Workshop on Sustainable Development Goal 14: Life Below Water Effective and Inclusive Management of Marine and Coastal Ecosystems to Promote Human Wellbeing and Sustainable Development

4th & 5th July 2017

CMFRI, Kochi

Contents

Rationale

India has about 2% of the world area but it contains nearly 18% of the biodiversity of the world. It has an extensive coastline of 7517 km in length, of which 5423 km is in peninsular India and 2094 km is in the Andaman & Nicobar and Lakshadweep islands. The exclusive economic zone has an extent of 2.02 million km.

Coastal zones represent the most diverse and fragile ecosystems as they are influenced by both terrestrial and marine processes. Marine ecosystems such as estuaries, coral reefs, marshes, lagoon, sandy and rocky beaches, mangrove forests and sea-grass beds are all known for their high biological productivity, which provide a wide range of habitat for many aquatic flora and fauna. It also provides important food resources and major services to human beings.

These areas are of great importance as they support huge populations. Around 25% of India's population is living within 100 kms of the coastline. India has around 3300 fishing villages and 1 million sea going fishermen. There is a population of 5 million in fishermen households/villages. 5-10 million people are employed in fishing and fish value chain.

Development of Industries and ports, increase in recreational activities, discharge of effluents (industrial and domestic) as well as exploitation of natural resources and illegal fishing all takes a toll on these fragile ecosystems. In addition storms and cyclones as well as erosion add to the degradation of these areas.

Poverty eradication, changing unsustainable patterns of consumption and production as well as protecting and managing the natural resource base of economic and social development are the overarching objectives of and essential requirements for sustainable development. This is especially crucial for India also to develop sustainably and remove the disparity and bring about pro poor and inclusive growth. All stakeholders besides the government like the civil society, private sector, and others are also key contributors to the realisation of the new agenda.

India as a UN member has committed itself to implement the 2030 sustainable development agenda. The Sustainable Development Goals are a big step forward for the environment. They recognise that we all depend on the planet's natural resources – its forests, rivers, oceans and land – for our social and economic wellbeing. Equally, the goals also acknowledge that our ability to use the planet's resources wisely depends upon creating a fair, sustainable and prosperous society, and decoupling our economies from fossil fuels and environmental damage.

For this purpose, NITI Aayog in collaboration with Central Marine Fisheries Research Institute and WWF India organised a two day workshop for the coastal states and UTs of India. The dates for the workshop were July 4th and 5th, 2017. The venue of the workshop was Central Marine Fisheries Research Institute, Ernakulam North P.O., Kochi, Kerala. The list of participants is attached in annexure 1.

Objectives

1. Build strong linkages and relevance of Goal 14, its targets and other associated targets in relation to India's sustainable Development
2. Develop guidance on integrating marine and coastal ecosystems values for poverty alleviation and building climate resilience for the coastal areas.

The presentations of all the speakers can be viewed under the link attached below-
https://www.dropbox.com/sh/go31oqbrbtab6h7/AABbG4Z6yJ0LhyTsZJMYfbVRa?dl=0

Session I: Setting the Context

Welcome Remarks

Dr. A. Gopalakrishnan, Director, CMFRI, welcomed the gathering to the two day workshop on SDG 14. He initiated the discussion on the importance of SDGs, especially SDG 14 in detail with its 10 targets. He said that the recently concluded UN Ocean Conference in June 2017 at New York ended with the adoption of pre-negotiated call of action of all member states for implementation of SDG 14 by 2030 with full participation of civil society and other relevant stakeholder. It also affirmed the need to conserve and sustainably use the oceans and marine resources for sustainable development.

There was also a strong request for separate organization for coastal states and UTs on SDG14 and its targets on the need to develop an integrated approach to the blue economy. Hence, the two day workshop has been organized in Kochi for this purpose in collaboration with NITI Aayog, CMFRI and WWF-India.

He expressed his gratitude to be part of this workshop and said that a major chunk of CMFRI research activities also falls under different sessions that are being discussed here. He wholeheartedly welcomed all participants to the SDG14 workshop as well as the organizing team.

Opening Remarks

Dr. Ashok Jain, Advisor, NITI Aayog, thanked all the participants for making an effort to participate in the meeting. He also thanked the CMFRI Director for hosting this meeting at the institute. He mentioned about SAMAVESH which is a network of 'Centres of Excellence' which can develop the training and capacity building materials as well as support in the implementation of the SDG goals and hoped that CMFRI could also be part of this. He also stated that SDG is a development agenda for the world where we integrate our ongoing programme accordingly and ensure that the countries commitments to achieving its targets are fulfilled. He elaborated that there are several SDG targets that are to be achieved by 2020 and a few among them emerge from SDG 14 that relate to regulating fishing and managing the marine ecosystem. He assured that the centre will fully support the states and research institutes in every form to achieve the SDG targets. He also informed the participants that a number of national consultations have been done in collaboration with multiple organizations, hence, the next stage is to hold the consultations all the states, particularly on issues like marine and coastal ecosystems. He also said that NITI Aayog will be happy to conduct workshops on specific topics/themes that are relevant and needs to be looked at closely.

He stressed that SDG 14 talks about conserving and sustainable use of marine resources. He also discussed in detail the threats and increasing pressure on the marine resources and its potential economic benefits. The current advancement in conservation work and technological interventions to address many of the issues in fisheries and coastal practices were also highlighted by him. He ended his talk by suggesting that policies, programmes, and interventions require proper alignment for achieving SDG 14 targets.

Special Remarks

Dr. C.N. Ravishankar, Director, CIFT, started by welcoming all the participants and appreciating the efforts of NITI Aayog, WWF and CMFRI for organizing the workshop. He then touched upon what work CIFT has been doing for the past 60 years in this sector. He said that one major problem for fisheries are that it is a state subject. The implementation of various technologies introduced by CIFT varies from state to state. Some states like Kerala, Karnataka and Gujarat are implementing it while others are not. He urged other states also to catch up and implement these technologies. He also

mentioned about TED, a successful technology developed by CIFT. CIFT plays a major role in conservation of juveniles and all other concerns that were flagged in the opening remarks. He said that CIFT is already in touch with all the state departments for implementation of various technologies. In the end he said that CIFT is really happy to be part of this two day workshop and hopes that is workshop it turns out to be fruitful and contributory.

Overview

Dr. Sejal Worah, Programme Director, WWF-India, emphasized on the transformational approach required to reach the Sustainable Development Goals by 2030 that aims at ending poverty, protecting the planet and ensuring prosperity for all. She also elaborated the SDG 14 goal and its targets and also informed the audience about the outcomes of the last SDG meeting held at Delhi on 8-9th February 2017. She also underlined the significance of the outcomes of the previous meeting for the Kochi meeting. She explained that that while the first meeting identified broad gaps and recommendations, it was crucial that this group aims to give detailed recommendations during the workshop to enable us to aim for successful achievement of SDG 14 in India.

She also gave an overview on the context of the coastal and marine scenario in India and pointed out that very little attention is currently being paid to the coastal and marine ecosystems and the services that they provide. Thus it was critical that the workshop aims to emphasize and create awareness on the potential economic and social benefits of marine and coastal ecosystems and also to realize the challenge to maintain environmental integrity. She also added that there is an increasing pressure from overfishing, pollution, loss of habitat etc. These impacts are strongly felt during coastal floods, inundation & erosion, acidification and coral bleaching. These threats collectively will have profound impact on our society. It is thus even more pertinent that policy-makers are responsible and evaluate the tradeoffs between economics, social values and environmental sustainability. The SDGs talk of the same and thus effective implementation of SDG 14 can help to mitigate threats and support biodiversity conservation along with sustainable livelihoods.

The recommendations identified for SDG 14 from the last meeting at Delhi were broadly divided into four heads i.e. Governance/Institutions; Legal/Policy/Regulations; Convergence/Integration; Information/Technology. The most important one being governance and institutions. It was uniformly agreed that the absence of ownership over marine and coastal territories and its resources remain unclear, there are overlapping jurisdictions and dilution of traditional systems has given rise to multiple conflicts. The central government also needs to give more importance to the

fisheries sector. Several policies and regulations pertaining to marine and coasts also need to be updated. These policies also often get influenced by politics, lack of information, limited knowledge, or understanding among the policy makers. The specific areas of concern that have been identified were:

- Overfishing
- Social transition in fishing communities
- Marine pollution and Marine debris
- Siltation of river confluences and Coastal erosion
- Invasive species
- Endangered species
- Anthropogenic underwater noise
- Climate impacts

Session II: Sustainably manage and protect marine and coastal ecosystems

Dr. N. Vasudevan, Additional Principal Chief Conservator of Forests, Mangrove Cell, Forest Department, Maharashtra, chaired the session and also spoke about the sustainable coastal management in Maharashtra. He informed that a mangrove cell has been initiated in Maharashtra around five and half years ago and that the mangrove cover in Maharashtra has increased from 186 to 222 sq km with the efforts of this mangrove cell. He also said that the Maharashtra government has declared mangroves on government land as reserve forests. Dr. Vasudevan also touched upon the various activities that have been undertaken by the mangrove cell. Some of the activities highlighted were crab farming in mangroves, Bivalve farming, Promotion of square mesh net for trawl fishing etc. Youth have also been trained in scuba diving to control ghost fishing. Mangrove and Marine Biodiversity Conservation Foundation of Maharashtra (Mangrove Foundation) has also been formed which aims at mangrove and marine biodiversity conservation, sustainable livelihood activities, promotion of research, education and awareness. He also stated that the activities undertaken by Maharashtra can be very well replicated in other coastal areas for better mangrove and marine biodiversity conservation.

Mr. B.C. Choudhury, Independent Marine Expert, started by emphasizing on the rich coastal and marine biodiversity of India, its geographical expanse and characteristics, distribution and significance. He briefed the participants on the existing policies and activities permissible in the current coastal demarcations, coastal regulation zones and exclusive economic zones. He then reviewed the existing network of protected areas, national parks, sanctuaries and community reserves along the coastal and marine habitats of the Indian sub-continent. He also stated that for India to meet its goal of establishing 10% of its coastal and marine habitats as Marine Protected Area network, we need to take into consideration critical areas already been identified by other agencies or research institutes. For example, ecologically sensitive coastal areas by Centre for Coastal Zone Management and Coastal Shelter Belt, Institute for Ocean Management, Chennai; important Coastal and Marine Biodiversity Areas (106- ICMBAs) by Wildlife Institute of India, Dehradun.

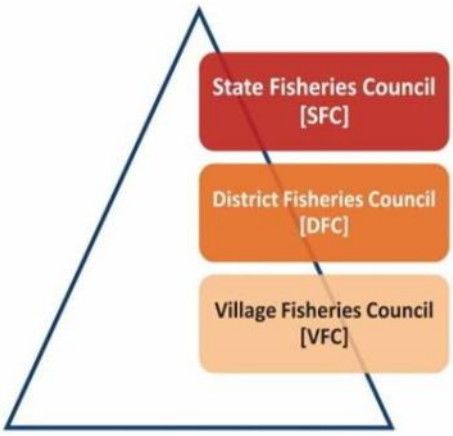
He emphasized on the economic significance of the coastal and marine resources and its contribution to the national gross domestic product. He mentioned that that there is an intricate relationship between terrestrial and marine environment with humans which needs to be better understood and smartly managed for its sustainability. Coastal and ocean development activities like beach and sand dune alterations, coastal embankments, developmental activities, coastal aquaculture activities, ports development and dredging significantly affect the ecology of the coastal

zone and the functioning of coastal and ocean process and resources. He highlighted the different existing conflicts among users and sectoral governmental agencies that administer programmes related to oceans and coasts.

He finally summarized and discussed possible solutions for sustainable approach to development in the coastal and marine areas. He also stressed on the need for seeking common meeting ground and similar approaches between conflicting sectors, conservation scientists, user groups and the developmental lobby. New management approaches also need to be experimented including inclusive management where user groups or a livelihood dependent community is one of the significant decision making stakeholders.

Dr. K. K. Joshi, Principal Scientist, CMFRI, initiated the discussion on the vast coastal ecosystems, rich biodiversity and varying habitats which hold immense opportunities of Indian coastal and marine ecosystems. He emphasized that these ecosystems also meet the dependency of large number of coastal community along the long Indian coastline. He mentioned that there is currently a poor governance system for these areas by stating an example of the absence of regulation for area between 12 and 200 nautical miles of the Exclusive Economic Zone (EEZ). This has led to a decline in a substantial proportion of catches and increase in illegal, unreported and unregulated fishing (IUU).

He highlighted the varied ecosystem services provided by coastal and marine habitats which are being deeply impacted by disappearance of many species at an alarming rate. He also added that the introduction and establishment of marine invasive alien species is a growing issue that has been long ignored and needs immediate attention. He recommended that for strengthening resilience to achieve healthy and productive ocean ecosystems a consultative mode of co-management needs to be initiated immediately. This could later be shifted to co-operative mode of co-management. He also proposed that a three tier fishery management system in India needs to be initiated.



He suggested establishing of fish *refugia* to enable undisturbed unfished area for spawning and nursery of all marine organisms. He also stated that the 'Rights Based Fisheries Management' can be a successful model where both right to fish and allocation of fisheries resources are defined. He mentioned that currently most of our traditional fishermen are unknowingly following the 'balanced harvesting concept' that are sustainable; hence, these should be encouraged through certifications.

Finally, he suggested investing in changing the growing blue economy through:

- Improving governance that will create a pipeline of opportunities in a way that benefits national economies and local communities, while protecting resources for future growth.
- Use of science, data and technology which is critical to underpin governance reforms and shape management decisions.
- Improving market infrastructure and access can create more sustainable outcomes which benefit the poor.
- Align natural capital with investment capital through improved governance and incentives so that responsible finance can secure returns and contribute significantly to building the blue economy.

Dr. K. Sivakumar, Senior Scientist, WII, focused on the Aichi Biodiversity Targets and subsequently the National Biodiversity Targets relevant to coastal and marine ecosystems. He mentioned that currently there are 130 Marine Protected Areas (MPAs) in India covering about 8200 sq. kms. Hence, MPAs form 3.85% of total area under PAs in India and 4.97% of coastal zone of peninsular India. He touched upon the importance of linkages between landscapes and seascape, stating the example of Sunderbans and the mass nesting rookery of olive ridley turtles. He also discussed the need to determine critical habitat requirements of globally migratory marine species before siting of developmental projects along coasts. He also stated that the evaluation of the management effectiveness existing MPAs underlines the lack of proper capacity, infrastructure and funds. Stating the example of the Gulf of Mannar Marine National Park, he stressed that about 40% of planned management actions were either not implemented fully or were partially tried on adhoc basis due to lack of funds and infrastructure. He discussed the study carried out by WII to identify important coastal and marine biodiversity areas to strengthen the Marine Protected Areas Network in India. He mentioned the six **"**conservation amplifiers" which were picked up from standard methods for criteria development

- Ecosystem resilience
- Ecosystem function
- Biodiversity uniqueness
- Cultural, Religious
- Aesthetic significance
- Socio-economic potential
- Land tenure.

He stated that by using this approach, a total of 106 'Important Coastal and Marine Biodiversity Areas' have been identified. He emphasized the requirements of efforts in securing and strengthening community participation in management of these ICMBAs so that we could achieve SDG 14 in India. He also discussed the advantages of protected area as they get funding support and have dedicated staff to protect the flag ship species and their ecological habitats. He highlighted some of the positive benefits of protection such as restoration of marine habitat types and their obligate flora and fauna; ecological processes and their services especially in the Gulf of Mannar National Park, Mahatma Gandhi Marine National Park, Jhansi Rani Marine National Park, Gulf of

Kutch National Part etc.. Finally, he spoke about possibility of declaring areas like Angria Bank, a submerged plateau of the east coast of Maharashtra as an ecologically and biologically significant marine areas (EBSAs) as per the Convention of Biological Diversity.

The major points in the open discussion were the following:

- Need to undertake sea ranching and restocking programme on certain threatened species and commercially important native species like CMFRI has been doing for flower shrimps. Also explore potential of captive breeding that has been done for reintroducing sea cucumber.
- Need to establish artificial reefs which has also been experimented and established in Tamil Nadu coast. They are being declared as no take zone and also act as buffer zones while peripheral areas can be fished.
- Urgent need to map and overlay the biologically significant areas and all the proposed or upcoming ports so that this information can be used for discussing with the concerned authorities to delineate areas and place management strategies in place to minimize the impact and protect critical habitats.
- All identified ICMBAs need to be declared as 'National Heritage Sites or Community or Conservation Reserves' and promote community based integrated management of these sites.
- Integrate the SDG 14 with India's National Biodiversity Targets mentioned in the 5th National Biodiversity Report.
- Improve infrastructure, capacity and funds available for existing Marine Protected Areas in India.

Session III: End illegal and harmful fishing practices as well as overfishing

Mr. Mohammad Shahid, Commissioner of Fisheries, Gujarat, chaired the session and started with giving an overview of the coastal resources in Gujarat. He said that the government of Gujarat is very concerned about conserving the fishery resources in the state. Various laws and Acts have been formulated in the state to provide for protection, conservation and development of fisheries. He gave example of the Gujarat Fisheries Act 2003 and the Gujarat Fisheries Rules 2003. He also mentioned that the fisherman in the state have themselves suggested for a ban on fishing for a period of 3 months. Gujarat has also put a ban on registration of new fishing boats above the length of 10 meters. All the fishing boats are registered in the state as per Merchant Shipping Act/Gujarat Fisheries Act. The movement of all the boats is regulated through a movement token system issued to all the vessels going into sea along-with crew details. This system has been introduced in the state since 2009 and has helped in monitoring how many boats from the state are fishing at any given point of time. However the system still needs improvement for better management. He also informed that the fishery harbors in Gujarat are crowded and need to be developed for better monitoring. Mr. Shahid ended his presentation by listing some steps that the Gujarat government has taken to protect small & traditional fishers. Some of the steps are reserving and an area upto five nautical miles from the shores for the traditional fishermen / non mechanised boats and providing financial assistance for purchase of Out Board / Inboard Machine for Motorisation of traditional fishing crafts etc.

Dr. Leela Edwin, Principal Scientist & Head, Fishing Technology Division, CIFT, discussed in depth about the excess fishing capacity, destructive fishing practices and the CIFT initiatives for responsible fishing. She mentioned that over the last decades there has been a significant increase in the size of the fishing boats and its machinery. Trawling has been the most energy intensive fishing method and

there has been an increase in the preferred size of trawlers.There has also been a significant increase in the number of hours of operations. Similarly, purse and ring seine has increased in size and number.

She mentioned about light fishing a technology of aggregating fish by using artificial light in order to harvest them. Fishermen use light for attracting spawning adults or as juveniles of fishes that get easily captured, hence, leading to serious impact on the spawning biomass. She also stated that bull trawling is one of the most intensive trawling mechanism that causes huge damage to seabed. Pelagic trawls are mid-water trawls used by traditional fishermen to catch pelagic fishes but has been banned in 1980s as it causes total damage to fish species and other marine organisms. However, recent report shows that this method is still practising in the country. She said a technical committee constituted by the Government of India in 2004 reviewed that operation of 'mini trawl' which has mesh sizes as small as 16 mm and is operated in the shallow coastal waters catching mainly the juvenile prawns (25-60 mm size) also should be banned.

She suggested some steps which are required to reduce overfishing and illegal fishing-

1) Standardization of gear materials and appurtenances,
2) Low-cost substitutes for conventional craft materials,
3) Design and development of fuel-efficient fishing vessels,
4) Low energy fishing techniques, low drag trawls and otter boards, and pair trawling should be promoted,
5) Improved Low energy and eco-friendly harvest technologies,
6) Selectivity of fishing gears: mesh size optimization,
7) Use of bycatch reduction devices
8) Eco-friendly trawls for the benefit of small scale sector.
9) Technologies like the juvenile fish excluder and shrimp sorting device used internationally to be adopted.
10) Turtle Excluder devices and other species specific technology should be enforced for the protection of the species.
11) Circle hooks for resource conservation, colour optimized gillnets for hilsa to be adopted by fishermen
12) Fishermen also need to be encouraged to adopt Fish Aggregating Devices with proper regulations and improved lobster traps.

Dr. P. Pravin, ADG, ICAR, initiated his presentation by mentioning that throughout the country and in each stated there has been an increase in the number of fishing boats. There are strong evidences supported by statistics to indicate the issues of overcapacity as well as poor implementation of regulations and use of bycatch reduction devices, but as yet no concrete conservation measures have been taken so far. He emphasized that several technologies exist with the potential to support conservation but not been yet been adopted or strictly implemented across all coastal states of India. He also expressed his concerns that research organizations and developmental agencies are a bit slower than the fishermen who are much quick in adopting new technology.

Destructive fishing practices devastate the marine environment. However, he mentioned that the impact of gear can vary based on its use with respect to scale of operation and area. Hence, any fishing gear used excessively or inappropriately can become destructive. A fishing gear can be destructive in an area where fishing is banned while the same fishing gear might not be destructive in areas where fishing is allowed. He informed that trawling, purse seining, gillnetting are the most commercial and destructive fishing methods in the country but are destructive as they do not use the stipulated dimensions and optimum mesh sizes and is still being continued in the fisheries sector. There are several existing rules or regulations but these are not being implemented on ground.

He also stated that CMFRI has drafted guidelines for the use of purse seining that has been adopted by several fishermen but its strict implementation still needs to be done. There should also be punishments for illegal fishing which can help set a right example for all fishermen. He emphasized that although there are technologies for non destructive fishing and monitoring but its adoption and implementation are not carried out effectively. Destructive fishing practices like use of small mesh size continues inspite of multiple awareness building sessions and trainings to the fishermen. Fisherfolks have also been explained its disastrous impact on marine resources as well as its habitats but nothing is being practiced by fishermen when out in the sea. Therefore, the need to educate fishermen and bring about behaviour change is crucial.

Fishermen also need to be made aware of the impact of lost nets and the need to retrieve these nets and bring them back to the shore to avoid loss of commercial value fishes. There is a need to change the mind set of fisher community so that all of them are brought at the same level. This will help in bringing much greater sustainability and greater equity of the resources. He said that the need of the hour is to evaluate, educate and regulate. One needs to end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices. There is a need to implement science based management plans in order to restore fish stocks. A serious review should be done of the fisheries subsidies (eliminate and refrain from introducing) which contribute to overcapacity, overfishing, illegal, unreported and unregulated fishing. There is a need to increase scientific knowledge and disseminate information. There is also a need to provide access and opportunity for artisanal fishers.

Mr. Reuben Mathew Jacob, Secretary Fisheries, Lakshadweep, gave a brief overview of the Lakshadweep Island fisheries. Lakshadweep is an archipelago of Islands that comprises of 10 inhabited and 21 uninhabited islands and there are also group of other atolls. He mentioned about the current regulations and management strategy for fisheries in the Island. He added that none of the islanders carry out illegal fishing but illegal fishing has been observed in the territorial waters of Lakshadweep by fishermen coming from the mainland states. These illegal fishing practices are being put under check and strictly monitored with the help of coastguards. The model of fisheries in Lakshadweep is such that the chances of illegal fishing are either minimal or none by the islanders. He was of the opinion that Lakshadweep waters are under fished and the administration needs technical support to optimize the fisheries potential in the islands. He added that the main catch of Lakshadweep Island is Tuna, however, it is not a viable economic product anywhere on the island. They have a traditional mechanism to process these fishes into '*masmene*'(processed tuna) that has greater value. He said that the administration is building the capacity of the island to increase its potential of tuna fishery.

The open discussion post these presentations highlighted some very pertinent issues like:

- Need for accelerating the transfer of technology to poor and traditional fisher folk as it will not only help address the issue of overfishing but also resolve conservation threats from bycatch etc.
- Sale of fish bycatch has become a good support system for fishermen during off season or low catch periods..
- There is a shift from marine wild catch to aquaculture practices. Hence, there is a need to focus on ensuring that these aquaculture practices are made sustainable.
- Need to incorporate Vessel Monitoring System to help in establishing traceability and transparency of fishing in open seas.
- Skipjack Pole and Line Tuna Fisheries in Lakshadweep is a traditional form of fishing and is being certified for its sustainability and will give a better access to larger markets.
- A need to understand the actual action on the ground and what is inhibiting proper implementation of these regulations.
- The issue of open access of resources leads to difficulty in making fisheries sustainable. There is a need to have an ecosystem approach for managing fishery resources instead of the current state wise regulation which has clearly not been successful.
- Critical need to influence the attitude of fishermen towards resource use for better implementation as the number of fishing vessels are much greater than the number of enforcing or monitoring individuals on ground.
- Regulation and monitoring of the manufacturing industry of boats, nets and mesh size and its supply to curtail the misuse of these gears and crafts.

Session IV: Inclusive management and use of marine and coastal areas

Mr. Rama Sankar Naik, Fishery Commissioner, Andhra Pradesh, **chaired the session** and also gave an overview of the fishery resources of Andhra Pradesh. He also listed out certain statistics about the fisheries sector in Andhra Pradesh. He stated that the aim is to make the Andhra Pradesh the aqua hub of the world. He then listed out certain regulations that have been laid out by Andhra Pradesh government to achieve the SDGs which include regulations are ban on fishing for a certain period, mesh size regulation, regulation of IUU etc. He also mentioned that the Government of Andhra Pradesh has also launched various schemes, capacity building and development programmes under the fisheries sector as well as sensitization programmes for the fisherfolk on marine pollution.

Dr. Deepak Apte, Director, BNHS, touched upon an initiative that was tried in Lakshadweep by his organization. This small initiative was undertaken to build bridges between people, their livelihoods and conservation. He said that if marine protected areas can enhance livelihood and protect biodiversity in Lakshadweep it can work anywhere else. He mentioned that Lakshwadeep Islands have certain strengths like high literacy rate among the community, skilled human resource, abundant resources etc. as well as drawbacks like remoteness of the islands and a politically divided society. The islands are also more vulnerable to certain threats like climate change and mainland invasion on resource use.

He stated that BNHS carried out a project where Giant clam were taken as a surrogate for habitat monitoring to see the ecosystems evolve and react during course of time. Giant clams are niche specialized species with a life of over hundred years and fixed to one place hence can be easily monitored. Project Giant clam was initiated in 2004 and looked at three different aspects--stakeholder analysis, community awareness, and research.

Initially, the project only focused on the Giant clam but as per community request they also included bait fish intervention. The project also looked at various acts and customary laws as well as took panchayat endorsement and prepared management plans so as to ensure sustainability of the

project . However, it was seen that unless livelihood security of local communities is not provided, the project could not sustain.

This project also focused on tuna as it is a major source of livelihood and the Lakshadweep's economy revolves around it. Bait fish is an integral part of tuna. One cannot have Tuna fish without the bait fish which requires reef integrity. The strategies adopted to increase adaptive capacity of the community in the area was training and combining different types of knowledge for learning: indigenous and scientific and self organization towards social ecological sustainability. It was seen that 90% of the scientific knowledge overlapped with traditional knowledge.

Dr Apte stated that after working for six years, the local community agreed to close the area for 5 years. It was decided that after the completion of 5 years it will be assessed whether the area should have permanent closure or different areas should be closed at different times. The project in the end was endorsed by the community themselves. However, due to issues related to contradictions with WLPA, this closure is currently not in place.

He concluded by saying that the involvement of communities for ecosystem conservation can bring about good results, however, he cautioned that for species conservation it may not work that well and enforcement may be required.

Mr. V. Vivekanandan, Advisor, SIFFS, initiated his discussion about what does inclusive mean in the context of marine fisheries. Marine fisheries is a common property resource and if allow everybody to fish in the name of inclusiveness then there won't be any resources left so the name of the game is actually to ensure exclusiveness. He stated that one has to take into account that the fish and fish resources are not open for everybody. Inspite of having process for registration and licensing mechanisms in place, we have no policies in place to decide who gets priority over the limited fish resources. He stated that there are unwritten understanding between the fishermen on areas of fishing which have been successful to a varying degree. This is because there is a historic social community which has accepted the right to fish i.e. the fisherman caste. However, there is another problem as anybody who is fishing or not fishing calls himself a fisherman.

He said today, no fisherman can survive if he doesn't upgrade his fishing equipment in the next season and an increment scaling is required annually. He stressed that the scale is a major problem in our inland fisheries. He also said that there needs to be a common system that keeps check on what are the current practices of the fishermen. If that was not in place then people will do what they want. He spoke about how to develop a co management system where the fishing communities and the department of fisheries work together to develop rules that the community is ready to enforce. He then moved to talking about scale subsidiarity. Scale subsidiarity is to about giving first rights to a smaller unit that can catch the fish over the larger unit.

Mr. Vivekanandan concluded by saying that we are shying away from making large scale regulations. What we need is resource allocation principles where we need to match capacity with resources and

apply scale subsidiarity to notionally allocate resources. Then we need to start regulations from the top or the largest unit and apply owner-operator principle. The first preference should be given to historical and traditional community members to resources.

Dr. Naveen Namboothri, Director, Dakshin Foundation discussed on why we should talk about inclusion. He said that when we are talking about defining inclusion, we need to see at the scale about which we are talking-- State level, district level, village level, panchayat level or across all levels. Next we should look at who will be included like community members, elected representatives, local CBOs, local panchayat/gram sabha members and will it entail certain powers or rights. In the end, according to him , everyone needs to see the process of inclusion-- how will the stakeholders be included and what, if any, mechanisms are in place. He also stressed that for effective implementation, decentralisation and devolvement of powers to communities as well as identifying them as contributors of knowledge as well as active contributors to resource management, and recognition of communities as monitoring agencies and enforcing agencies (with some diversion of power) is required.

He also spoke about the island ecosystems as they provide decent models to show that inclusive and participatory mechanism could work. This could be because these models have been isolated geographically from the mainland. He also gave an example of Lakshadweep. He said that this island is home to a plethora of traditional knowledge and customary, intrinsic, bottom-up resource management practices which can be good case study for inclusive management initiatives.

In the end he emphasised that the inclusive management approaches need true conviction and desire, a right kind of expertise in dialogue and communication, devolving/decentralising of powers, identifying existing practices and strengths within communities and developing mechanisms to make the inclusion formal.

Sub Group Session for framing of recommendations

At the end of the first day the participants were divided into sub- groups to discuss and develop recommendations on the three sessions mentioned above. The recommendations of each of the sub groups have been listed in detail in Session VI.

Session V: Prevention of marine pollution from all sources

Dr. M.V. Ramana Murthy, Head, ICMAM, chaired this session. He started by listing out the various indicators under SDG 14 and how ICMAM has contributed to these indicators. He also emphasized on the coastal research work being undertaken by ICMAM. He then listed out the various sources of pollution in coastal waters. He listed municipal sewage as one of the major source of pollution. However, it has been seen that the sewage treatment capacity of the states is not adequate. The states also don't have enough funds for sewage treatment. He then shared some data on marine pollution like seasonal variation in sea water quality, water quality index, dissolved inorganic nitrogen and phosphorus, Algae bloom monitoring etc. He concluded by saying that the Ministry of Earth Sciences has various models in place for water quality monitoring which will be available for wider use in the future.

Dr. V. Kripa, Scientist, CMFRI, started with discussing the major threats of marine pollution coming from marine debris or litter, chemical or industrial sources, aquatic weeds, oil shipments, acidification and in some cases from activities related to fishing also. She further elaborated today the marine debris has become one of the increasing threat with 4.8 metric tons of the debris entering the oceans every year globally. The estimated damage to these sectors in APEC region has been found to be US$1.265 million annually. She stressed that a huge amount of the non-biodegradable plastic wastes entering the marine ecosystems are from land sources. It was also

stressed that there is a huge gap in policy guidelines. She suggested that there should be a proper waste disposal facility and collection mechanism at all jetties. The issue of ghost nets was also discussed. which have been a great menace to the marine life, threatening critical species like sea turtles, dolphins etc.

She mentioned that there are no national marine debris management strategies in place as yet. Hence, there is an immediate need for developing a waste management plan for each of the coastal villages and propagate use of eco-friendly materials. In addition there is also a need for establishing a reduce, reuse and recycle mechanism among the community. She recommended that for reducing waste, we need to create awareness, minimize waste generation at source, establish proper collection mechanism, , identify and set up collection points and regularise monitoring for picking litters brought in from sea and coastal activities along with implementation of segregation of biodegradable and non-biodegradable waste..

She emphasized on private participation initiative for waste management as it may have a higher level of efficiency and accountability. Government can also consider providing incentives to groups like fishermen to reduce and remove litter from oceans. Proper rules and regulations also need to be put in place for prohibiting dumping of land waste in backwaters, coastal and marine areas and penalize defaulters.

Dr Kripa also stated that India is the second largest consumer of crude oil in the Asia-Pacific region. In addition, 70% of world oil is ferried along Indian coastline. There have been multiple incidences of oil spills in transportation or collision of shipping vessels. Oil slicks stay on water and impact sea animals as well as enter the food chain leaving long term impact on the ecosystem. Oil spill also impacts a large number of marine mammals, corals, gorgonids, sea cucumber, sponges, and sea horses that are protected under the Indian Wildlife Protection Act. Almost all of these are demersal or bottom dwellers like molluscs that have limited movement and are most vulnerable to oil pollution. Similarly, activities like aquaculture, cage farming, integrated farming and farming of seaweeds may get impacted by oil spills. She said that we have no strategy or mechanism in place to deal with disasters. She recommended that application of remote sensing for monitoring pollution and designing oil spill contingency plan is critical to be prepared for such accidental impacts on our resources. Spatial maps of critical habitats along the Indian coasts and the route of oil tankers needs to be carried out so that precaution can be taken. In addition mapping of vulnerable resources throughout the Indian coast should be done and it should be provided to the information should be shared with stakeholders. Lastly, she discussed the impact of invasive species in India and increasing fishing pressure on the biological resources. Overfishing impacts stock depletion especially forage fishes, pelagic birds, and marine mammals. Harmful and illegal fishing practices should be strictly regulated. Therefore, to be able to reduce pollution in our oceans by 2030, necessary actions should be taken as mentioned previously.

Dr. Nandini Menon, Deputy Director, Nansen Environmental Research Centre, Tamil Nadu mentioned that marine litter has been much ignored and a lesser studied facet in India till date. The major pollutants that are giving rise to marine litter are oil, sewage waste and pesticides, plastics, heavy metals, radioactive and oxygen demanding wastes, , invasive species, CRZ violations and tourism impacts. All of these also impact the , health of ecosystem and alternative livelihoods like mariculture. She said that in the Indian context it is important to note that the seas around India act as corridors for the oil tanker route and such mid ocean exchange practices can negate the principle of limiting bioinvasion. Research related to ballast water treatment is underway in many countries and the options include, heating, filtration, ozonation, deoxygenation, gas super saturation, ultraviolet radiation and biocides. India is also undertaking research in this area. She informed that the National Bureau of Fish Genetic Resources has also prepared a list of exotic/alien species under aquaculture, fisheries and aquarium trade . They have also published a strategic plan for quarantine and exotic fish introductions so that we do not introduce aliens and invasives in the natural environment.

She said that the increasing tourism industry has also become a significant source of pollution in India. While 80% of all tourism takes place in coastal areas, with beaches and coral reefs amongst the most popular destinations and often contributes in a positive manner to socio-economic achievements. However, its fast and sometimes uncontrolled growth can be the major cause of degradation of the environment and loss of local identity and traditional cultures. The stress imposed by tourism activities on fragile ecosystems accelerates and aggravates their depletion. Developmental projects in the name of tourism are damaging the highly fragile ecosystem of the coasts. She also mentioned the multiple CRZ violations due to increasing coastal development drive.

Dr. Dattesh Desai, Senior Scientist, NIO, revisited the causes and sources of marine pollution and also highlighted their long term impacts on marine ecosystem. . He also stressed upon the impacts of noise pollution from large number of vessels, climate change impacts on the ocean, and consequences of acidification . He discussed the measures taken so far both globally and nationally. He emphasised that the need for protection of ecosystems has been acknowledged worldwide. He also gave an insight into various laws and Acts which India is a signatory too or has enacted on its own.

- The United Nations Convention on the Law of the Sea (UNCLOS) 1982,
- The Maritime Zones of India Act 1976,
- The Coast Guard Act 1978
- The Merchant Shipping Act 1958.

He said that the responsibility for the prevention of pollution is shared by the state and central governments. The Government of India has approved the National Oil-spill Disaster Contingency Plan (NOSDCP) in 1993, and has also allocated functional responsibilities to various ministries and departments for oil-spill response in the Maritime Zones of India. The Coastal States and Union Territories are responsible for shoreline clean-up, whenever the oil-spill reaches the shore, and threatens the shoreline.

Dr Desai emphasized that management of marine ecosystems and resources increasingly demands comprehensive and quantitative assessments of health of the oceans.

Session VI: Way Forward for policy coherence and integrated planning for sustainable use of marine and coastal resources

The working groups had developed recommendations in the sub groups and these were presented in the plenary for additional feedback and suggestions. The following recommendations were proposed under each theme. *Please see annex 2 for comments from National Biodiversity Authority on the recommendations.*

Sustainable management and protection of marine and coastal areas

Facilitator: Mr. B.C. Choudhury

Recommendations:

- There is a need to consider and use the CRZ-I category seascape/landscapes including mangroves for achieving the SDG target of 10% coastal and marine ecosystems within a protected area network
- Identify sites from the range of locations suggested by WII, BNHS, and other conservation organizations including traditional knowledge of fisher community (operating within 12 nautical miles & 15m depth)
- Examine the potential of Ecologically and Biologically Significant Marine Areas within the Indian EEZs and document these for being considered for inclusion into the Marine Conservation Area Network
- Provide a legal framework other than under the provision of WLPA, explore the possibility of declaring Ecologically Sensitive Areas/Hotspots as Biodiversity Heritage Sites
- Enable pragmatic management of Marine Conservation Areas with inclusive management approaches (benefit sharing), examine the possibility of expanding the scope of WLPA
- Examine the prospect of establishing a network of smaller and manageable community reserves/co-managed areas along the Indian coastline
- Undertake a comprehensive auditing of contribution of the coastal and marine ecosystem to the national GDP. This will help assess the ecological and socio-economic benefits as well estimate the value of marine bio-resources. Based on this, sustainable bio-prospecting can be facilitated for the bio-resources in the coastal and marine areas to increase their contribution to the GDP
- Initiate a study to understand the impacts of climate change on the coastal and marine environment and processes as well as to develop viable technological interventions and solutions for adoption.
- Understand land based/source stressors for a better understanding of coastal and land interactions.
- Use principles of restoration ecology to enrich the biodiversity of MPAs/Biodiversity Hotspots and Heritage Sites
- Enhance coastal literacy through awareness programmes and include this as part of the syllabus upto high school. *(Note: Coastal literacy is not about overall literacy of coastal communities but is the understanding of coastal and marine systems, processes and cultures)*

Ending illegal harmful fishing practices as well as over fishing

Facilitator: Dr. T.V. Sathianandan

Recommendations:

- There should be a cap on registration of fishing vessels looking at the current situation of overcapacity in most regions. Additional/new registration of fishing vessels should be stopped

- The government could consider implementation of a buy-back scheme of existing licenses to address overcapacity

- Encourage conversion to different fishing practice/gear based on assessment of carrying capacity*(it was pointed out that this has been tried but has usually failed – an assessment of reasons for failure of such schemes should therefore be conducted first)*

- Implement a licensing scheme for fishing gear (recommended mesh size and dimension) and boatyards

- Use of VMS and harbour management needs to be enhanced; involvement of coastal police for vessel tracking needs to be put in place

- Urgently finalise the Ocean Regulation Management Act to regulate fishing in EEZ. The Act should also prescribe uniform rules and specifications (not state-specific) and the states need to be empowered for its implementation

- Species-specific uniformity of MLS for all the states and UTs should be enforced at harbor and fish processing factory level

- Good practices related to the fisheries sector need to be documented for better dissemination to the relevant actors, including fisher communities and knowledge/policy institutions like NITI Aayog, for broad-based sharing and awareness development

- Subsidies (on gear, craft and fuel) that act as a driver for overfishing should be phased out. The funds from this can be used to support livelihoods including value chain addition, infrastructure, etc for fishing communities.

- FADs/artificial reefs have pros and cons and its further development should be strategic and judicious

Island-specific

- Fishing on islands should be controlled and managed by and for islanders

- Focus of fisheries on islands should be on value addition and marketing and not just on catch quantity

- Guidelines are required for sport fishing which is being promoted in Lakshadweep and Andaman and Nicobar Islands

Project specific

- Planning and implementation of the Sagarmala project needs to be carefully assessed against the SDG Goal 14, This project could lead to large-scale displacement of small-scale fisherfolk as well as have significant negative impacts on marine and coastal natural resources which would undermine achievement of the Goal.

Inclusive management and use of marine and coastal areas

Facilitator: Mr. V.Vivekanandan

Recommendations:

- Transparency, accountability and monitoring in existing and planned governance systems need to be established

- Need to demystify the parlance of science, data and policy for the community benefits related to coastal and marine issues

- Enhance the ability of communities to make informed choices through community empowerment efforts

- Identify and strengthen existing community-level institutions who are working on marine and coastal issues

- Importance of women and their organisations in coastal and marine issues needs to be recognized and they need to be included in all relevant processes

Coasts

- Free Prior Informed Consent (FPIC) of communities to be mandatory for any development project along the coasts

- The District Level Committees under the existing CRZ notification needs to be set up and capacitated so that they can be involved and perform their designated functions and duties.

- Involvement of district level committee in the functioning of the coastal zone management authority needs to monitored and strengthened.

- Efforts are required to secure involvement and capacity building of fishing communities and BMC members in monitoring CRZ violations

- ICZM (Integrated Coastal Zone Management) in its true sense needs to be developed with fishing communities as key stakeholders and also with approaches appropriate to India

Co-management

- Multi-tiered co-management structures relevant to different parts of the coast need to be developed. However, structures should evolve and not be blue printed.

- Work with existing self organized/governed groups across the coast for small scale and mechanized boat fishermen, rather than attempt to create new fisher organisations.

- Initiate a strong pilot phase for co management of MPAs to understand what works and what is not required before scaling the process to cover the entire coast; a learning approach with good documentation and discussion platforms will be required.

- Capacity building of all stakeholders (including government/implementing agencies) is required to provide a solid base for co-management.

- Develop a network of institutions including civil society organisations for supporting and facilitating the co-management process

- Strong mediation and facilitation by independent persons to bring fishermen and fisheries officers together is required

- While fishermen traditional knowledge will play an important role in the management process, scientific institutions need to be part of the co-management process; scientific institutions need to undertake customized research in support of co-management and provide scientific advice.

- A pre-requisite for a successful co-management programme will be for the Government to take a clear stand on priority access to marine resources to small scale fishermen and to restructure the fleet in favour of the smaller and more eco-friendly fishing methods.

- A co-management policy that supports transfer of power to co-management councils is required urgently with suitable legal framework (amendments to existing laws or new laws) based on the learning from the pilot phase

Islands

- Improve greater access and participation of fishing communities in the Island Development Authorities and other governing institutions

- Island Administration should be sensitized and their capacities built for inclusive management.

- Recognise and build on existing traditional resource use and management systems from the traditional communities of Nicobar and Minicoy islands.

- Island development models that have pretentions to become Singapore or Dubai are not appropriate in the Indian context

- There needs to be a mechanism to developed for convergence and building synergies between co-management plans and Island development plans including fisheries development plans

- Strengthen community involvement in the Integrated Island Management Programme formulation and their implementation

Next Steps

Dr. Sejal Worah, **Programme Director, WWF India** thanked all groups for giving excellent recommendations as well as thanked the chairs. She emphasized that all the presentations were extremely valuable as it contained a lot of new data and information collated for the first time

revealing facts and current situations that will be very useful for all our arguments that we make for the protection of marine and coastal ecosystems.

She said that the SDGs have given a new opportunity to try and ensure that many of the concerns one has gets integrated in planning and policy. We all must lobby and advocate for the integration using the SDGs as a tool inspite of all our multiple skepticism and inhibitions. She stated that the NITI Aayog has provided all of us with a great opportunity to change that take this process forward.

She also added that it is essential for the states to understand that this is not just about providing recommendations to NITI Aayog alone but also to take home many of these recommendations that can be implemented only in the states and by the state government. This will help the country show progress, hence, it is equally important that these issues are integrated at the state level. She urged the states to start implementing these recommendations at the state level and stated that organizations like WWF India and other CSOs and Institutes present can definitely provide the required support.

Vote of Thanks

Mr. Vinod Malayilethu, Senior Coordinator, WWF India, concluded the workshop by giving the vote of thanks. He thanked all participants for taking out their valuable time for attending the workshop and actively participated in all the sessions. He also was grateful to CMFRI for hosting the workshop. In the end he also thanked the media for covering the event.

Annexure 1: List of Participants

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Annex 2: Comments from NBA on the emerged recommendations on Sustainable Development Goal 14: Life below Water

Under the Session VI - Recommendation

I. Sustainable Management and Protection of Marine and coastal areas:

Point 4 -The existing provision under the Section 37 of the Biological Diversity Act, 2002 can be explored for declaring the important Coastal and Marine areas (such as unique ecologically fragile ecosystems, presence of high endemism, rare and threatened species, keystone species, species of evolutionary significance, wild relatives) as Biodiversity Heritage Sites (BHSs).

Note: Under the Section 37 of the Biological Diversity Act, 2002 the State Government in consultation with the local bodies can notify areas of biodiversity importance as BHSs.

Point 10 - May include conservation of rare, endangered and threatened species of coastal states/UTs and appropriate steps need to be taken for the rehabilitation of those species.

Point 11 - Under the Coastal literacy awareness, the following topics can be considered:

a) Biological Diversity Act, 2002;
b) Coastal and marine biodiversity;
c) Preparation of Coastal and Marine PBRs;
d) Constitution of Coastal BMCs;
e) Trade of Coastal and marine biological resources.

Other recommendations:

- Preparation of coastal and Marine Peoples Biodiversity Registers in the coastal states/UTs can be encouraged
- Bio prospecting of coastal and marine resources can be encouraged and the Access and Benefit Mechanism can be facilitated in the coastal States/UTs.

II. Ending Illegal harmful fishing practices as well as over fishing

Point 9 - To reduce the overfishing, usage of a) Square mesh codends; b) Fish excluder cum shrimp sorting device; c) Turtle excluder device; d) Semi-pelagic trawler system is encouraged.

III. Inclusive Management and Use of Marine and coastal areas

Point 4 - Local level institution such as Biodiversity Management Committees (BMCs) constituted as per the Section 41 of the Biological Diversity Act, 2002 at the panchayat/block/district level also can be strengthened in the coastal States/UTs.

Point 9 - Involving BMCs in monitoring CRZ violations is not agreeable, BMCs are not empowered to monitor the violations as specified in the CRZ Notification, 2011. The role of and responsibilities of BMCs area) Preparation of PBRs; b) Conservation and sustainable utilization of biological resources; c) Eco-restoration of local biodiversity; d) Provide feedback to the SBBs and NBA on matters related to Intellectual Property Rights and Traditional Knowledge; e) Management of Biodiversity Heritage Sites.

Point 15 - In the Co-management practices, Local BMCs in the coastal States/UTs can be integrated and involved.