Report on Outcomes of the High-Level Dialogue: Commemorating the 1st International Day for Biosphere Reserves

According to the Ministry of Environment, Forest, and Climate Change (MoEFCC), Biosphere Reserves (BRs) are representative parts of natural and cultural landscapes, extending over large areas of terrestrial or coastal and marine ecosystems and they are representative examples of biogeographic zones/provinces. **UNESCO India, in collaboration with the Maritime Research Centre (MRC), organized a conference to commemorate the** *"1st International Day for Biosphere Reserves"*, **which was attended by some eminent speakers and domain experts.**

Dr. Benno Boer from UNESCO India shared details with attendees about the situation of biosphere reserves in India and other countries, including in South Africa and Ethiopia. He talked about prevailing problems in the environment and potential solutions. He further discussed the means of bringing positive changes to our environment and how we can learn to live in harmony with nature on Earth.

Guest speakers from the UNESCO Addis Ababa office mentioned details related to ecosystems and different Biosphere Reserves in Ethiopia. Other potential solutions that surfaced in the discussion included collaborations within countries and continents, like the South-South Cooperation and the North-South Cooperations.

Dr. (Cdr.) Arnab Das from MRC discussed with the audience the details related to the Underwater Domain Awareness (UDA) Framework, which is uniquely solving a lot of critical issues by considering all the necessary domains of the problem. He explained how public policy, technology interventions and capacity building should go hand in hand to achieve Sustainable Development Goals (SDGs).

A 'Pockets of Hope' booklet released by UNESCO provided key details on BRs in India, Nepal, Bhutan, Maldives, and Srilanka. There was a mention of Marine Biodiversity and Marine Conservation which brought up concerns about the marine ecosystem as it is declining at a faster pace than we can think of. Ocean literacy, marine pollution management, circular marine/blue economy, blue carbon, and the great green blue wall in the Indian Ocean realm are some peculiar topics that were talked about very efficiently by Dr. Swayamprabha Das.

The webinar ended on a positive note with crucial information shared, gathered, and collaborations made for the future to organize more of insightful discussions.

In his closing remarks, Dr. Arnab Das shared details about MRC and the UDA Digest e-magazine platform and various articles and research papers that MRC has published in past years. He shared details related to blue bonds and other aspects of the UDA Framework. thanked all the speakers and attendees for their keynote addresses and illustrious presentations.

Dr. Benno in his closing remarks thanked all the speakers and Dr. Arnab for his words. He then shared a webpage on one of UNESCO's websites "Quest 4 Action". He also talked about the marine environment, commenting on the quantity of plastic in our oceans. Dr. Benno suggested on North-South cooperation along with South-South cooperation. He also mentioned about the funds that are being lost because of issues like the COVID-19 pandemic and the ongoing dispute between Russia and Ukraine, which he said, could have been avoided.

Besides, Ms. Nishtha Vishwakarma, who works in the Communication and Advocacy team at MRC delivered the Vote of Thanks to all those who had joined and participated in the conference. She concisely mentioned key extracts from all the esteemed guest speakers' speeches and the discussions that were held. She highlighted the main issues being raised at the conference that day.

About MRC
Maritime Research Centre (MRC) is a technology-driven think tank that is dedicated to the promotion of the Underwater Domain Awareness (UDA) framework. MRC has emerged as a platform of national and regional significance, fostering dialogue and cooperation amongst stakeholders from Maritime Security, Blue Economy, Marine Environment, Disaster Management, and Research & Innovation. MRC has created a comprehensive framework for UDA which has been wholeheartedly embraced by key stakeholders for driving discourse and affirmative action. NITI Ayog has considered the UDA framework prepared by us for National Policy formulation.

Contact details and other related links

To make you more aware of what we do and how our work has been in the past, we would request you visit the following links.

- Our website- Link here

- Our research publications (which we call Knowledge Centre)- Link here

- Our events and webinars- Link here

- Our Newsletters for two of the quarters of 2022- Link here and here.

- UDA Digest e-Magazine- Link here

About UNESCO India- Section on Natural Sciences:
The Natural Sciences sector contributes to UNESCO's mission to promote science for peace, sustainable development, human security, and well-being. UNESCO acts as a platform for generating and sharing ideas and promotes dialogue between scientists and policy-makers. It catalyses innovative initiatives in the field of international cooperation in science.

Contact details: https://en.unesco.org/fieldoffice/newdelhi

About UDA Framework

The UDA framework proposed by the MRC has significant merit in ensuring effective maritime governance in the IOR and beyond. The deliberations through the webinar recognized the relevance of the UDA framework and proposed setting up of a Centre of Excellence on the UDA Framework. The specific way forward collectively envisioned by the distinguished speakers and the participants are as follows:

(a) The importance of the oceans in ensuring sustainable growth across the stakeholders needs to be recognized and prioritized. Environmental Impact Assessment (EIA) must be undertaken more comprehensively.

(b) Role of think tanks with deeper understanding of science & technology aspects in policy formulation was acknowledged. Closer interaction between the government and entities like MRC was encouraged. Sensitising our law makers both at the national, regional, and global levels needs to be taken up on priority.

(c) Setting up of a ***Centre of Excellence*** (COE) for progressing the UDA framework for effective maritime governance was unanimously endorsed. More details on the COE is attached at enclosure-2.

(d) The panellists also approved a three-tier strategy of ***outreach, engage and sustain***. The details are mentioned below:

Outreach: The stakeholders across the stakeholders within and the nations in the region need to be made aware of the specific takeaways of the UDA framework through workshops & seminars, academic & corporate exchanges, short courses and bilateral & multilateral interactions. This kind of activities will facilitate heightened diplomatic outreach for India in the region.

Engage: Post the outreach, we need to engage with these stakeholders and the nations for more involved capacity and capability building across multiple stakeholders. This will include UDA fellowships, academic degree programs in our institutes for their students & young professionals and joint projects under bilateral & multilateral MoUs. This will give us deeper penetration into their governance mechanisms.

Sustain: The deeper penetration needs to be sustained with regional regulatory framework, establishment of a Centre of Excellence and inclusion of the UDA framework as an agenda point in the regional and global forums like IORA, BIMSTEC, IONS, Indian Ocean Commission, G-20, G07 and more.

The three-tier strategy will require massive capacity and capability building at the national level first. This can be achieved with a dedicated acoustic capacity & capability building program, backed by the global community. A User-Academia-Industry partnership with participation of all the stakeholders is required on priority.

There is significant merit in taking forward the above way ahead and the Maritime Research Centre (MRC) and the UNESCO, in partnership with M/S NirDhwani Technology Pvt Ltd (NDT) is well equipped to play a leading role in progressing the UDA framework for effective maritime governance in the IOR and beyond for true realization of the SAGAR vision. MRC will be keen to engage with the key authorities and institutions to take forward the policy advocacy, development of technology & innovation and comprehensive capacity & capability building. The MRC website (https://mrc.foundationforuda.in) has more details on the projects being undertaken by them along with the engagements undertaken in the last four years since its inception.

<u>Underwater Domain Awareness (UDA) Framework</u>

The concept of Underwater Domain Awareness (UDA) in a more specific sense will translate to our eagerness to know what is happening in the underwater realm of our maritime areas and the freshwater systems. This keenness for underwater awareness from the security perspective, means defending our Sea Lines of Communication (SLOC), coastal waters and varied maritime assets against the proliferation of submarines and mine capabilities intended to limit the access to the seas and littoral waters. The freshwater systems are not defended by the Navy & the Coast Guard, but these waters are equally vulnerable and more complex to manage. However, just the military requirement may not be the only motivation to generate underwater domain awareness. The earth's underwater geophysical activities have a lot of relevance to the wellbeing of the human kind and monitoring of such activities could provide vital clues to minimize the impact of devastating natural calamities. The commercial activities in the underwater realm need precise inputs on the availability of resources to be able to explore and exploit them for economic gains effectively and efficiently. The regulators on the other hand need to know the pattern of exploitation to manage a sustainable plan. With so much of activities, commercial and military, there is significant impact on the environment. Any conservation initiative needs to precisely estimate the habitat degradation and species vulnerability caused by these activities and assess the ecosystem status. The scientific and the research community need to engage and continuously update our knowledge and access of the multiple aspects of the underwater domain. Fig. 1, presents a comprehensive perspective of the UDA. The underlying requirement for all the stakeholders is to know the developments in the undersea domain, make sense out of these developments and then respond effectively and efficiently to them before they take shape of an event.
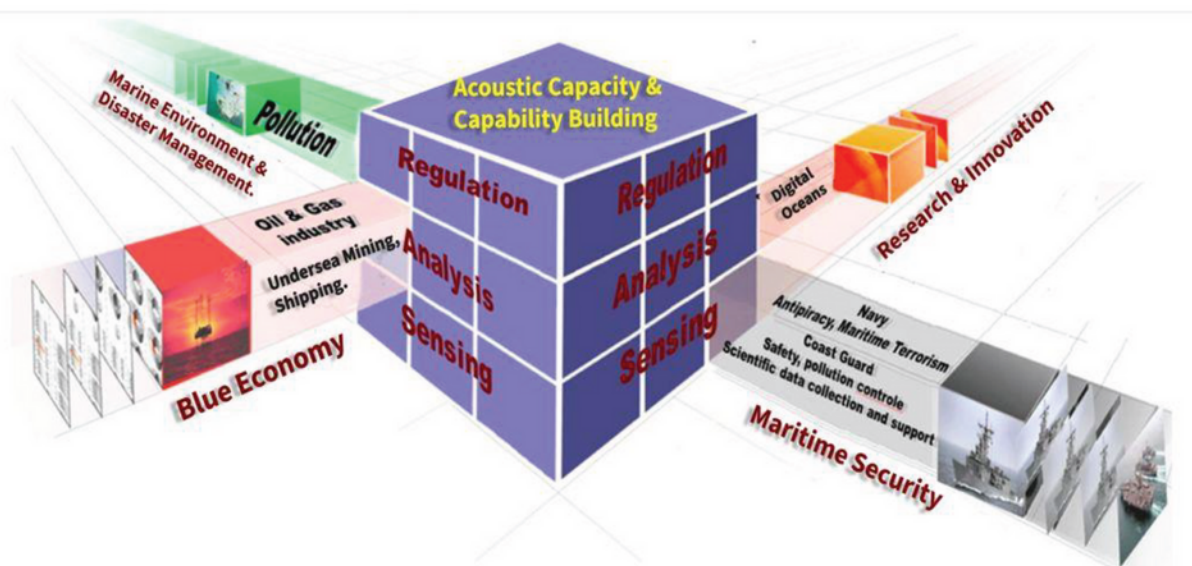

Fig. 1 Comprehensive Perspective of Underwater Domain Awareness

The UDA on a comprehensive scale, needs to be understood in its horizontal and vertical construct. The horizontal construct would be the resource availability in terms of technology, infrastructure, capability, and capacity specific to the stakeholders or otherwise. The stakeholders represented by the four faces of the cube will have their specific requirements, however the core will remain the acoustic capacity and capability. The vertical construct is the hierarchy of establishing a comprehensive UDA. The first level or the ground level would be the sensing of the undersea domain for threats, resources and activities. The second level would be making sense of the data generated to plan security strategies, conservation plans and resource utilization plans. The next level would be to formulate and monitor regulatory framework at the local, national and global level.

The figure above gives a comprehensive way forward for the stakeholders to engage and interact. The individual cubes represent specific aspects that need to be addressed. The User-Academia-Industry partnership can be seamlessly formulated based on the user requirement, academic inputs and the industry interface represented by the specific cube. It will enable more focused approach and well defined interactive framework. Given the appropriate impetus, the UDA framework can address multiple challenges being faced by the nation today. Meaningful engagement of Young India for Nation Building, probably is the most critical aspect that deserves attention. Multi-disciplinary and multi-functional entities can interact and contribute to seamlessly synergize their efforts towards a larger goal.

The UDA Framework as proposed above has been formulated jointly by the Maritime Research Centre (MRC), Pune and M/S NirDhwani Technology Pvt Ltd (NDT). The focus is on all the three aspects namely Policy, Technology & Innovation and Human Resource Development. More details are available in the MRC website https://mrc.foundationforuda.in.

Centre of Excellence on
Underwater Domain Awareness (UDA) Framework

This proposal includes the establishment of a *"Centre of Excellence"* comprising 5 sub-centres (or verticals), under the MRC, which would be characterised by a strong coherence but with independent activities. All the five centres will draw inputs from each other but have their unique and well defines Key Result Areas (KRAs) and Key Performance Areas (KPAs). The five sub-centres under the Centre of Excellence are listed below:

(a) The first will be *strategy centre* that will keep track of the R&D and industry requirements to build effective policy frameworks. There will be data driven policy formulation to address the stakeholder requirements. The KRA for the strategy centre will be to identify gaps in the domestic and regional policies and formulate effective way forward to build effective maritime governance. The KPAs will reflect in seamless interactions among the policy makers and the local communities and the key indicator of our success will be policy intervention for enhanced economic growth for the local industry and long term sustainable maritime activities.

(b) The second will be a multi-disciplinary *research centre* that will provide cutting edge inputs with site specific field experimental R&D to address the core acoustic capacity and capability building requirements. The IOR with its unique tropical littoral waters needs sustained indigenous R&D efforts to overcome the challenges and capitalize on the opportunities. These efforts should be able to provide nuanced inputs for the strategy centre for effective policy formulation with data driven real time ground understanding. This should minimise the dependence on the technology imports and enhance our strategic capabilities. Home grown science & technology dominance will minimize strategic risks for security and other critical projects. The activities of this sub-centre would be of relevance to our maritime outlook in its widest scope.

(c) The third will be an *incubation centre* that will map the research outcomes of the research centre to application specific requirements of the stakeholders. Start-ups and industries can draw ideas from here and build business plans. India's self-reliance on critical strategic issues will be critically depend on this initiative. The start-ups are always known for their agility to build high-tech solutions and the UDA framework has unimaginable possibilities. The effective eco-system provided by this incubation centre will nurture the talent pool we have in the country and provide innovative directions to channelize their efforts towards nation building.

(d) The fourth will be a *skilling centre* that will ensure the professionals and practitioners from the stakeholders, including partner countries to understand the nuances of the UDA framework and apply them effectively in their operations and strategic planning. This will not only make our practitioners more scientific and effective in their routine operations but also promote building the national infrastructure and bring seamless collaboration across the stakeholders. This facility will add to our diplomatic leverage in the pursuit of our larger maritime objectives.

(e) The fifth will be the *academic centre* that will build academic programs along with project-based learning to prepare the next generation of students and professions to attain higher

professional qualifications to appropriately take forward the UDA framework. The professional enhancement will be a very critical aspect to bring regional cooperation. The young generation and the experienced professionals sitting together and working on regional issues need no elaboration for its impact on regional cooperation. These centres will be the hotbed of innovations and ideas for effective progress and seamless interactions at all levels of decision making.