

# 2020

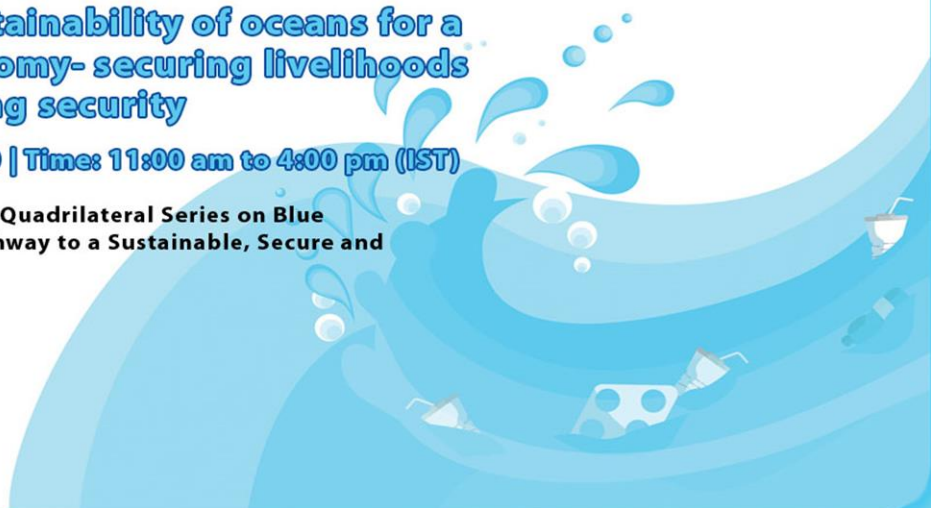
## KAS-TERI-NMF-FICCI Quad Series



**Ensuring sustainability of oceans for a healthy economy- securing livelihoods and enhancing security**

**28<sup>th</sup> October 2020 | Time: 11:00 am to 4:00 pm (IST)**

**KAS-TERI- NMF-FICCI Quadrilateral Series on Blue Economy-India's' Pathway to a Sustainable, Secure and Resilient Economy**



The Energy and Resources Institute

10/28/2020

## Ensuring sustainability of oceans for a healthy economy-securing livelihoods and enhancing security

---

**28th October, 2020 | 11:00 to 16:00**

The Dignar began with an opening session welcoming all partners, distinguished speakers and participant. A brief overview of the quadrilateral dialogues series was given by Swati Ganeshan from TERI. The quadrilateral dialogues series has been a joint effort of TERI-KAS-NMF-FICCI on Blue economy (BE) for India and the role of three pillars- economy, security and sustainable development in its framework.

### Opening Session:



**Mr. Peter Rimmele** - Resident Representative, Konrad Adenauer Stiftung India office

Sustainability is a term that covers the broadest of possible issues including development, environment, resource management, diplomacy, the possibilities are limitless and each and every one of them constitute a valid societal challenges we need to face. So ensuring the sustainability of oceans touches on quite a few rather diverse topics and that is why we have diversity of partners covering different aspects of the blue economy framework. He highlighted that everything is connected, the ecological wellbeing of a maritime spaces directly effects the economical prospect of it sea fare relations which in turn has repercussions for their prosperity and political stability. If you look into details of what our sea fare relations are of Europe, you would be surprised that even Switzerland has a high sea fleet but you don't know of Switzerland being connected to the ocean. It's a land lock country but it has a running high sea fleet like Austria. So ocean has connectivity to everyone even if one doesn't think of them in the first moment.

Even European are far removed from the Indo-pacific spatially we feel the ripples or rather shock waves that will indirectly occurs when the scale are tipped one day or other in the indo-pacific and this is why the German government has formulated recently its new indo-pacific guidelines highlighting the importance of the region for our country and for Europe as a whole. Let me look a little bit at the sustainable economy and security part. So ninety percent (90%) roughly of global trade is transported via sea. 35% of that passes through the strait of Malacca alone. The wealth that is generated in and along the Indian and Pacific Oceans ensure that the eyes of both the trading nations are firmly set on the indo-pacific. The political and economic significance of these vast space cannot be underestimated or even under stated and as we all know wealth invites conflict and destruction such as piracy off the Somalian Coast. Fighting this with blunt force has hardly been proved to be a sustainable solution. There are systemic reasons below the surface that need to be addressed and they have lot to do with

unsustainable arrangements in the Indo-pacific but elsewhere in the world too. Free and fair access of and for all must be guaranteed in multilateral and open framework where each voice is heard and each nation has a chance of attaining prosperity and success. If the spoils of the sea are being denied to indo-pacific rim we practically invite criminal behavior and if we turn away for a moment from the trade that passes through the Indo-pacific to the wealth that is contained within we see a similar pattern. The Natural maritime resource of the indo-pacific are being depleted at an alarming speed and pace. Here too we need to just not only fight the symptoms but look at the underline reasons. The region is in focus and the quest for control over it is bound to happen and indeed with China growing influence and its increasing movement in the region is a major concern. This cannot be allowed to happen. Not just because we as Europeans and as India might not agree with some of the geostrategic aims and ideas brought forward by Beijing but rather because of notion of any unilateral power in control of Indo-pacific is a recipe for multidimensional global catastrophe which needs to be avoided.

We are aware that the world is trying to influence China and China tries to change the world. But we should work together in a multipolar world and with not one side strongly influenced. The new guideline by federal government of Germany concludes that maintaining peace and security is the main aim for which nations staking claims in the Indo-pacific must adhere to. This goal cannot be attained by unilateral control, leaving the safety and security policy to one or two super powers is a thing of past. We cannot trust that decisions on Indo-pacific which have such wide range of repercussions for all countries should be made unilaterally but made collectively by all nations in the field of sustainability in all its variations. In conclusion, India, Germany, Europe and Quad countries are all subscribed to the notions of multilateralism in the end it boils down to this- we cannot pass the buck as they say. Responsibility for sustainable economy, a sustainable security framework and above all sustainable resource management in the Indo-pacific rest with all of us and may be that is the fundamental aspect from where the dynamics of sustainability should emanate from.



**Mr. Souvik Bhattacharjya** - Associate Director, Centre for Resource Efficiency and Governance, The Energy and Resources Institute (TERI)

The topic of today's diginar "Ensuring sustainability of oceans for a healthy economy-securing livelihoods and enhancing security" extremely well-timed as economists plan for recoveries in a post Covid world and India is no different. The significance of Oceans for the global economy is immense and the progress of blue economy (BE) will depend on the achievement of sustainable development. Most of us know that ocean harbors fragile ecosystems and is one of the most significant carbon sinks for the world and hence ensuring its health is essential for economic success. Adoption of sustainable methods can provide long term economic benefits and provide access to new opportunities hence examining India's SDG progress in the context to Ocean and its allied sectors would be essential to understand the holistic development for the economy. The food security of the coastal communities is also depended on Oceans and increasing inclusion of fish products into the global food system is increasing. The scope sustainable blue economy is much more than the Ocean economy as it covers all ocean related activities including direct and indirect supporting activities required for functioning of the

various economic sectors while adjusting to the cost of environmental damage and ecological imbalance caused due to exploitation of ocean resources for consumption.

The focus on the blue economy has been the priority of the government for the past few years and now the India government stands committed to promoting the blue economy in a substantial way. The activities relating to the blue economy has also identified (21:28) in the country since 2015 after the introduction of 2030 development agenda. Blue economy as a new pillar of economic activity in the coastal areas and linked international sustainable tapping of oceanic resources and announced India's vision for the seas through security and growth for all in the region which is the **SAGAR**. At the regional level India has emphasized on blue economy as a priority sector of cooperation in the India ocean rim association, the Bay of Bengal multi-sectoral technical and economic cooperation **BIMSTEC** and other platforms. During the announcement of the 2020 budget, the finance minister of India mentioned the importance of blue economy and allocated significant resources for the fishery sector. This emergence of the blue economy in the budget signals the gaining prominence of the sector. The sustainability is built in the concept of **BE**. The importance of achieving SDG 14 is also important for India. However the knowledge and the data repository is still in its development stage and we are yet to achieve the full reporting of all the indicators although the Ministry of Statistics(MoS) and Programme implementation who is responsible for preparing all the indicators. We have been able to include some indicator but not all of them are in the tier 1 category. In this context the blue economy working committee under the Prime Minister has also been able to build a BE accounting framework for the country. This constitutes of enlarging the NIC 2008 classification engaging various relevant ministries, constituting higher power committee also BE support at the regional level.

A healthy ocean is a precursor to a robust economy and addressing biodiversity, food security, climate change issues linked to oceans is necessary step. I am really delighted the discussion paper is not only focusing on the environmental aspect of the three pillars of sustainability but also on the social aspects and there is increasing focus on employability and livelihood options not only in this sectors but also in other sectors including the energy, just transition or even the distribution equity and justice so far the resource sector is concern. So the element of society, and creating a social justice across various economic sectors have achieved a significant importance in recent years and that is very well reflected in the blue economy concept. Today's discussion aims to capture both the element of the livelihood as well as the environment which is extremely important and I am very confident that the learnings we will have through the lead presentation as well as the discussion and feedback from different participants will definitely help in further adding value to our existing thinking and get a renewed support from different stakeholders towards a sustainable blue economy.



**Amb. Rajiv Bhatia** - Chair, Federation of Indian Chambers of Commerce & Industry (FICCI) Core Group on Blue Economy

First we know that this is a comprehensive dialogue. It is covering three pillars of blue economy- security, sustainability and business perspective. I think the first part of the dialogue was handled extremely competently by the NMF when

we all learnt a lot about the concept of holistic security and today now the turn of learning is about sustainability, ecological and environment perspectives and then will be time to move on to the final pillar. I think that this combined approach is very good and what would really matter at the end is to develop a harmony and a balance among these three pillars, that will be the challenge for the leadership of three institutions.

My second point is that undoubtedly the sustainability pillar is of very high importance. When we at FICCI began our work on blue economy back in 2016, at the very foundation stage when we sat down to deliberate and define blue economy we began with the S word the sustainability word and so two years later when Africa convened its biggest blue economy show, with the conference in Nairobi, the organisers thought it was necessary to stress the word sustainable by adding it before blue economy. They called it sustainable blue economy conference because they felt that there were great deal of skepticism about the value of this pillar. So it is your choice whether to keep it starting with the word sustainable or to start from the assumption that blue economy itself means sustainable blue economy.

My third point relates to the three principles which have guided FICCI's approach on this subject because it is not enough to pay lip service to sustainability but to reflect these in your own work strategy and work ethics. These three principles are firstly a holistic approach where economic growth is balanced by sustainable development and we will be hearing about lot of SDGs today. The second principle is that we need to follow a multi sectoral and multi-disciplinary approach. I think the correct humble approach to admit that we need the naval professionals, we need the scientist, we need business, we need research scholars, we need discussions in order to decipher this elephant called blue economy and be able to develop a suitable policy framework that helps guide not only our government but also all other players in this field and third principle clearly is the one which play stress on collaboration resulting from public private partnership (PPP). This is where we need to involve governmental authority at all three level centre, state and local. But we also need to involve fully include business and industry, civil society, media and the intellectual class as well.

My fourth point is to engage with experts and ask what exactly do humans need? The answer is clear, humans need food, medicines, energy, entertainment, travel opportunity, employment, minerals, they also need adventure and other resources and all these things are available in the oceans. It is available in ample measures for humanity today which is now touching eight billion people, it may be enough for our population when it reaches ten billion mark in 2050. But we must step up our caring and nurturing of oceans and safe guard them from being subjected to further degradation.

## Discussion Paper Presentation



**Ms. Mani Juneja,**  
*Research Associate, Centre for  
Resource Efficiency and Governance  
TERI*



**Ms. Asha L Giriyan,**  
*Fellow, Coastal Ecology and  
Marine Resources  
Centre, TERI*



**Ms. Christina D Souza,**  
*Research Associate, Coastal  
Ecology and Marine Resources  
Centre, TERI*

The presentation on the discussion paper gave an overview of the paper and the key issues that have been covered. The paper on Blue economy for Healthy oceans focused on livelihoods and sustainable development in key sectors including fishing, tourism, energy, shipping and deep sea mining. The paper examines the intrinsic link between livelihoods and sustainability. The presentation focused on highlighting the significance of biodiversity, Food security and Climate change and its inter-linkages and impacts on livelihoods and the economy as a whole.

## Session I: Looking Beyond the Obvious- Underlining the importance of oceans for Food security, Climate Change and preserving biodiversity



**Chair: Vice Admiral Pradeep Chauhan** AVSM & Bar, VSM (Retd), Director General, National Maritime Foundation

Adm. Chauhan highlighted that the entire economy is dependent or related to blue economy and land locked areas and sectors also impact oceans the land based pollution that finds its way to deep oceans. The question is how much does the blue or oceanic element of the economy contributes to the national economy. That is the wrong question. The question is how blue is your economy. That is the question. Even need to be cautious of the interrelated nature of what blue economy is and the question again that I pose is how blue is your economy, for example if you are taking merchant shipping and consider shipping increases to be beneficial to the economy but the same increase in shipping generate mid frequency and low frequency noise which will adversely impact the marine habitat for mammals, greater mammals stranding impacting biodiversity and tourism. The second question is how long will this Covid business last and what would be its impact on the global economy, regional economy, the national economy and how they would bounce back. Somewhere not in the stage yet but we are talking about two year window before which the world will economically come back so people who are living in this time and researching in this time should bear this particular

fact in mind. The third element is the blue economies relationship further in terms of anthropogenic activities. Impacts of climate change accelerate changes in the precipitation cycle, increased frequency, increased severity but decreased predictability of tropical revolving storms that are hitting the coast of Oman, they are not effecting the human being their but they are effecting the locusts and the locusts swarms are picking up coming and across to northern India and all the way down to Gujarat and affecting agriculture and in turn food security. This puts additional pressure on fishing a food source that lead to more fishing regulations, higher load on fishing regulatory authorities greater tendency toward IUU fishing and the story therefore not easily isolated into its various silos. The need for data in fishing is important in this context especially when calculating maximum sustainable yield, how much is the yield and how this yield is changing because fish movement. This data would also highlight how fishes are no longer in their original habitat because their habitat is impacted by climate change.

## Session I - Speakers



**Dr. Aaron Savio Lobo** - Member of the IUCN SSC Marine Conservation Committee

Dr. Lobo focused on the significance of aquatic foods or blue food and just future of ocean economy which hopefully will includes all these things. When we talk about climate emission from food is definitely one of the major drivers for emissions, particularly when it comes to GHG emission and now that many of the largest cities are also sort of coastal cities many of these are actually coming from these coastal cities and when we look at these urban emissions one of the big drivers is definitely protein which possibly have disproportionately high carbon footprint and looking at fast growing economy like India, many other parts of Asia and Africa, we going to see protein consumption growing at a rapid pace. When we talk about protein, we mainly think about livestock and other intensive forms of farming. So whether livestock production or intensive forms of farming are the major sort of drivers for deforestation and biodiversity loss worldwide and infact if we look at most of our aerable land area and fresh water supplies have pretty much been maximized in many ways. I think it is approximately 90% and if we think of it in many ways the sea and aquatic foods can be a major part of solution that we are looking at of how blue can be actually strive to make a blue economy and in what way it can help in lowering up carbon footprint. And if we look at seafood production definitely have a much lower carbon footprint compared to large scale factory farming livestock have. So maximizing our sustainable sea food production will help in achieving some of our 2050 climate and biodiversity goals. I think this is something we have to keep in mind. India is one of leaders not only in capture fishery production wherein the large state of world fishery and aquaculture report published by the FAO ranked fourth and is approximately six percent of total global fisheries production. However, if we look at the national average per capita fish consumption in India is very low. It is about 9 Kilo per person per year. Now this is in contrast to say a country like Korea which has probably the largest sea food footprint which is around 70 odd kilos of seafood per person per year. So the thing is our sea food production and our seafood footprint is going to be increasing in the next twenty years to a great extent. This will pose immense pressure on already stressed wild marine resources. So we look at it aquaculture is the fine sort of putting in sustainable marine fisheries measures in place. Aquaculture becomes our next go to

options. So coming to the major challenges, one of the major challenges beside the overarching one of say climate change is definitely an over capacity and over fishing where we saw peaks in total fish catches happening somewhere in the 90s and that where total global capture fisheries production also peaks, somewhere around 90 to 96 and then although we have a kind of stabilization in our total catches, there is actually a decrease in catch per unit, there is an increase in area covered by shelf fisheries by approximately four times since 1950 to 2000. So basically we have reached our boundaries in many ways and it is not just fisheries but aquatic fish production space and it is kind of multifactorial. Many other drivers are working simultaneously whether it is industrial effluent runoff, agricultural runoff, climate change and to overfishing all coming together in a catastrophic conversion and these are being exemplified in death zones pretty much in several parts of the world.

In India in fisheries, many of the mechanized or the semi industrial fisheries whether it is small fisheries, many of these boats are running way beyond their bio economic equilibrium as it called that is they are moved from just fishing the target species to fishing of whatever one can possibly sweep up the sea floor. Now we have realize that the lot of sea food caught, lot of the protein caught out of the sea is going to feed animals reduction fisheries wherein you have large quantities of sea food being caught and just been fed to chickens, factory farm fish etc. One area to move forward is aquaculture. The dominance of certain kinds of species in the aquaculture sector which are largely carnivores like the Asian seabass which are currently even been farmed in area which has got nothing to do sea life Punjab and Haryana and are been fed on large quantities and it is a major issue and it is not sustainable in long run. So it is not just about ecological footprint here but how accessible are many of these species to marginal poor who depend on and not just a source of protein but also very important source of nutrition and nourishment particularly for the marginal poor.



**Dr R Ramasubramanian** - *Principal scientist, Coastal Research Systems, MS Swaminathan Research Foundation*

Dr. Ramasubramanian focused on the importance of Mangrove conservation and Management for Ecological and Livelihood security of the coastal community . He highlighted the major aspects of India's vast coastline, the coastal ecology and the ecosystems on the coastal shores. He discussed the linkages of coastal ecosystems and their significance of livelihoods, biodiversity and food security. Coastal ecosystems are highly biological productivity and diverse in nature, they are also a major livelihood source for the fishers -fish, shellfish and seaweeds and commercially significant as a source for drugs, cosmetics and chemicals. They also Store and cycle nutrients and filter pollutants. They continuously protect shoreline from erosion and storms and also hold the potential to be carbon sink. The coastal areas are also home to ports , transportation and essential for tourism. The role of mangroves in ecosystem services is undeniable as it regulates the ocean environment, provisions and fosters economic activities such aquaculture, fisheries, building materials etc, it nurtures the ocean environment and provides nursery habitats while being critically important for tourism. However, increasing economic activity without providing time for the mangrove to regenerate and renew itself, the mangroves in the country are degrading rapidly and also disappearing at a faster rate. India lost 40% of its mangrove area during the



last century. Of this, east coast has lost about 26%; west coast area about 44%; and Andaman and Nicobar Islands about 32%. With mangroves being destroyed for fuelwood and building material and rising aquaculture, the protective layer of mangrove against inundation and flooding is disappearing. Sea Level rise and rising salinity due to Climate change is also impacting mangroves. The increasing natural disasters are adding to the problems of mangrove preservation. There is need to focus on ensuring greater community level participation and awareness generation in mangrove areas to ensure that existing mangroves are protected and preserved while providing the ecosystem services they have been generating. Some good examples of mangrove preservation and community participation are already being undertaken and such examples could scaled up and replicated.



**Dr. Asir Ramesh, DISE** - *Integrated Social Sciences and Economics Division, National Centre for Sustainable Coastal Management, Ministry of Environment, Forest and Climate Change*

Mr. Ramesh focused on the impacts of climate change on livelihoods of fishing community. The focus of the presentation was on the Livelihoods Pentagon. The Human capital, Physical capital, financial capital, Social capital and natural capital were the key areas identified as a part of the pentagon and these capitals were linked to the Climate Change Risk management Framework. He highlighted the use of ISO31000 Risk Management Framework to identify the risks that are posed by Climate Change. The Key parameters that were being utilized to assess the risk were establishing the context, risk identification, risk analysis, risk evaluation and risk treatment. According to these parameters, some key indicators of climate change that are affecting fishing villages were identified which include Sea Level Rise, Sea surface temperature, shoreline change, floods, cyclones and droughts. Under these parameters and indicators around 9 villages were identified on the coasts of small part of Kerala to be affected by the indicators and facing the impacts of climate change and are high on the risk category. Such an exercise has helped in developing a streamlined framework to address the impacts through a structure process and also prepare for risks that may emanate in similar areas.



**Dr. Fraddry D'Souza** - *Fellow and Area Convenor, TERI*

Dr. D'Souza discussed the linkages between marine biodiversity and blue economy. He emphasized that there is a need to ensure that marine biodiversity is preserved at three levels- species diversity, genetic diversity and ecosystem diversity. The major threats to biodiversity are Land use changes, pollution, Over exploitation of species (bycatch), Invasive alien species and Climate change impact. Under current socio-ecological conditions, economies with higher GDP tend to consume more raw materials and energy, occupy more productive land, and/or use it more intensively. Increases in the efficiency of resource use could enable economic growth while reducing environmental and biodiversity impacts. Biodiversity enhances Ecological Functions/processes and enhanced ecological functions accelerate the benefits that ecosystem provides. The key benefits of biodiversity to ecosystem services include Provisioning services, Regulating services, Cultural services and Supporting services. The ocean genome

is the foundation upon which all marine ecosystems rest and is therefore integrally linked to the existence of all life on Earth. Marine life is incredibly diverse—having existed in the ocean for three times as long as life has existed on land. The ecological benefits of the ocean genome are vast and genetic diversity in the ocean is critical because it stabilizes ecosystems. The commercial benefits are primarily in the pharmaceutical industry with several medicinal products currently under research and development. Species such as the Whale can sequester carbon to up to 33 tons of CO<sub>2</sub>, that is higher than any other form of carbon sequestration. The phytoplankton activity enhanced by whales - even a 1 percent increase in phytoplankton productivity would capture hundreds of millions of tons of additional CO<sub>2</sub> a year, equivalent to the sudden appearance of 2 billion mature trees. Marine protected areas also hold the key to providing both commercial as well as biodiversity based values.



**Dr. Pushp Bajaj** - Associate Fellow, National Maritime Foundation

Dr. Bajaj discussed Enhancing “Blue Carbon” to Mitigate Climate Change and Strengthen India’s Blue Economy. He discussed Blue carbon and the impacts of Climate Change and Human Overexploitation on Blue Carbon Resources. He also highlighted the mechanism by which Blue Carbon could Mitigate Climate Change and Enhance Coastal Resilience and its Correlations and Linkages with India’s Blue Economy. The role of blue carbon resources was discussed as essential for phytoplankton enhancement, as habitat for marine species, as a nursing ground for fish population and protection against sea level rise. The role of Blue carbon resources in context of blue economy includes support to fisheries and aquaculture sector, ensuring food and economic security for coastal population, essential for coastal tourism and protects against extreme weather events and safeguards infrastructure.

## Session II – Sustainable Livelihoods in Blue economy Sectors & Leveraging Regional cooperation

---



**Chair: Prof. VN Attri**, Chair Indian Ocean Rim Association (IORA) & FICCI Task force on Blue economy

The idea of blue economy started sometime in April 2010 with the publication of the famous book by Gunther Pauli. During the UN conference of sustainable development where SIDS countries raised the issue that while we are talking about Sustainable Development, we must discuss ocean economy. So in the early days of 2014 in the first core meeting on blue economy of IORA happened on 4-5<sup>th</sup> May 2015 in Durban, South Africa, where I raised the question of defining blue economy with other scholars highlighting that rather than defining blue economy there should focus on the practice of it. With each organisations attempting to define it from their perspective. Now the basic issue is how we can sustainably use the oceanic resources. Firstly, the issue of sustainable blue economy must be linked with the issues of the land locked countries, the countries who are not connected with the ocean are also affected by it. They are also the part of sustainable development. Then the other thing which very prominent is the issue of industrial revolution

and accelerated technological change and accounting for blue economy. Developed countries have been able to harness the ocean resources and many of them are already able to ascertain the contribution of blue economy to GDP, however IORA and its countries still need to find out its contributions to GDP and employment.

In the context of the session basically now we know that 24% of the world productive land has been degraded and this degradation in the land is causing serious problems for 1.5 billion lives globally and another fact is that 42% of poor people depend upon the degraded land for food and for their income. So when we try to define ocean as an unrelated development space, in terms of factor, ocean basically acts as a factor of production. That is basically a natural capital. So how do we measure the natural capital? There is a need to evolve a pragmatic approach about sustainable blue economy to help in achieving the objective of sustainable livelihood especially the Goal 1 and Goal 2 of the SDGs and how these goals are interlinked with each other.

## Session II - *Speakers*



**Dr. Yugraj Yadava** - *Director & Project Manager, Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO)*

The Bengal of Bengal programme is a regional fisheries body (RFB) instituted in 2003. It Evolved from FAO's Bay of Bengal Programme, which started in 1979. Presently Bangladesh, India, Maldives and Sri Lanka are the contracting parties.

We Assists countries in meeting their aspirations in a responsible manner and also in meeting their regional and international commitments and In line with the mandate of the BOBP-IGO, the scope of my presentation covers livelihood issues in the marine fisheries sector of India, in particular livelihoods of marine fishers. A Sustainable livelihood is a concept to prioritize poverty alleviation in development planning and livelihood comprises: capabilities, assets, and activities. It is required for means of living and it is deemed sustainable if it can cope with and recover from stresses and shocks, maintain or enhance its capabilities, assets, and activities both now and in the future and ofcourse, subject to maintaining the natural resource base.

The Indian marine fisheries, is an INR 61 thousand crore sector but livelihoods are not sustainable. In 2019, the Indian marine fisheries generated a revenue of about 61 thousand crore at the point of first sale and a recent study shows that the workers get about 40% of the revenue. The active fishermen population is estimated at about 0.9 million and a rough estimate shows that an active fisher earns about Rs 22 thousand per month to run a family of four, and going by the estimate one may assess it be not bad, if we compare with the other sections of the society. However, the 2016 marine fisheries census conducted by the Central Marine Research Institute (CMRI) shows that about 67% families are below poverty line and about 30% families are living in kutcha houses. Just a few indicators, there are large number of indicators which the census covered but we have just picked up this two indicators to show the condition are not as good as it may be envisaged.

Of the many reasons, we feel that the Poor quality of assets have led to poor livelihoods. An average Indian fisher is skilled (human capital) and is well-connected with the production system (the ‘fisher community’) but the natural capital in terms of the health of fish stocks, access to fishing ground, physical capital in terms of gear and crafts (vessels) and financial capital credit from the public sector financing sources are lacking. Most of the commercial stocks are either exploited or over-exploited with leads to increasing the cost of fishing and the growing number of seaports, shipping traffic and urbanization are also impacting access to fishing grounds. Marine pollution, plastics, water abstraction, etc. are harming the fish habitats. Fishing vessels are not of quality to undertake long voyages. They lack basic safety standards and amenities and this results in accidents which are quite common. Climate change and increasing number of weather events just to mention cyclone Ockhi are further jeopardizing fisheries livelihoods and the lack of access to institutional finance along with the lack of insurance of fishing assets are costly limiting factors. Blue economy can be for optimizing financial benefits from marine waters and social benefits. A balance is needed and we also feel that the ecosystem approach emphasizes on optimizing social benefits for a sustainable future is very important and one of the tools of ecosystem approach is marine spatial planning (MSP), both within and outside the sector. Within sector, we need to balance the bigger mechanized boats with the smaller artisanal boats and as we see that over the years, the share of artisanal catch has reduced to 20% and mechanized boats bring about 80% of the total landing and simultaneously, we also need to secure fisheries in competitive uses of ocean space through dedicated legal measures, such as rights to be given to the fishing community. The regional cooperation with ranges from occupational safety (e.g. drifting of a boat to neighbouring country) to fisheries management it is widely recognized that no country can go alone. Fisheries problems are transboundary. However, fishing countries in the region follow a myopic approach. The national policies do not have clear directions on regional cooperation. Decisions taken at the regional and international levels are often not implemented at the national level. A statistics which is quite important and this is new study published in the ‘Science’ finds that the world's marine fisheries form a single network, with over \$10 billion worth of fish each year being caught in a country other than the one in which it spawned.



**Dr. Amey Sapre** - *Assistant Professor, National Institute of Public Finance and Policy (NIPFP)*

Dr. Sapre focused on methodologies and estimation framework for activities in the blue economy. There are several attempts to quantify the contribution of blue economy, however the vastness of framework and the massive contribution of oceans in all sectors has been a challenge to account for. For the conecotal and operational definition of blue economy Blue Economy vs. Activities related to oceans, water bodies and other marine resources. There is a need to take sum of all economic value added by activities related to oceans, water bodies and other marine resources. Three basic points of capture (i) Employment, i.e. people engaged in identified/related economic activities, (ii) Goods and Services produced and (iii) environmental accounting. There is a need to Map activities on the basis of what each sector produces, the activity and the industry. One also needs to examine activities that are spread within manufacturing and services,

and industries are spread with public, private and household sectors. Value Addition in the National Accounting System is based on economic activities- identification of activities that relate to the Blue Economy- those that directly and partially attributable, Use a production approach to estimate value of output, intermediate costs and remainder as value added and Use an expenditure approach to estimate final expenditures on blue economy related products and services, Other alternative is to estimate the number of people employed in blue economy activities and use value added per worker to estimate the overall contribution, Identify indicators to extrapolate contribution for later years and Natural Resource Accounting for valuation of natural resources and creating an asset repository. Dr. Sapre then briefly highlighted the methodology to ascertain the valuation and ways to account for blue economy activities. There is significant requirement of data for the purpose and there I also a need to initiate a robust Data collection exercise to enhance the estimation methodology. He is also discussed different ways other countries have quantified ocean based economic activities and some good case examples that could be taken into consideration for the accounting.



**Mr. Deepak Shetty** - *Former Director General of Shipping, Government of India*

Mr. Shetty discussed key issues in the Shipping industry and sustainability aspects in its context. He stated, India rank 17th in terms of its global merchant shipping tonnage. It has a relative miniscule proportion of around of just little around 1% of tonnage. However it has a very diverse fleet of vessels in a form of foreign ocean going and coastal trade ships and offshore service and supply vessels, merchant sailing vessels and an assortment of smaller craft that is barges, wedges, tugs, Harbour Craft, pleasure crafts, yacht etc. They also services several other maritime needs apart from the trade requirement such as passenger movement, port harbor operations, offshore service supply activities, pleasure and leisure trips etc. In addition there are host of other vessels under this belt which cater to riverine trade and passenger movement along India’s inland water ways through it networks of rivers, cannel, backwaters and creeks.

It is very essential that the Govt. of India considers reckoning Shipping as a priority sector and also accord it infrastructure status to aim for the merchant shipping industry to look like in about two to three decade down the line and more importantly vis-a-vis the counterpart transportation mode such as civil aviation, railways, and road transportation etc. There is also need to a strategic plan in place to embed it in the emerging need of India’s blue economy requirement. It is critical that the robustness, numerical sufficiency and scalability and typological diversity of its merchant shipping fleet needs to be integrated with the blue economy development going forward. It is about time that the merchant shipping sector is also driven in terms of an architectural framework which is mounted on a national mission mode. The whole of the government approach is brought to bear on a very perspective and holistic development of the merchant shipping sector as it were, we need to look at the backward and forward linkages. A national mission for shipping will also ensure there is closer and harmonious interaction, coordination and collaboration with industries and ministries such as External Affairs, Earth Sciences, Science and Technology, new and Renewable energy, Petroleum and Natural Gas etc.

India shares just 6.4% of carriage of India's exempt trade and there is a very urgent need to look at scaling this up to at least about 15% in the next decade going forward. India approximately spends 56 billion US Dollar towards freight charges annually which is paid to foreign flag ships for carrying India exim cargo. This is an area which if we are able to save to a substantial extent which could be ploughed back into not just scaling up and diversifying Indian merchant shipping fleet but also will be able to contribute to the cause of blue economic development in the overall. It is a given fact that merchant shipping by far is most cost effective, energy efficient and ecofriendly mode of transportation. The empirical studies conducted time and again across the globe have emphatically proven that the greenhouse gas emission footprint is no more than 1.5% in merchant shipping and this can be tied with the several SDG goals. Some of the points which I wish to highlight here and which have contextual relationship with the futuristic development of India's blue economy.

The first strand would be the propagation on a mega scale of the philosophy of SAGARMALA. The underpinning here is of having port led development, where you propagate the concept of coastal economic regions or maritime economic regions that underpin this development. The architecture that is proposed is to have ports which have spinoff development in a geographical radius of around 200 KM across and there would be holistic development that would get spawned as a result. There is an imperative need for an institutional mechanism for coordination which subsumes an associated array of stakeholders in the form of government bodies, city town planners, architect, conservationist, environmentalist, bodies of local communities and other allied players. This essentially is to embrace holistic development in the 13 maritime states and Union territories of India.

The second strand that is essential to emphasis is that India needs to ratify international convention relating to intervention on the high seas in the case of oil pollution casualties which state back to the year 1969. It is a pity that India became a part of IMO instrument going back to the year 1980, however it took almost about 36 years there afterwards for this to be merged into the merchant shipping bill which was proposed in 2016 but again four years down the line we find that this is yet to be approved by the parliament. The international instrument would enable India to intervene in the high sea in the event of oil pollution casualties and give us the reach and the ability to be able to contain the spillage which have a direct bearing on our ocean resources connected to blue economy paradigm.

The third element is the concept of **OSROs** which is oil spill response organisations. Typically as it stands currently, whenever there is an oil spill incident the directorate General, National Maritime Service designated to the purpose, get activated, the Indian coast guard comes in to play with its expertise but often times India falls back on supplemental expertise and experience of private sector bodies which provide salvage services and these are generally based overseas. There is a need to prepare a draft cabinet note to bring in OSROs and have them as a standing institution basis to be available so that as and when if there is a marine oil pollution incident and which has catastrophic consequences then we don't lose precious time in trying to requisition the services of these expert and these OSROs are available. This is essentially based on the OPA act of US going back to the year 1990.

The fourth factor in the dimension is, the IMO has already brought in effective from 1<sup>st</sup> January 2020, a bunker marine oil pollution control measure which mandates that merchant ships cannot have marine fuels which will have sulphur content in excess of 0.5%. There are challenges as we speak on this in terms of having exhaust gas cleaning systems and putting in place various measures. About close to one year down the line, we still find that the merchant shipping industry faced with extremely narrow margins freight rates, very low freight rates, fairly averse to getting into this regulatory compliance but while this is a mandate but I think it is necessary to understand that this would be a significant contribution to the overall paradigm of the blue economy preservation as well.

From a Blue economy perspective there is the need for timely and robust enforcement of existing instruments of the national maritime organization in the form of SOLAS, MARPOL, Ballast Water Management, STCW convention, but I think a time has come where two additional instruments in the form of the international maritime search and rescue 1979 and International convention on oil pollution preparedness response and cooperation which goes by the acronyms of OPRC 1990 which also needs to be ratified in fairly quick time. On the port infrastructure side, there is a need for up gradation of technology in the existing brown field ports as well in the large green field ports which are now coming into play under the SAGARMALA framework and the maritime ports Bill 2020 which is under consideration perhaps incentivise some of these forward looking measures. Going forward the emergence of alternative fuels which are available and technologies which are coming into play such as superconducting electric motors, hybrid propulsion system, magneto hydrodynamic propulsion energy saving devises, hull designing and coatings are also need to be factored in the overall calculus because these are the technologies that are now getting adopted and adaptive by shipping companies worldwide and India cannot be perceive to be lagging behind. India also needs to consider initiatives such as IMO's energy efficiency design index (EEDI) for new ships. The ship energy efficiency management plan (SEEMP) for all ships which are in operation. It is estimated just to give you a broad sense of what this tax up in macro numbers is that this is likely to lead to annual CO2 emission sparing to the extent of about 200 million tones constituting around 10-17 % in the next couple of years. These also likely to going forward scale up to about 420 million tonnes by 2030 which would represent about saving of 19-26%. It is further projected that about annual fuel saving cost of around 20-80 billion dollars are likely to accrued in next couple of years and this would then scale up and escalate to anywhere between 90-310 billion dollars come the decade 2030.

The other aspect needs to be emphasized here is the activity which is fairly new to marine ecosystem, which is in the form of ship wrecking. As you are aware India is been the capital of ship wrecking industry, so the end of life of vessels from across the world basically end up reaching the shore of Alang in Gujarat where under extremely unsafe environmentally hazardous conditions and circumstances which pose grave hazard to human health of the workers, things are carried out. It is of some solace that India has ratified Hong kong international Convention for the safe and environmental sound recycling of ships and the Director General of Shipping Govt of India stand designated very recently as a national authority for recycling of ships. It is expected that to the Hong Kong convention coming in we would have brought to bear some sanity in the way ship breaking industry is conducted and we would then be

able to put the skits on the environmental degradation in the proximate and in the larger marine environment system going forward.

The Directorate General of Shipping has now issued some circular which have gone in addressing and readdressing and is a sequel to a final report to monitoring committee on management of Hazardous waste of which date back to July 2019 which mandate that these kind of facilities should be in place in about a year which is by end of 2020. The incremental feature which is in apply, there is swachh sagar portal which is now coming to play where it is incumbent to all merchant ships to be able to report and make faithful and comprehensive disclosures of all waste which they have been discharging and also any complains could be reported where either there is deficiency of service in a port or there are simply no availability of services. So this said, largely speaking it these various strands which would need to be brought about with reference to merchant shipping contextual to the paradigm of blue economy.



**Ms. Mani Juneja,**  
*Research Associate, Centre for  
Resource Efficiency and Governance  
TERI*



**Dr. Ria Sinha,**  
*Fellow, Centre for Resource  
Efficiency and Governance  
TERI*

Ms. Juneja and Dr. Sinha focused on the Imperatives on Blue Financing Mechanisms. With several sectoral based discussions to enhance blue economy framework and associated opportunities, one key factor is the need for financing economic as well as sustainable development. The blue finance mechanisms that have emerged in recent years are focusing on fulfilling the dual objective of aiding socio-economic development especially with greater community participation besides ensuring the adherence of sustainability principles. The need for blue financing mechanisms is critical as much of the current SDG and Climate change related financial instruments have a greener approach mostly focused on land based sustainability aspects. SDG 14 and ocean based activities receive the lowest amount of funding in all SDGs. Even though the sector has high prospects are initiating sustainable ocean activities, the funding and financing for this sector hasn't seen much progression since the adoption of SDGs. Official Development assistance and philanthropies have been the major source of funding for sustainable development in oceans. While there are various opportunities for different stakeholders to explore and invest yet the financial architecture for oceans is still underdeveloped. Various sources of capital were highlighted and how these sources can be utilized in Asia and specifically in India. The example of Blue bonds was discussed and the larger principles for blue financing were also highlighted. They key challenges and enablers to Blue financing were also discussed.



***Session Remark by Prof. VN Attri, Chair Indian Ocean Rim Association (IORA) & FICCI Task force on Blue economy***

The focus of the BE should be led to research and capacity building across the region whether it IORA, SAARC, EU, SA. All of these are linked and there is a need for more multilateral cooperation among the different regional grouping to find a leverage to create a sustainable livelihood which can feed the growing population because by 2027 the population of the globe will be 8 billion and by 2050 it will be more the 9-10 billion. So basically the growing population and the food security, poverty eradication, zero hunger these are very serious issues and the focus of Blue Economy should be on social security that is creating socio economic development across the globe all those thing needs to be required and all the panelist have touched the marine protected India, marine fishing planning, the role of accelerated technological change and another thing. Now the Blue Economy era is linked with circular economy, so we need to start thinking about circular economy so that will lead to sustainable development across the global and that has been emphasized in 2001 by UN Secretary General Koffi Annan and in IORA .

The IORA Blue carbon hub created by India and Australia is a good example of regional cooperation for enhancing sustainability. Now IORA is evaluating and accessing the action plan of IOR 2017, 2020, 2021 and also formulating the action plan 2022 to 2026. For recovery from Covid 19 impacts multilateral cooperation has to be increased. There is a greater role for IORA as a regional grouping to fight the post covid impacts and lead the path of recovery. Tourism is badly affected and while bouncing back we need to enhance standardization. We need to create regional standards to create market for each other.

Circular Economy and Blue Economy are parallel to each other as there is emphasis on reducing wastage and enhancing efficiency. A serious problem in ocean economy is plastic pollution/ marine pollution and circular economy has measures that could help to reduce this. Reduction of wastage from land based sources could be achieved through circular economy. All economies need access to appropriate technology to meet the challenges of Blue economy. The core of a Blue Economy is sustainability so land economy and ocean economy needs to be integrated under the principles of sustainability

The diginar concluded with these deliberations and discussions and set the agenda and tone for the next diginars in the series.

## Agenda

11.00 –am	<p><b>Opening and Welcome Remarks</b></p> <ul style="list-style-type: none"> <li>• Mr. Peter Rimmele, Resident Representative, Konrad Adenauer Stiftung India office</li> <li>• Mr. Souvik Bhattacharjya, Associate Director, Centre for Resource Efficiency and Governance, The Energy and Resources Institute (TERI)</li> <li>• Amb. Rajiv Bhatia, Chair, FICCI Core Group on Blue Economy</li> </ul>
11.15 am- 11. 11.15 30 am	<p><b>Presentation of Discussion Paper by TERI</b></p> <ul style="list-style-type: none"> <li>• Ms. Mani Juneja, Research Associate, Centre for Resource Efficiency and Governance TERI</li> <li>• Ms. Asha L Giriyan, Fellow, Coastal Ecology and Marine Resources Centre,TERI,</li> <li>• Ms. Christina D Souza, Research Associate, Coastal Ecology and Marine Resources Centre, TERI</li> </ul>
11.30 am- 1.00 pm	<p><b>Session I - Looking Beyond the Obvious- Underlining the importance of oceans for Food security, Climate Change and preserving biodiversity</b></p> <p><b>Chair-</b> Vice Admiral Pradeep Chauhan AVSM &amp; Bar, VSM (Retd) Director General, National Maritime Foundation</p> <p><b>Speakers</b></p> <ul style="list-style-type: none"> <li>• Dr. Aaron Savio Lobo, Marine conservation scientist, member of the IUCN SSC Marine Conservation Committee</li> <li>• Dr. R. Ramasubramanian , Principal scientist, Coastal Research Systems, MS Swaminathan Research Foundation</li> <li>• Dr. Asir Ramesh, DISE - Integrated Social Sciences and Economics Division, National Centre for Sustainable Coastal Management, Ministry of Environment, Forest and Climate Change</li> <li>• Dr. Fraddy D’ Souza, Fellow and Area Convenor, TERI</li> <li>• Dr. Pushp Bajaj, Associate Fellow, National Maritime Foundation</li> </ul>
1.00 pm- 1.45 pm	<b>Lunch</b>
1.45 pm – 3.15 pm	<b>Session II – Sustainable Livelihoods in Blue economy Sectors &amp; Leveraging</b>

	<p><b>Regional cooperation</b></p> <p><b>Chair-</b> Prof. V. N Attri, IORA &amp; FICCI Task force on Blue economy</p> <p><b>Speakers -</b></p> <ul style="list-style-type: none"> <li>• Dr. Yugraj Yadava, Director &amp; Project Manager, Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO)</li> <li>• Dr. Amey Sapre, Assistant Professor, National Institute of Public Finance and Policy (NIPFP)</li> <li>• Mr. Deepak Shetty, Former Director General of Shipping, Government of India</li> <li>• Ms. Mani Juneja, Research Associate and Ria Sinha, Fellow, Centre for Resource Efficiency and Governance, The Energy and Resources Institute (TERI)</li> </ul>
3.15 pm- 3.45 pm	<p><b>Open Discussion</b></p>
3.45 pm- 4. 00 pm	<p><b>Closing Remarks &amp; Vote of Thanks</b></p> <ul style="list-style-type: none"> <li>• Ms. Swati Ganeshan, Fellow and Area Convener, Centre for Resource Efficiency and Governance, The Energy and Resources Institute (TERI)</li> <li>• Mr. Pankaj Madan, Advisor/Teamleader Program Coordination, Konrad Adenauer Stiftung India office</li> </ul>