[1]MECOS-3 Final Recommendations

No	Theme	Recommendations
1.	**Fisheries and ecosystems sustainability**	
	1.1.	Promotion of exclusivity of small-scale fisheries in territorial waters and mother-ship and catcher vessels operations in the EEZ and beyond are needed.
	1.2.	Inclusive, rights based, participatory management systems with focus on education and awareness on sustainability issues, need to be promoted and facilitated.
	1.3.	Enhancing capacity building of fishers to handle tuna with adequate financial and technical support to empower them to compete in the global market, facilitating an efficient value chain.
	1.4.	Guidelines and best practices for the Small-Scale Fisheries (SSF) sector with emphasis on education and capacity building of small-scale fishers to enable organized market production and access to markets should be developed.
	1.5.	Develop business models, moving from volume to value, in respect of oceanic tunas and other resources through creation and facilitation of appropriate value chains.
	1.6.	Continued efforts and facilitation towards certification and eco-labelling of the fishery resources and fishery based products to promote sustainability.
	1.7.	Encourage studies on ageing of finfish and cephalopods based on hard-parts, to improve stock assessments.
2.	**Responsible aquaculture production systems**	
	2.1.	Ecosystem based aquaculture is essential for the formulation for the strategies and developing policies for sustainable aquaculture.
	2.2.	The policy guidelines on mariculture should be extended to other open waters bodies like estuaries, creeks, lagoons and lakes.
	2.3.	There should be improvements in existing aquaculture technology, including better management practices and better site selection, so that aquaculture remains within the carrying capacity of estuarine and coastal water bodies.
	2.4.	Novel aquaculture technologies such as Recirculating Aquaculture Systems (RAS) should be popularized and scientific research should be focused on development of aquaculture technologies to minimise ecological impacts.
	2.5.	Development of formulated feed for larval and juvenile phases of various farmed species need to be developed further and standardised.
	2.6.	Diversification of species under culture is necessary as the coastal aquaculture and mariculture is currently restricted to only limited number of species.
	2.7.	Integrated spatial planning approaches are necessary in developing aquaculture to resolve potential conflicts with other traditional activities such as fisheries or tourism.
	2.8.	The beneficial application of blockchain technology in seafood supply chain, particularly in improving traceability, need to be taken advantage of.
	2.9.	Microalgal concentrates such as from *Nannochloropsis*, as an alternate approach, need to be further developed, for use in fish seed production systems. Biofloc based nursery rearing systems need to be further promoted.
3	**Marine Biodiversity assessments and valuation**	
	3.1.	Research Institutes should conduct periodic studies on the effectiveness and deficiencies in the Wild Life (Protection) Act 1972 of India and suggest amendments and appropriate changes in the ETP species based on scientific evidence.

[1] *Recommendations were initially drafted by the Rapporteuring Committee (http://mbai.org.in/mecos3/MTIw/MjA=) chaired by Dr. R. Narayanakumar. Several participants send in their comments, these were incorporated and edited by Dr. M.R. Boopendranath, MBAI Executive Council member.*

	3.2.	National and regional Red List for marine taxa in India, which needs protection have to be developed and periodically updated, based on scientific evidence.
	3.3.	Community participation for monitoring and conservation of aquatic resources need to be encouraged.
	3.4.	Valuation of ecosystem goods and services in the marine and coastal areas, need to be conducted more extensively.
	3.5.	By-catch of ETP species in Indian marine fisheries has to be given deeper attention.
4	**Climate change and meeting SDG-14 goals**	
	4.1.	Promote restoration of Blue Carbon Habitats for improving mitigation opportunities, monitor health status of coastal waters and critical habitats, understand phase shift within vital ecosystems like coral reefs to develop urgent remedial measures to stall further deterioration.
	4.2.	Implement strict measures to control pollution and minimise introduction of plastics in aquatic habitats. . Studies on the occurrence of micro and nano-plastics in the aquatic environment and their bioaccumulation in organisms need to be strengthened.
	4.3.	Participatory approach involving all categories of stakeholders to move towards an inclusive, transparent and socially just approach in policy development and promote skilful management of trade-offs among different sectors of the Blue Economy.
	4.4.	Development of climate-smart marine fisheries: identifying vulnerabilities and resilience potential of different sectors and components (from fishery resources to stakeholders) and developing Climate Action Plans for protecting fisheries and aquaculture sectors through scientific interventions.
	4.5.	Develop and implement Marine Spatial Planning (MSP) schemes in order to bring together multiple users of the ocean – including energy, industry, government, conservation and recreation – to make informed and coordinated decisions to use marine resources optimally and sustainably.
	4.6.	Streamline research and policy interventions to conform developmental changes in the marine fisheries and aquaculture sector towards meeting United Nations Sustainable Development Goals for life below water (SDG-14).
	4.7.	There is need for improving carbon sequestration, and using bioremediation as potential means to improve environment and climate resilience.
	4.8.	Vulnerability assessment of coastal villages need to be periodically conducted and prospective resilient strategies for Indian marine fisheries sector to climate change need to be re-assessed.
5	**Marine biotechnology and bio-marine products**	
	5.1.	It is required to develop newer natural compounds from marine organisms and microorganisms as promising sources of bioactive compounds and as prospective nutraceuticals, cosmeceuticals, insecticide degrading, aquaculture-grade chemicals, and therapeutic agents.
	5.2.	In order to reduce the dependence of aquafeed industry on fish meal, the importance of non-conventional high-value protein and lipid sources, such as insect larvae as novel aquafeed ingredient need to be given attention.
	5.3.	There is need for basic research to understand the impact of ecosystem challenges to marine invertebrates and their immune system to have deeper insights on their long-term survival.
	5.4.	It is a shared responsibility among government agencies, local bodies, intergovernmental organizations, academic and R&D institutions, private industries, farmers and non-governmental organizations in tackling diseases in aquaculture.
	5.5.	Bioplastic producing bacteria from northeastern Arabian Sea need to be studied in greater detail, as they are potential substitutes of biological origin for the conventional petroleum plastics.
6	**Livelihood, economics and trade**	
	6.1.	Linkages between traditional knowledge of the fishers with the scientific knowledge are needed for bringing about better fisheries management measures.
	6.2.	Recognize and encourage location specific traditional community organizations in managing the marine fishery resources.

	6.3.	Enhance capacities of women fish workers for mainstreaming of gender into fisheries policy and legislation and also to emphasize the importance of fisherwomen in small-scale fisheries.
	6.4.	Carrying out periodic assessment of socio-economic status of marine fishers and document their constraints, occupational hazards in their livelihood options.
	6.5.	Popularization of coastal mariculture technologies among fishers by providing adequate financial and technical support to improve the adoption rate of these technologies.
	6.6.	Formulating guidelines for increasing the involvement and participation of small-scale fishers in fisheries management and marine biodiversity conservation programmes.
	6.7.	Economic empowerment of fisherwomen Self Help Groups through entrepreneurship capacity building (ECB) on identified business enterprises.
	6.8.	Developing a state of art Fish Market Price Information System to facilitate efficient fish trade in the country benefitting both the producer and consumer.
7.	**Green harvest and post-harvest technologies**	
	7.1.	Develop and facilitate adoption of low impact fuel efficient harvest and novel post-harvest technologies and take initiatives to phase out practices with relatively high carbon and ecological footprints.
	7.2.	Adopt area-based best management practices for trawl fishing to minimise its negative impacts on fisheries environments and fish stocks.
	7.3.	There is need to develop a satellite based remote sensing system that can be used as a tool to combat illegal fishing.
	7.4.	It is necessary to streamline on-board fish handling and processing techniques to ensure higher quality fish for consumers.