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Indian Ocean Blue Economy Summit
 6 May 2021 (8:30 a.m. – 12:30 p.m. UTC, online)

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 15 June 2021
 English only

Webinar on Blue Economy in the Indian Ocean region towards United Nations Decade of Ocean Science for Sustainability (2021-2030)

Oceans play a very significant role and that has a direct bearing on the human life with wide socio-economic implications. Due to increased anthropogenic activities and effect of climate change, there are many inherent challenges and issues being faced today such as marine pollution, global warming, ocean acidification, overfishing etc. that is leading to rapid decline in the health of oceans and its ecosystems. Keeping this in view, the UN Decade of Ocean Science for Sustainability (2021-2030) recognizes the importance of sustainable development in order to improve the overall ocean health and also create awareness for the sustainable development of oceans, seas, and the coast. Therefore, it is very important to address a deeper understanding of oceanic processes and solution based approach that can result in generating deeper knowledge. The thematic areas that has direct societal implications are clean oceans, identifying the source of pollution and its removal; ocean resilience mapping marine ecosystems and its protection; prediction based studies for current and futuristic scenarios; ocean hazards and warning systems for emergency preparedness, and sustainable oceans ensuring adequate food supply.

Keeping this in view, the ‘Indian Ocean Blue Economy Summit’ – a live webinar on Blue Economy in the Indian Ocean region towards United Nations Decade of Ocean Science for Sustainability (2021 2030) was held on May 6, 2021 (Thursday) from 08:30 AM – 12:30 PM UTC (02:00 – 06:00 PM IST). This event was jointly organized by the IOC Regional Committee for the Central Indian Ocean (IOCINDIO), IEEE Oceanic Engineering Society, Marine Technology Society (MTS), Ocean Society of India (OSI), Kuwait Institute for Scientific Research (KISR), Kuwait, Ministry of foreign Affairs, Bangladesh, South Asia Cooperative Environment Programme (SACEP), Department of Oceanography, University of Chittagong, Bangladesh, Indian Institute of Technology, Madras, India, Basrah Marine Science Centre, Iraq, Iranian National Institute for Oceanography and Atmospheric Science, Iran,



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Ministry of Municipality and Environment, State of Qatar, National Institute of Oceanography, Pakistan, University of Portsmouth, UK and King Abdullah University of Science and Technology, Saudi Arabia.

This important event was chaired by Mr. Rear Admiral (Retd.) Khurshid Alam, Bangladesh and co-chaired by Dr. M. A. Atmanand, Chair IOCINDIO, India. The other distinguished members in the Organizing Committee were: Dr. Kawser Ahmed, Bangladesh; Dr. Md. Salimullah, Bangladesh; Dr. Marie-Alexandrine Sicre, France; Dr. M. Ravichandran, India; Dr. Srinivas Kumar, India; Dr. Prashant Srivastava, India; Dr. Saja Fakherldine, Kuwait; Dr. Abtahi, Iran; Dr. Ali Bassal Mahmood, Iraq; Dr. Gilbert Siko, South Africa; Dr. Arurananthan, Sri Lanka; Dr. Alan Evans, U.K; Dr. Juma Al-Muskati, Oman; Dr. Samina Kidwai, Pakistan; Dr. Wong, Qatar; Dr. Margareth S. Kyewalyanga, Tanzania; Dr. M.Ashraf Haidari, South Asia Cooperative Environment Programme (SACEP), Srilanka; and Dr. Yasser Abualnaja, KAUST, Saudi Arabia.

The Opening Session started from 8:30 AM – 9:15 AM UTC (02:00 PM – 02:45 PM IST) and Dr. M. A. Atmanand, Chair, IOCINDIO IOC, UNESCO & Senior Member, IEEE delivered the welcome address to all participants. He mentioned that the Indian Ocean region, owing to its complexity and amazing diversity with complementary strengths, is the place where regional and international cooperation is more needed to demonstrate the added value of the IOC of UNESCO. He said that the areas to be concentrated are on capacity building, shore line management, marine spatial planning, coastal vulnerability assessments etc. Blue economy in the region, especially with respect to fishing, ports, renewable energy, all need support and mutual cooperation. He indicated that the IOCINDIO, the regional body of IOC is precisely attempting to bring all the Indian Ocean rim States together so that the gap areas could be filled up effectively and all the countries in the region reap the benefits of Blue economy. He mentioned about the IEEE/MTS Oceans 2022 International conference which will be held at Chennai, India in February 2022 and invited all to actively participate in the conference.

This was followed by Mr. Rear Admiral (Retd.) Khurshid Alam, Chairman, Organizing Committee. He briefed on the ambitious plan of Bangladesh in the area of Blue Economy like fishing, port, marine aquaculture, ship building, hydrocarbons, bio



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technology etc. He highlighted the need for integrated response for the challenges like climate change, marine pollution, natural hazards etc. He emphasized the need for cooperation in the area of fishing, shipping, renewable energy towards achieving sustainable blue economy. He reiterated the importance of IOCINDIO and the need to revitalize it into a sub commission. He briefed about the various IORA and other meetings hosted by Bangladesh in the area of Blue Economy.

Thereafter, the opening address for this event was addressed by Dr. Ariel Troisi, Chair, IOC, UNESCO. He explained about the multiple stressors for the ocean and the need to bring in multiple stake holders like political leaders, policy makers, private sector, financial institutions, academia, researchers and local community. The region is important for shipping, bio diversity etc. but at the same time subject to hazards, which require sustained observations. He gave the importance of the Indian Ocean region and the commencement of the UN Decade of Ocean Science for Sustainable development, from 1st January this year, indicating that science included all areas like natural sciences, human sciences etc. It is time to take action in global, regional and local scales to achieve the goals of 2030 agenda, he said.

Dr. Vladimir Ryabinin, Secretary, IOC, UNESCO said that oceans are the 7th economy of the world with output of 1.5 trillion dollars. Developing countries have high percentage of Ocean economy of their GDP. Also, ocean economy in developing countries is moving in a riskier direction due to stronger environmental degradation. Thus, developing countries need more science to have a sustainable ocean economy. Hence the UN Decade is necessary for all in the region. It is important to cross recognize the various UN conventions which deal with specific aspects like bio diversity, climate change etc. as solutions lie elsewhere. The solution is to main stream climate dimension, bio diversity dimension, ocean health dimension in modern means of managing the ocean, so that all the conventions will be helped. The high-level panel decided themselves to commit all EEZ to be sustainable by 2025 and request others to do it by 2030. This requires lot of new science to manage the oceans using existing technology. A decade program can be proposed to manage the oceans and can be taken as a new task for IOCINDIO, which will unite all and move forward.



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Mr. Justin Ahanhanzo, Programme Officer, IOC, UNESCO mentioned that study of the Indian Ocean was one of the ambitions of IOC during its formation in the 1960s. It was necessary to know scientifically the ocean which was least known at that time. He mentioned that there is true representation from the Indian Ocean rim countries including African States. It shows the commitment of the region and beyond to work together to achieve the IOC global programs. He expressed his happiness the presence of many organization with which IOCINDIO has not worked with earlier, like IORA, ROPME etc. Blue economy is as old as settlements in the coast even though it may appear as a new concept. As an outcome of this Summit, concrete bankable proposals could be submitted to funding partners worldwide.

The inaugural talk was delivered by Prof. Peter Haugen, Former Chair, IOC, Programme Director at Institute of Marine Research, Norway and Professor at University of Bergen, Norway. The title of talk was ‘Towards sustainable ocean economy and ecosystem based ocean management in Norway’. This talk covered the vision for clean and rich oceans and coastal regions. Three oceanic areas viz; the North Sea, the Norwegian Sea, and the Barents Sea off Lofoten were chosen for integrated ocean management and marine spatial planning in Norway that involves countries and municipalities. Interesting examples on Salmon farming highlighting on the crucial role of environmental regulation and management were discussed. Further, Salmon lice monitoring using traps/gill nets, sentinel cages, trawling, and modeling aspects in the wild since 2010 were highlighted. Importance of traffic light system in regulating the level of salmon lice induced mortality on wild salmonids at production areas with risk levels of mortality was demonstrated. The talk also highlighted on the role of ocean panel in climate based solutions, along with ocean based climate mitigation measures prone to have more benefits than trade-offs. The importance of sustainable planning along with the commitment of ocean panel providing effective protection, sustainable production, and equitable prosperity have been highlighted in the talk.

There were two sessions organized between 9:15 AM – 10:30 AM UTC (02:45 PM – 04:00 PM IST). The Session-1 was chaired by Dr. Venugopalan, Senior Member, IEEE, National University of Singapore and Session-2 was chaired by Dr. M. Ravichandran, President Ocean Society of India and Director, National Centre for



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Polar and Ocean Research (NCPOR), India. A total of 11 talks from distinguished scientists from different countries were scheduled in this session (five talks in Session-1 and five talks in Session-2).

The first talk under Session-1 was delivered by Martine Hippolyte (COI, Mauritius) and Dr. Marie-Alexandrine Sicre, Sorbonne Université, France. The topic was on ‘Multifaceted blue economy actions in the Indian Ocean’.

The talk covered aspects on two category of projects under the upcoming presidency of France of the Commission de l'Océan Indien (May 2021-April 2022) that had two components. The first component involved engagement with civil society and local communities having total of 22 projects, and the second category has 11 projects based on research and innovation from various research institutions. Three themes were discussed covering aspects on protection of biodiversity and ecosystems, waste recycling and water treatment, and coastal resilience and risk prevention. It was also mentioned that a book will be published that summarizes on the lessons learned and skills achieved on Blue Economy strategy at regional level. Different countries involved for this study are Comoros, Madagascar, Mauritius, Seychelles, Kenya, Tanzania, Mozambique, and South Africa. Martine Hippolyte (COI, Mauritius) highlighted on the Indian Ocean Plastic Expedition with a mission to increase the living standard of human population emphasizing on the value of marine and coastal resources, promotion of socio-economic development conserving the environment. Primarily, the study focused on the problems with plastic pollution supporting behavioral development and commitment of stakeholders, in particular the companies involved. The objectives were to create conducive environment to change behavior and practices in the usage of plastics and to support the emergence of circular economy dynamics by encouraging the economic indicators. The ongoing project is of 5 years (2021-2026) having four different components. Under component 1 the various activities include: oceanographic campaigns, plastic waste observatory and study on its biodegradability in marine environment, ecosystem health impact assessment and its impact on coastal aquaculture practices. Component 2 deals with developing technical and economic knowledge on plastics around island along with online training modules for regional needs and dissemination of good practice manuals



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for control and treatment of plastic wastes. Under component 3, the study on marine plastics and risk among coastal populations were highlighted. Further, awareness programme through media and training were also discussed. Lastly, in component 4 the competitiveness cluster on circular economy with incubation of pilot projects were discussed.

Dr. Ali Bassal Mahmood, Iraq presented the activities related to Blue Economy being pursued by Iraq in the Arabian Gulf – Indian Ocean region. This talk highlighted on the activities related to blue economy, sustaining marine resources, and managing the blue economy file. Importance of marine and river fishing and associated food processing industries involved in this activity have been discussed. Manufacturing aspects of floating iron cages along the sides of rivers and Gulf, manufacture of fishing nets and refrigerators for freezing, and packaging techniques were highlighted. Further, the export of oil and gas, associated establishment of oil and gas derivatives, having implications on financial resources factories were discussed. The establishment and role of Al Faw port that is in progress facilitating loading/unloading operations of exported goods and its transport mechanism were highlighted. The importance in sustaining marine resources such as preserving the safety of environment and ocean health of waters in the Gulf, rivers and marshes were also discussed. Water pollution aspects by the installation of sewage networks and waste from factories were highlighted. Also, the international agreements between the upstream and downstream countries to ensure permanent flow and optimum water utilization were also covered in this talk. Finally, the talk also highlighted the potential to create enormous job opportunities and continuous food security aspects.

Dr. Arulanathan, Sri Lanka delivered the talk on ‘Potential contribution of the blue economy to Sri Lanka’s growth’ covering different aspects on the opportunities, challenges, initiatives, and the way forward. In terms of opportunities, the talk covered the role of small island developing state to large ocean state highlighting on the expansion of outer limit of the exclusive economic zone. The expected expansion of the territorial seas after delimitation is approximately about 75,000 sq. km. Role of estuaries and lagoons in the coastal water bodies highlighting on the variety of socio-ecological systems and ecosystem services were highlighted in



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this talk. Factors that contribute to economic activities such as marine fisheries, aquaculture, extraction of minerals, oil & natural gas, desalination, renewable energy, eco-tourism, and shipping aspects were also discussed. Challenges such as the impact of climate change and its effects on habitat and livelihood aspects were elaborated. Also, the unsustainable extraction of marine resources such as overfishing, illegal fishing, habitat degradation, and ineffective policy and governance were covered in this talk. Anthropogenic activities such as coastal development, degradation of critical habitats, mining, coastal erosion, and shipping are some of the major challenges. Also, the major challenges involved with environmental drivers such as acidification, rising sea water temperature, circulation patterns, extreme weather events, sea level rise, coastal stability, and mixing were discussed. Finally, the talk also highlighted on some of the recent initiatives such as: ocean observation network, fisheries policy, artificial reefs, ban on bottom trawling, marine protected areas, oil spill contingency plans, offshore sand mining regulations, commitment to adhere to regional/global conventions and agreements. Importance of technical, institutional, technological, and financial capacity building for innovative use of ocean resources for economic development and good governance of ocean health management were highlighted in this talk.

Dr. Yasser Abualnaja, KAUST, Kingdom of Saudi Arabia delivered a talk on ‘The Blue Economy: An Essential Pillar for Building a Development Model for the Kingdom of Saudi Arabia’. The role of Red Sea and Arabian Gulf in contributing to strategic, economic and social values to the Kingdom of Saudi Arabia and surrounding nations were covered in detail. Under Vision 2030, the Kingdom of Saudi Arabia has placed different plans to enhance the non-oil revenues by diversifying the economy. The Red Sea and Arabian Gulf resources can provide huge opportunities for increasing Saudi economic growth – especially the tourism and aquaculture sectors, and tackle unemployment rates, poverty and food security. Blue economy approach in Saudi Arabia is aimed to improve the overall human wellbeing, as well significantly reduce environmental and ecological degradation. The talk covered a detailed elaboration and importance of six sectorial areas such as: Fisheries, Maritime transport, Climate Change, Marine tourism, Renewable energy, and Waste management. Challenges in climate change such as dust storms in Saudi Arabia has



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been discussed. Two important initiatives “The Saudi Green Initiative” and “The Middle East Green Initiative” that were announced will be launched soon. Also, the achievement made by KAUST in launching Circular Carbon Economy (CCE) during December 2020 that focused on increasing energy efficiency, capturing and storing carbon, transforming carbon into useful product and integrating renewable resources were highlighted in the talk.

Dr. Saja Fakhraldeen, KISR, Kuwait presented a talk on ‘Research Activities Related to the Blue Economy in Kuwait’. The talk highlighted on the measures required to mainstream Blue economy into future sustainable development goals. It includes various aspects such as: Development of access and benefit sharing rules for marine bio-prospecting, Investment in R&D, infrastructure, capacity, and use of marine and other renewable energy sources, investment in sustainable coastal and maritime tourism and infrastructure, reducing marine pollution from land-based sources, sustainable management and protection of marine and coastal ecosystems, mitigation efforts for ocean acidification, regulating fish harvesting, and restoration of fish stocks to safe levels. Different research activities carried at KISR, Kuwait were highlighted. In context to oceanographic and fisheries management sector, the research activities at Kuwait and the dedicated research program Ecosystem based management of marine resources were highlighted in the talk. Some of the environmental challenges on desalination technologies keeping in view increased salinity in waters off Kuwait attributed due to damming of upstream rivers and reduction in flow were highlighted in this talk.

Dr. Samina Kidwai, National Institute of Oceanography, Government of Pakistan made a presentation on the topic ‘A step forward for Pakistan - Advancing Blue Growth through Cooperation and Innovation’. This talk highlighted on the Pakistan perspective of blue growth, and national focus on preparedness and international cooperation. The importance of blue economy, its multi-sectoral and long-term benefits have been discussed. Important areas and sectors that have high potential for sustainable jobs and growth such as trade through seas, aquaculture and fisheries, ocean energy and seabed mining, coastal tourism, marine biodiversity and biotechnology were highlighted in this talk. Further the important components that contribute to achieve the goals of blue economy such as knowledge, legal certainty, and security aspects were discussed. Importance of aquaculture and



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fisheries sector and its growth potential was discussed. The ocean energy and seabed mining sector and joint cruises in collaboration with the Geological Survey of China for gas hydrates in the Makran coast along with natural hazard studies were highlighted. Blue partnership by opening CPEC regional office for environmental protection have been discussed. Over the next five years, the areas of collaboration between SIO (SoA) and NIO in capacity building such as training, joint research, researcher exchange programs, and agreement with National Centre of Ocean Standards and Metrology (NCOSM), SOA was discussed.

There were five talks delivered in Session-2 chaired by Dr. M. Ravichandran, President Ocean Society of India and Director, National Centre for Polar and Ocean Research (NCPOR), India. The first talk in this session was delivered by Dr. G. A. Ramadass, NIOT, India on the topic 'Blue economy - Indian way'. The talk started with an introduction and Ocean policy for Blue Economy in India. The role of different working groups under the Indian Government has been discussed. Different components of Blue Economy such as extraction of non-living resources, harvesting of living resources, and ocean commerce and estimated blue resource potential in India were highlighted. The importance of maritime transport in India and its contribution to Indian economy were detailed. The role of different organizations under the Ministry of Earth Sciences were highlighted. Further, the talk also highlighted on different energy sources from the ocean such as waves, ocean currents, thermal gradient, and offshore wind as well as concentrated research efforts on wave devices and hydro-kinetic approaches for extraction of tidal energy. Efforts made on desalination from oceans and its implementation in Lakshadweep Island were highlighted in the talk. Involvement of India in exploration and technology development for harvesting deep ocean minerals such as polymetallic nodules were also covered in the presentation. In addition, the different technology available for mapping ocean resources were also discussed. Research activities on coastal areas such as the shoreline protection and management, marine and coastal pollution, and coastal vulnerability, coastal monitoring and protection measures were highlighted. The importance of ocean advisory and information services such as potential fishing zones, ocean state forecast, early warnings for high wave alerts, storm surge, tsunami etc., and special services for Indian Navy and Coast Guard were also presented. The flagship



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programme 'Sagar Mala' initiated by the Ministry of Shipping and its beneficial value were also highlighted in this talk.

Dr. Pierre Failler, University of Portsmouth, U.K. made a presentation on the topic 'Blue Economy Strategies: African perspectives'. The presentation covered aspects on Blue Economy and key principles for development covering strategies for Africa and Intergovernmental Authority on Development (IGAD). Value added in Blue Economy sectors and the value of Blue Economy components covering aspects such as ecosystem services, education, research, etc. from 2018 to 2063 were discussed. In addition, the potential for employment generation during this period were also presented. Study signifies that Blue Economy sectors and components for Africa generate today 49 million jobs. It is projected that by 2030, the figures rise to 57 million, while in 2063 the estimates would be 78 million. Various coastal marine ecosystem services in Africa were highlighted in the talk. Importance of Circular Economy, Good Governance, Environmental and social sustainability, Empowerment and inclusive decision-making were presented. Opportunities on a short- and long-term implementation for various sectors were highlighted. Finally, the challenges such as insufficient structuring of the implementation of Blue Economy, lack of knowledge of blue potential, nutritional deficit, absence of accounting for Blue Economy activities and components, and the absence of an integrated and prospective approach to marine ecosystems and spatio-temporal management tools and strategic axes of intervention were discussed in the talk.

Dr Hussain Almuscati, Oman presented on the topic 'Fisheries sector in the Sultanate of Oman Blue Economy Review'. The presentation covered aspects on: Overview of the Fisheries sector in Oman, Fleet Structure 2020, Evolution of Fisheries Landings, Long Term Strategy 2020, objective of the 2040 Oman vision, Objectives and Policies of the Eighth Five-Year Plan, Fisheries Sector Actions to meet Blue Growth Objectives, and Investment opportunities. Long term strategies 2020 covered a detailed discussion on Sustainability of fisheries resources/environment, competitiveness of national fisheries industries, promotion of human wellbeing, and better adaptation to climate change. The goals for 2040 Oman vision such as improving the economic added value of sector based on effective management and environmental sustainability, providing new investment opportunities for private sector, promoting innovation, improvement



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in production chain efficiency, and developing value added fishery products were discussed. Also the ongoing projects such as small & large pelagic resources, modernizing fishing fleet aquaculture development, artificial reef farms, and promotion of coastal women were discussed. More details pertaining to rehabilitation of the current fishermen’s village, creation of two villages at Sarab and Heitam, providing adequate housing and other services for welfare of fishermen, encouraging Omani fishermen from neighboring areas to engage in fishing activities, improving the quality of landed fish, improving data collection processes related to species and quantity of landing, laws and regulations related to fisheries were discussed.

The topic on ‘Marine aquaculture in Iran’ was presented by Dr. Abtahi, INIOAS, Iran. He stressed on the importance in reducing the pressure from fishing on living resources of the sea, and in turn reducing the impact of fish farming on limited freshwater resources in water-stressed countries like Iran. The presentation covered major cage culture producing countries and cage aquaculture production based on fish family around the world. Production capacity of fish farming in cages for Iran in the waters off Caspian Sea is stated as 8,000 tons, and in coastal waters off Persian Gulf and Sea of Oman the estimate vary from 25,000 to 400,000 tons. Further, the total capture and aquaculture production and aquaculture production by culture environment for Iran based on FAO estimates were presented. Dr. Abtahi also discussed on the various possibilities and advantages such as native species cultivated in all coastal waters for the southern and northern portions of Iran, environmental conditions and suitable ecological facilities available in the territorial waters, possibility of modern marine fish breeding system in cages, suitable sheltered areas in Persian Gulf for setting up marine fish farms in cages, increased production of marine farmed fishes to reduce the fishing pressure, and investment opportunities for the private sector.

The last presentation in Session-2 was by Dr. P. Vethamony, UNESCO Chair, Qatar. The topic was on ‘Management and protection of marine resources within the EEZ of Qatar’. A brief overview on the Arabian Gulf and Qatar EEZ was discussed highlighting on the Blue Economy resources in the EEZ of Qatar. It involves sectors such as Oil and gas, seafood products, desalinated water, mangrove forests, intertidal mudflats, seagrass meadows, coral reefs, aquaculture, sea turtles,



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dugongs, and eco-tourism. More details were presented on the fisheries and aquaculture market growth in Qatar including their trends and forecast. The status of desalination, mangrove swamps within the EEZ, seagrass beds, distribution of coral reefs and associated ecosystems in Qatar was presented. Further, the causes and consequences of coral bleaching event during 2017 in the Arabian Gulf region was highlighted. Interesting points were made on the mushroom forest artificial reef, a new patented design made at ESC, Qatar University. The technology biomimics natural aspects like habitat heterogeneity, hydrodynamics, material and general shape supporting the idea of Blue Economy in Qatar enhancing marine ecological growth, productivity and restoration of damaged ecosystems. Discussions were made on the impact of fisheries when sea turtles disappear. The importance of dugongs (sea cows), eco-tourism, land reclamation for Pearl, Airport and Seaport in Qatar waters were highlighted. Further, the physical oceanographic conditions and regions of upwelling and well mixed zones attributed from Shamal and Nashi wind systems were discussed. The role of circulation and eddies on seasonal variations in the Arabian Gulf circulation and its implication on turtle hatchlings, dispersion of brine from desalination plants, sustenance of sea grass were discussed in detail. Aspects on seasonal hypoxia events and marine debris and associated biota, microplastics and tarmat distribution for Qatar waters were covered in the presentation.

Qatar government Ministry of Municipality Environment (MME) has completed an integrated coastal zoning management plan, according to Prof. John Wong. MME cooperate with Qatar University has commissioned and completed a coastal ecological baseline study. MME are in the process of preparing a National Action Plan for Conservation and Management of marine resources. With the establishment of a multidisciplinary scientific advisory committee. It is expected to set up MPAs covering 30 % of Qatari waters as support to UN OCEAN Decade. Dugong and Whale shark are used as flagship species to promote Marine conservation and blue Ocean Economy in Qatar and the region.

The concluding session of this event was from 11:45 AM – 12:30 PM UTC (05:15 PM – 06:00 PM). It covered discussion on the outcomes of the webinar and future activities moderated by Dr. M. A. Atmanand, Chair, IOCINDIO. The panel-list participants were Mr. Rear Admiral (retd.) Khurshid Alam, Bangladesh, Chairman, Organising Committee, Dr. SSC Shenoi, Vice Chair, IOC, Mr. Christopher Whitt,



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President, IEEE Oceanic Engineering Society, and Dr. Pierre Failler, University of Portsmouth, U.K. The Question that was asked to the panel-list participants was the following: **‘Indian Ocean is least studied and its coasts are prone to many natural hazards. The Indian Ocean rim countries have lot of untapped resources as far as Blue economy is concerned. Where do you see the Indian Ocean region after the conclusion of the UN decade of Ocean science for sustainability taken up by IOC in 2030?’**

The panelists from varied backgrounds gave their inputs.

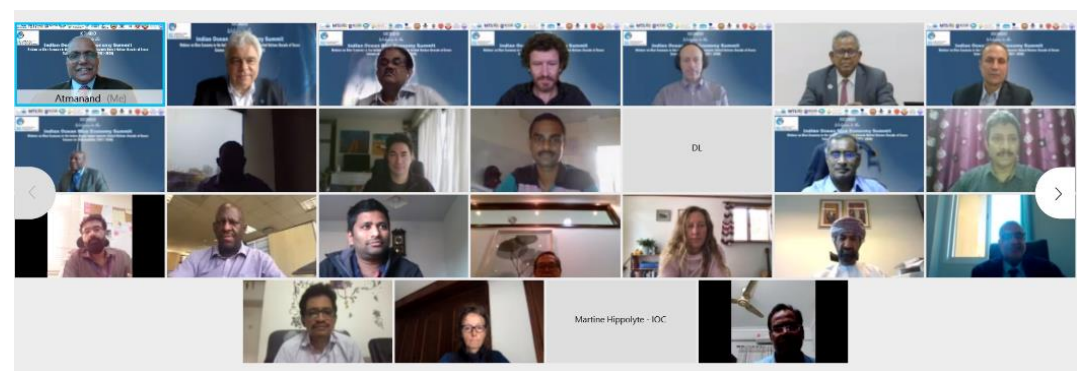
The final outcome and recommendations from this webinar based on discussions are: (i) cooperation and collaboration is the key to success, (ii) mariculture is the best option to meet fisheries demand, (iii) special focus is required on natural hazards in the Indian Ocean region, (iv) studies on pollution, micro-pollution, ship related pollution needs to be emphasized by researchers from IOC, (v) it is envisaged that the next generation should see more productive ocean health. It is also recommended to tap Blue Economy keeping in view to increase the economy of people. More attention is required on climate change aspects. Also, the Indian Ocean is warming at a higher rate. Its relation to natural hazards like tropical cyclones, frequency, and duration etc. needs a thorough understanding in relation to ocean warming. Another aspect, is sea level rise implications on climate change. Impacts on fisheries sector for sustainable developed needs to be focused. In lines with the International Indian Ocean Expedition (IIOE-2) aspects of climate change affecting Indian Ocean region is required with collaborative efforts of IOC, SCOR, IOGOOS. It is important to transfer research to applications for sustainable development and governance for societal benefit.

Overall the Blue Economy Summit was a successful event. The contents of lecture from distinguished experts was quite intense and provided valuable insight on various activities in the Indian Ocean rim countries. There was an overwhelming response from large number of participants with about 125 participants in WebEx and more than 368 views in the YouTube as of now. You tube link is available for viewing : <https://www.youtube.com/watch?v=gzEARMitNzk>.

The detailed list of participants is enclosed in Annexure.

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Photo of a section of participants





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Annexure

List of participants

1	NCPOR Goa (V S Samy)
2	M Ravichandra
3	Raja Acharya
4	Dimitri D
5	DL
6	karim HILMI
7	Zammath
8	Prasun Goswami
9	Prince Prakash Jeba Kumar. J
10	Sidney Thurston
11	Manal Al-Kandari
12	Dr. Rakhesh Madhusoodhanan
13	Pierre Failler
14	Dr Ibrahim Al Maslamani
15	Arul-Sri Lanka
16	Uma Harish
17	Madusmita Dash
18	Damith Perera
19	ishani
20	Dr. ALI BASSAL MAHMOOD
21	Joseph Naughton
22	s ramesh
23	RABARY_Madagascar
24	Dr Fahmida Khanom
25	Pascaline Alexandre
26	Mika Odido, UNESCO/IOC
27	Heba Mohamed Ezz El-Din
28	M V RAMANA Murthy, MoES-NCCR
29	ILO Mauritius
30	Kirti Swain
31	Muditha Katuwawala
32	Dr. Ebrahim Al-Ansari
33	Dinesh Babu Sutti Omnath
34	Hussain Al Muscati
35	Juma
36	Vositha
37	Karim



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38	Jagadish Vallarampara
39	Dr Ashley Naidoo
40	Dr. Gopikrishna Mantha
41	Vaisakh G
42	Suzan Kholeif
43	Rifa Wadood, Sri Lanka
44	Christopher Whitt
45	Suseentharan V
46	Dr.Mohamed Aly-Eldeen
47	Tarique Faiyaz
48	Dr Suresh M
49	Mohamed Ibrahim
50	Harrison Onganda (KMFRI)
51	Margareth S. Kyewlyanga
52	Nick (Guest)
53	Janaranjana Ekanayaka
54	Gamini wijesinghe
55	Dr R Venkatesan
56	Dr G A Ramadass
57	Dennis Mombauer
58	Harumi Sugimatsu
59	P. Vethamony
60	prashant kumar srivastava
61	Gopikrishna Mantha
62	Keerthivasan
63	Subramaniam Neelamani
64	suresh
65	Peter M Haugan
66	Greg Cowie
67	Abtahi B.
68	Gilbert Siko
69	Juliet Hermes
70	palaniappan
71	Satheesh shenoi
72	Yasser Abualnaja
73	Saja Fakhraldeen
74	Divu D
75	Dr Tata Sudhakar
76	Venugopalan Pallayil
77	MD Lutfor Rahman



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78	Rajapan Dhilsha
79	Dr Dilip kumar Jha
80	RABARY Andriantsilavo J.M
81	Denis Chang Seng
82	Joshua Baghdady
83	Dr Rezah Badal - CSMZAE, PMO
84	R Jeyabaskaran
85	Dean Fisheries
86	Ken Findlay - Cape Peninsula University of Technology
87	Shimaa Hosny
88	Dr. Mohan Kumar DAS
89	Amrita Saha
90	S. Ramesh
91	Outam Kumar Guiness (RCOC)
92	suthep jualaong
93	Jassem Al-Thani
94	Dr. Senthil Vel
95	Samithamby Santhirakumar
96	Martine Hippolyte - IOC
97	Vladimir Ryabinin, IOC
98	REKHA J NAIR
99	Marie-Alexandrine Sicre EC-France
100	Dr. A Senthil Vel
101	Abtahi B. INIOAS, IR. Iran
102	Suthida Kan-atireklap
103	KHALFAN MOHAMED ALRASHDI
104	Prasad K Bhaskaran
105	Samina Kidwai, DG, NIO Pakistan
106	Hassani Ahamada Soilihi
107	South Africa_ Ms Nicole du Plessis
108	Atmanand
109	Atmanand Kissoondoyal
110	Ahanhanzo
111	Fahad Al Senafi
112	Zammath Khaleel
113	Faiza-Kuwait
114	saif alghais
115	JohnmkWong
116	Dr Rezah Badal - Prime Minister's Office (CSMZAE)
117	Rear Admiral Md. Khurshed Alam, Bangladesh



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118	K.B.S.S.J. Ekanayaka
119	Nadee Nanayakkara
120	Eranga Niroshan Dayarathna
121	B K Jena
122	Mthuthuzeli Gulekana
123	Ashoke Weerakoon
124	Mullai Vendhan
125	RANJASON