

Quadrilateral Virtual Series on Blue Economy-India's Pathway to a Sustainable, Secure and Resilient Economy

Emerging Sectors and New Technologies

January 28, 2021; 1100- 1600 hrs on Zoom

Concept Note

Background

The webinar on **Emerging Sectors and New Technologies** – fifth in the series - is part of a chain of Diginars being organised in a thought-leadership Quadrilateral project by FICCI, KAS, TERI and NMF titled "**Blue Economy-India's Pathway to a Sustainable, Secure and Resilient Economy**". As part of the series, six webinars and a National Conference will be conducted from **2020-2021**.

Context

Blue Economy is a holistic paradigm in the development discourse which gives equal weightage to economic growth and environmental sustainability. The Blue Economy of India is inextricably linked to the global Blue Economy. The development of India's Blue Economy requires strong domestic synergy and integration with the wider international ocean community.

Blue Economy is now considered as the fountainhead of a number of national priorities which can potentially trigger national growth, economic prosperity and job creation. While dedicating the Kochi-Mangaluru natural gas pipeline to the nation in January 2021, Prime Minister Narendra Modi stressed that Blue Economy will be an important source of 'Aatamnirbhar Bharat' and sketched out a multi-pronged plan for "improvement of coastal infrastructure and protecting the marine ecosystem". PM Modi stated that ports and coastal roads are being connected with a focus on multi-modal connectivity. He conveyed that India is working with an aim to turn our coastal region into a role model of ease of living and ease of doing business.

At the heart of marine scientific research and Blue Economy is data which is generated by sensors, machines and humans. A large number of platforms, observation stations and monitoring devices are embedded-positioned at vantage locations under the sea, on the water, and in the space. These continuously observe, collect and transmit scientific data which is characterized by 5Vs i.e. 'volume, velocity, variety, veracity and value'.

Fourth Industrial Revolution (4IR) technologies led by artificial intelligence (AI), machine learning (ML), internet of things (IoT), Bigdata, etc., are transforming Marine Scientific Research (MSR). There is strong evidence of system automation, smart sensors are being positioned and are linked to networks for data transfer. Also, unmanned and remote-

controlled platforms are conducting semi or fully autonomous operations which augment MSR. Significantly, growing digitalization and the ever-expanding use of electronic data has transformed the way MSR is conducted.

There is little doubt that 4IR technologies are critical for MSR and Blue Economy.

India also needs to invest in skilled human resource. Sector-specific talent development is imperative for a number of white (administrative and institutional) and blue (products and services) collar jobs. Similarly, vocational institutions are critical for promoting, training and skilling workers with 4IR tool kits to support MSR and Blue Economy. The role of entrepreneurs, start-ups, medium and small enterprises cannot be underestimated. In this context, a national agenda of '4IR skill development' dovetailed into 'make in India' and 'digital India' would support the development of a MSR and Blue Economy¹.

FICCI and Blue Economy

The FICCI Blue Economy Initiative set up in 2016 is an endeavour to develop Blue Economy economic opportunities in its genuine spirit: through balanced, responsible progress based on principles of sustainability and deeper understanding and appreciation of the imperative and strategic mechanisms to secure ocean pathways and frontiers.

The FICCI Taskforce on Blue Economy (2016-17) analysed several interpretations of the term by diverse stakeholders –multilateral agencies, leading academic and policy experts and governments– to arrive at a definition of Blue Economy as : *'the Blue Economy encompasses a wide range of economic activities pertaining to sustainable development of resources and assets in the oceans, related rivers, water bodies and coastal regions – in a manner that ensures equity, inclusion, innovation and modern technology'*.

The first Knowledge Report by the FICCI Taskforce released in 2017 titled '**Blue Economy – Vision 2025**', reiterated the need for a balanced approach, combining imperatives for growth and sustainability the value of Public-Private Partnership and the deployment of technology for optimal development of Blue Economic opportunities for India Inc. and its international partners. For this study, India's coastal states were consulted along with key line ministries, industry, academia and leaders of multilateral agencies.

The second Knowledge Report- '**FICCI-KAS Report on Blue Economy – Global Best Practices: Takeaways for India and Partner Nations**', produced over 2018-20 under the FICCI KAS institutional partnership was prepared by a Core Group drawn from the FICCI Taskforce. It carried forward the recommendations of the first study to connect directly with coastal India,

¹ <https://indianarrative.com/opinion/india-taps-industry-4-0-revolution-to-boost-blue-economy-60198.html>

advocate for a balanced development paradigm focusing on Blue Economy for these littoral states and identify best practices from India and abroad for shared learning.

Webinar Series: Schedule

Holistic Maritime Security in The Indian Ocean Region: Pursuing A Sustainable and Secure Blue Economy (NMF)	21 st September, 2020
Ensuring sustainability of oceans for a healthy economy- securing livelihoods and enhancing security (TERI)	28 th October, 2020
Established Sectors: Growth Opportunities and Financing Blue Economy in Post Pandemic world (FICCI)	10 th November, 2020
Indo-Pacific and Blue Economy (NMF)	18 th December 2020
Blue Economy: Emerging Sectors and New Technologies (FICCI)	28 th January 2021
Advancing Science and technological innovation to accelerate Blue Economy in India (TERI)	17 th February 2021

Webinar V: Emerging Sectors and New Technologies, January 28, 2021; 1100- 1600 hrs

Session 1: Blue Economy and Industry 4.0 Technologies

The maritime domain has witnessed a near continuous technological transformation since ancient times. After a long period of several centuries of using oars and sail, during the First Industrial Revolution, steam engine emerged as the primary means of propulsion. In the 20th Century, under the Second Industrial Revolution, there were seminal industrial-technological advancements resulting in the internal combustion engine fitted onboard and radio came to be used for communication. These developments transformed operations at sea and were the precursor to harnessing sea-based resources using advanced technologies.

The Third Industrial Revolution or the Digital Revolution led to the use of electronic devices and sensors onboard ships. **The maritime industry is now transitioning to the Fourth Industrial Revolution which is also called a period of Industry 4.0. It is tethered to the Third Industrial Revolution technologies but is exponential in nature and marked by rapid disruptions.**

Likewise, the seas and oceans too have experienced resource revolution and these large bodies of water are now providers of a variety of goods and services, also referred to as the

Blue Economy. Its value is worth trillions of dollars and is source of livelihood for millions of people.

However, human knowledge about this ‘reservoir of resource wealth’ is still very limited given that the seas and oceans are still to be fully explored. The Industry 4.0 technologies such as Artificial Intelligence (AI), Machine Learning (ML), Bigdata, Blockchain technology, Internet of Things (IoT), Robots, Drones, digital twinning and Additive Manufacturing (AM) or 3D printing can help fill this gap by scientifically building systems and devices to collect knowledge of the material and mineral capital and the eco-system services provided by the seas. This session discusses the role of 4IR technologies in the development of Blue Economy as the core of the future of Blue Economy.

It is also important to acknowledge that while economic development and industrial-technological advancement are crucial for the development of the ocean-based industries, one cannot deny the varying degrees of impacts of economic development on the ecological environment.

Accordingly, session 1 would encompass the following discussion points:

- The maritime industry is now transitioning to the Fourth Industrial Revolution which is also called a period of Industry 4.0. What role will the 4IR technologies play in the development of Blue Economy and how can the Industry 4.0 technologies such as Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IoT), help to explore better the ocean-based and water-based resources?
- Technology transfer is an important aspect of effective monitoring and capacity building. How can technology transfer for monitoring open ocean ecosystems be available for effective development and management of ABMTs?
- The Third Industrial Revolution or the Digital Revolution led to the use of electronic devices and sensors onboard ships. But with issues of cyber security issues, how can ships protect themselves from security breach?
- What are the tools and techniques which can be used to assess and store the volume of data generated globally for monitoring ocean-based activities including ecological monitoring, oceanographic monitoring? Can AI be used to ensure protection of biodiversity and key marine species?
- Technology is being used for weather satellites and vessel monitoring. What technologies can be used to generate data for promoting ecotourism in the coastal areas?

Session 2: Marine Litter / Plastic Pollution in IORA: Regional and Sub Regional Levels Initiatives

Marine litter and pollution is a global challenge that is ingrained in unsustainable production and consumption patterns, poor solid waste management and lack of infrastructure, lack of adequate legal and policy frameworks and poor enforcement, including on interregional cross-border trade of plastic waste, and a lack of financial resources. The component of marine litter and global marine pollution is one of the important aspects under marine ecological environment which not only affect the health of the oceans but also affect the coastal areas, port terminals, tourism industry, lives and livelihoods of those dependent upon the oceans, ultimately causing an adverse impact upon the sustainability aspect of Blue Economy.

According to the UN, marine litter is any persistent, manufactured or processed solid material discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; or discarded or lost at sea. Marine litter poses environmental, economic, health, aesthetic and cultural threats, including degradation of marine and coastal habitats and ecosystems that incur socioeconomic losses in marine-based sectors.

An estimated 20 percent of all plastic waste in the oceans comes from marine sources. In some regions, marine sources dominate: More than half of plastics in the Great Pacific Garbage Patch (GPGP) comes from fishing nets, ropes and lines. Plastic pollution is having a negative impact on our oceans and wildlife health. High-income countries generate more plastic waste per person.

However, it is the management of plastic waste that determines the risk of plastic entering the ocean. High-income countries have very effective waste management systems; mismanaged waste – and plastic that ends up in the oceans – is therefore very rare. Poor waste management across many middle and low-income countries means that these are the main sources of global ocean plastic pollution. This makes the improvement of waste management systems across the world critical to reducing plastic pollution.

Session 2 would encompass the following discussion points:

- Marine Spatial Planning is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives. How can MSP be used as a tool to ensure environmental protection and sustainable use of the marine environment?
- One of the crucial aspects of seafood and aquaculture sector is capture fisheries however, one of the downsides of it includes bycatch which represents the millions of unwanted fish caught during commercial fishing. Can 3D imaging cameras and net-cleaning robots help to address this issue?

- Microplastics are important component of marine litter. Since 2014, the United Nations has paid great attention to the pollution and control of microplastics and in February 2017, the United Nations Environment Program launched a global campaign calling on governments, industries and consumers to reduce the production and overuse of plastics. How can global cooperative governance be used to control the issue of marine pollution?
- The enterprises play the role of micro-economic organizations for the cooperative governance of microplastics and the main source of marine microplastics. What measures can the developing economies ensure sustainable use of packaging and plastics to control marine litter?
- Can satellite-enabled tracking and autonomous clean-up systems address the issue of marine litter and pollution?