



TOUR REPORT

Dr(Cdr) Arnab Das
Founder & Director
Maritime Research Centre

Europe Trip-
Zagreb, Paris, and Brussels

02 to 13 Dec 2022

Europe Trip Report – Zagreb, Paris, and Brussels **02 to 13 Dec 2022**

Background

The Maritime Research Center (MRC), Pune has received reasonable recognition for its efforts in progressing the Underwater Domain Awareness (UDA) Framework. The national and regional recognition now needs to transform to the global scenario and thus a trip was planned to Europe to reach out to the UNESCO and the European Union (EU). The UDA framework presents unique opportunities for managing security and growth in the tropical waters of the Indo-Pacific region and beyond. It addresses the marine as well as freshwater challenges and opportunities.

MRC efforts have been recognized by the Government of India and a paper on Underwater Radiated Noise (URN) due to shipping in the tropical waters was forwarded to the International Maritime Organization (IMO) for the Marine Environment Protection Committee (MEPC-76) in 2021. The innovative URN monitoring tool developed by MRC was recognized earlier in 2019 by the French city of Brest, under their Narwhal Challenge. Based on the MRC paper, now IMO has nominated India as the lead nation for underwater noise in the Indian Ocean. MRC will now be leading this prestigious project on behalf of the Government of India.

A national acoustic capacity & capability building policy framework was proposed by the MRC to NITI Aayog in 2020, given its relevance to the ongoing geopolitical and geo-strategic developments. The Security And Growth for All in the Region (SAGAR) vision of the Honourable Prime Minister and the corresponding mega projects to complement the same require UDA at an unprecedented level. The Sagarmala, Bharatmala, Inland Water transport (IWT), Gati Shakti, Deep Ocean Mission and many more require the UDA framework on an urgent basis. The NITI Aayog accepted the MRC proposal and directed for a detailed report to articulate the multiple dimensions of the UDA framework and the gaps. MRC submitted the interim report in the designated time and now NITI Aayog has circulated the same for comments from the designated ministries.

The UNESCO India recognized the acoustic capacity & capability building abilities at MRC to support the tropical region across the Indo-Pacific. An event was hosted at the UNESCO cluster office in New Delhi on 19 Aug 2022 to discuss the UDA framework and its relevance across varied dimensions for sustainable blue economy and enhancing livelihood for coastal and riverine communities. The event was attended by strategic experts and policy makers from diverse domains. There was another event at the same venue to celebrate the first International Day of Biosphere Reserves on 03 Nov 2022, with an underlining relevance to the UDA framework in supporting acoustic capacity & capability building across Africa and South Asia. MRCs collaboration for innovation and capacity & capability building was firmly recognized by UNESCO India through a letter from their then Director Mr. Eric Falt and he proposed setting up of a Category II, Center of Excellence on the UDA Framework.

In mid-2021, the French think tank, The Bridge Tank started an initiative in collaboration with the French Development Agency (AFD) Bank of France to build local partnerships for the Bay of Bengal region on progressing sustainable blue economy. The local partnership was sought in three countries, namely India, Bangladesh, and Sri Lanka. The diverse set of entities, working on varied domains related to blue economy and from government, public and private were brought on board and a set of three interactive webinars were hosted. Based on this rigorous six-month exercise, MRC was identified as the nodal agency to coordinate this initiative. MRC and The Bridge Tank continued their interaction and decided to collaborate on multiple other aspects of the UDA framework and not limited to the geography as well.

MRC in the meantime consolidated its collaboration with partners across the country and the region, including Sri Lanka, Bangladesh, Mauritius and more. The regular webinars and seminars also brought together experts and stakeholders from across the world to discuss the UDA framework across multiple applications. The UDA Summer School and the High-Level Internships & Fellowship program picked up significant intensity. Multi-disciplinary students and young professionals from varied premier institutes continued to associate with MRC and work on variety of projects related to the UDA framework. Recognition for innovation and research also continued to grow. Four PhD scholars have completed their Doctoral work at MRC so far and many more have associated to identify research topics.

Europe Trip Plan

The UNESCO's proposal for setting up a Center of Excellence was an important trigger to plan the trip to Paris. Coincidentally, Dr. Benno Boer, who is the Chief of Natural Sciences UNESCO Cluster Office India and our main contact person at UNESCO was also visiting Paris Headquarters at the same time. The Bridge Tank also extended an invite to be part of a High-Level Water Diplomacy Panel on 06 Dec 2022 at Paris. The office of the President Indian Council for Cultural Relations (ICCR), kindly came forward to coordinate MRC interaction with India's Permanent Delegation to UNESCO at Paris.

The Center for Economic Diplomacy at Zagreb, Croatia extended an invite to visit their center at the University of Zagreb and discuss possible collaborations. University of Zagreb is over 350 years old and has a rich body of work. The EU headquarter at Brussels was a natural stop to explore possibility to collaborate in their ongoing foray into the Indo-Pacific.

The Honourable Ambassador of Belgium to India, H.E. Mr. Didier VANDERHASSELT, along with Council General Mr Frank Geerkens and Mr. Wouter VANHEES, Trade and Investment Commissioner had visited Pune on 11 Nov 2022. During interactions they were informed that MRC Founder will be visiting Brussels in early Dec. Their office was extremely kind to respond in quick time and coordinate multiple meetings with senior stakeholders across multiple organizations in the Flanders region.

MRC also contacted the Indian Embassy in every country to be visited to request for a meeting with the Honourable Ambassadors, also requesting them for facilitating important meetings with relevant stakeholders. Positive response was received from each of the Indian Embassies and very senior officials contacted the MRC team for details on the visit and the purpose of visit. The embassy then followed up with multiple entities and the Ambassador himself interacted with Founder & Director, MRC to discuss the potential of the UDA framework for bilateral and multi-lateral partnerships.

The Visit

The visit commenced on 30 Nov from Mumbai, starting from Croatia and ending with Brussels at Belgium

Zagreb (02 & 03 Dec 2022)

The first visit was to the University of Zagreb and the Center for Economic Diplomacy. Dr. Danijel Mlinaric, Director Center for Economic Diplomacy and Assistant Professor at the University of Zagreb was the host. He took us for a walk around the University of Zagreb and explained the multiple programs being conducted by the faculty. The potential for research collaboration and conduct of joint academic modules was also discussed. The UDA framework was of value for the students and faculties at the university. Joint workshops, internships & fellowships on projects & research and academic modules are attractive possibilities for collaboration.



(Dr (Cdr) Arnab Das with Dr. Danijel Mlinaric, Director Center for Economic Diplomacy and Assistant Professor at the University of Zagreb in Croatia

Center for Economic Diplomacy suffered some damage during the recent earthquakes in Croatia and they had to shift their activities to the University campus for the time being. There are multiple possibilities of submitting joint proposals with MRC to the EU. The Marine Spatial Planning (MSP) has become one of the fundamental tools for governance across marine as well as freshwater systems. The MRC expertise in the digital transformation in the underwater domain and more specific to the tropical waters, could be of value for the Indo-Pacific focus of the EU. Croatia with its maritime capabilities could be a valuable partner. The students and faculty from the universities could find multiple new ideas to work on, under the UDA framework. Economic diplomacy will be the key for bilateral and multi-lateral relations across the Indo-Pacific region.



Dr (Cdr) Arnab Das met with the Honourable Ambassador India to Croatia, His Excellency Shri Raj Kumar Srivastava in Croatia

The Honourable Ambassador India to Croatia, His Excellency Shri Raj Kumar Srivastava, had a long interaction with Dr (Cdr) Arnab Das and tried to understand the UDA framework and appreciate its relevance for the bilateral and multilateral partnership with Croatia and EU. He took cognition of the fact that the UDA framework is timely and is relevant to the ongoing geopolitical and geostrategic developments. He also stated that if managed well, it can be a significant diplomatic tool to further our relations with the EU countries under the SAGAR vision. The Excellency made the following specific points:

(a) Croatia is formally entering the EU with-effect-from 01 Jan 2023, thus there is significant opportunities for building joint proposals with partner agencies in Croatia to address multiple issues related to the UDA framework in the Indo-Pacific region. The EU is likely to allocate resources to the new members and India could help build solid partnerships with the EU through these collaborations.

(b) Croatia is a known maritime nation with specific capabilities built over several centuries. India with its demographic advantage and digital transformation capabilities could partner, and take these aspects to the next level.

(c) MRC could work with all the three well known universities, namely Dubrovnik, Split and Zagreb. The partnerships could take the entire UDA framework to a different level with academic and research collaboration, along with innovation, skilling, and policy support.

(d) The ambassador found value in a privately-owned not-for-profit entity like MRC coming forward to build international partnerships. The agility and efficiency of small private entities could be a good model for promoting innovation and research-based partnerships.

Dr (Cdr) Arnab Das, assured His Excellency that MRC will respond very promptly to any possible collaboration. The following way forward could be planned as the next step:

Outreach: Online joint webinars could be planned with the known entities in Croatia, under the leadership of the Honourable Embassy of India at Zagreb. MRC will coordinate the entire outreach and hosting for conducting such online meetings.

Engage: Based on the outreach, specific areas of collaboration will be identified by the respective partners for further action. Exchange of interns, online internships, offline workshops, academic & research collaborations, consultancies, joint projects, and many more could be planned.

Sustain: Once more clarity on the possible collaboration is established, project proposals and funding mechanism will be formalized to sustain the partnership. Involvement of the two governments or multilateral forums directly or indirectly will also be considered based on the specific proposals.

Paris (05 to 09 Dec 2022)

The visit to Paris had multiple dimensions and meant strengthening MRC outreach with the global entities.

UNESCO The first meeting was scheduled with Dr. Ramasamy Jayakumar, Chief of Natural Sciences to discuss multiple possibilities to further the MRC interaction with UNESCO India cluster and beyond. Dr. Benno Boer Chief of Natural Sciences India cluster was also present for the meeting, and his presence really made the interaction far more meaningful. Dr. Benno pushed for a stronger relation with MRC and Dr. Jayakumar endorsed the proposal based on the activities conducted jointly in the past six months. He assured all support from the UNESCO Paris office and encouraged the partnership to expand its activities to Africa and other regions. The meeting was planned with four basic agendas:

(a) Setting up of a Category II, UNESCO Center of Excellence for supporting Marine Biosphere reserves and sustainable blue economic growth.

(b) Taking forward the South-South Cooperation between Africa and South Asia for capacity & capability building. The Addis Ababa office in Ethiopia is already on board.

(c) Seven Sisters cooperation in the North East India. The seven states in the North East India need to be brought together to drive a focussed approach with other UN agencies and donors.

(d) Book project on the Brahmaputra to address multi-dimensional aspects.



Dr (Cdr) Arnab Das with Dr Benno Boer (L) and Dr Ramasamy Jayakumar (R) from UNESCO in Paris

Dr. Jayakumar took a detailed briefing on all the four agendas and approved in principle. He asked UNESCO India to submit the formal proposal as per the prescribed format and procedures.

Dr (Cdr) Arnab Das, further met Dr. Vladimir Ryabinin, Executive Secretary Inter-Governmental Oceanographic Commission (IOC). The meeting was facilitated by Dr. Jayakumar and MRC work on the Marine Spatial Planning (MSP) and the relevance of the entire UDA framework for sustainable blue economy was well appreciated by both. Dr. Vladimir recognized the importance of the UDA framework and the digital transformation, towards effective good maritime governance. He reiterated his commitment to involving his colleagues and relevant stakeholders, post the holiday season and hectic end of year travel schedules for all at the UNESCO and others. Dr. Vladimir, took cognition of MRC recognition by the IMO on the MSP innovation undertaken by them. He was happy to see the progress made by MRC on multiple fronts across verticals of innovation, research, skilling and policy. Ocean governance would need significant capacity & capability building across the entire tropical region. Specialized domain expertise in the tropical conditions will be a welcome thing for collaboration.



Dr (Cdr) Arnab Das met Dr. Vladimir Ryabinin, Executive Secretary Inter-Governmental Oceanographic Commission (IOC) in Paris

Dr (Cdr) Arnab Das and Dr. Benno Boer met again to debrief on the interactions at the UNESCO Headquarters. They both had met His Excellency Shri. Vishal Sharma, Permanent Delegation of India to UNESCO at Paris separately and they could sense positive support for collaboration of MRC with UNESCO on the multiple dimensions of the UDA framework. Shri Vishal Sharma, assured all support and encouragement for any formal proposal in this regard.



Dr (Cdr) Arnab Das with Dr Benno Boer from UNESCO India (Middle) during a friendly interaction in Paris

Permanent Delegation of India to UNESCO

The UNESCO collaboration is an important component of MRCs outreach with global forums to progress the UDA framework. Given the sensitivity of the issue globally and its importance in India's global outreach on sustainable blue economy, Dr (Cdr) Arnab Das reached out to Ambassador and Permanent Representative of India to UNESCO, His Excellency Shri Vishal Sharma, much before the visit to Paris. Shri Vishal Sharma was in Delhi in Nov 2022 and he gave reasonable time to understand and appreciate the UDA framework. He also gave a broad perspective on the UNESCO functioning and the geopolitical dynamics. The inputs were extremely valuable to pitch the UDA framework appropriately during the interactions at Paris.



Dr (Cdr) Arnab Das met Ambassador and Permanent Representative of India to UNESCO, His Excellency Shri Vishal Sharma in New Delhi in November 2022

he President, Indian Council for Cultural Relations (ICCR), Shri Vinay Sahasrabuddhe was instrumental in officially briefing His Excellency Shri Vishal Sharma on MRC activities and their progress in pursuing the UDA framework. Shri Vinay Sahasrabuddhe as part of his outreach initiative of identifying unique entities trying to contribute to nation building requirements, had visited MRC at Pune and reviewed their activities in 2020. He encouraged MRC to also focus on the maritime cultural connect under the project Mausam, of the Government of India. Skilling and knowledge sharing in the Indo-Pacific region. People to people contact led by a private entity with high commitment and deep domain expertise, has been encouraged by the President ICCR office on a continued basis.

His Excellency Shri Vishal Sharma met Dr. Arnab Das at his office in Paris on two occasions and reviewed the interactions with the UNESCO officials at the Headquarters. He himself interacted with all of them and took detailed feedback. Based on the inputs, he gave the following specific recommendations:

(a) MRC and UNESCO India office should have a detailed interaction with the National Commission for UNESCO Coordination, at the Ministry of Education and brief them on the merits of the proposal. He encouraged them to mention that the Permanent Delegation at Paris has been briefed and they have found value in further consideration.

(b) Involving the Ministry of Earth Sciences and Ministry of Science & Technology will be a good idea to get the line ministries on board for an international collaboration of this scale and ramification. The ministries are drawing up their own plans and this component could further enhance their design given the relevance of the UDA framework to the Government of India's vision on the SAGAR.

(c) The G20 Presidency, could be an important juncture to include a futuristic aspect of digital transformation in the Oceans and the freshwater systems, into the geostrategic agenda. India is well placed to provide a leadership role to such high tech and futuristic aspects.

(d) Planning a global seminar in India and inviting all the experts and strategist to deliberate on the UDA framework and its nuances could be a good way forward. Multiple ministries could be involved, but the focus should be to showcase India's capacity & capability building prowess to support the entire world. He gave the example of the UNESCO India – Africa Hackathon that was recently concluded in Nov 2022 at New Delhi.

(e) The UDA framework could be included in the Mausam project of the Ministry of Culture to promote Underwater Archaeology and Science & Technology Innovation into the ongoing initiative.



Dr (Cdr) Arnab Das met Ambassador and Permanent Representative of India to UNESCO, His Excellency Shri Vishal Sharma in Paris, France

His Excellency, Shri Vishal Sharma also showed interest in multiple interactions with other agencies within the mandate of UNESCO. He appreciated the commitment and passion demonstrated by the small MRC team and resounding recognition received in a short time. He encouraged MRC to share all the activity details and achievements with his office and he will share the relevant inputs with other member country representatives in UNESCO and within UNESCO's mandate. Receiving India's ancient Sanskrit philosophic text - the Bhagavad Gita from HE Shri Vishal Sharma Ji, was certainly very precious. He explained that the philosophy of the Bhagavad Gita promotes the philosophy of Nishkaam Karma (Selfless Service) - that to do one's duty/Kartavya without expectation of anything in return, to do one's duty/Kartavya only because it ought to be done. He mentioned that his Délégation distributed this ancient philosophic text of India to more than 100 Ambassadors in UNESCO in their own language!



Dr (Cdr) Arnab Das received Bhagavad Gita from Ambassador and Permanent Representative of India to UNESCO, His Excellency Shri Vishal Sharma in Paris

High Level Panel on Hydro Diplomacy The Bridge Tank hosted a full day conference titled World Water for Peace Conference on 06 Dec 2022 at the grand venue of France-Ameriques at the 9Av. Franklin Delano Roosevelt, Paris. The event brought together experts from across the world to discuss the all-important issue of "Rethinking Hydro-diplomacy: International Rivers as Instruments of Peace, Shared Experiences, solutions and sustainable resources management". The post pandemic offline event was extremely refreshing to have a one-to-one interaction with some of the key domain experts and known strategists with vast experience at high levels. Dr. Joel Ruet, Chairman, and his team at The Bridge Tank, had really put up an excellent event together. Multiple panellists joined online as well. The offline panel members as follows:

- (a) Mrs. Irina Bokova, Co-Chair of the International Science Council's Global Commission on Science Mission for Sustainability and Former Director General UNESCO.
- (b) Mr. Eric Orsenna, Chairman, Initiative for the Future of Great Rivers.
- (c) Amb S Gompertz, Former Ambassador for the COP21 French Presidency.

(d) Mr. Hamed Semega, Former Minister in Mali and Former High Commissioner, Senegal River Basin Organization (OMVS).

(e) Mr. Lalonde Brice, Former UN Under Secretary, Former French Minister of Environment.

(f) Ms. Vercambre Marie Laure, General Director French Water Partnership.

(g) Mr. Mats Karlsson, Former World Bank Vice President and Former State Secretary for Development, Ministry of Foreign Affairs, Sweden.

(h) Mr. Eric Kuindersma, Senior Policy Advisor Water Governance, Waterschap Rivierenland, The Netherlands.

(i) Mr. Goujon Lionel, Head of Division on Water and Sanitation Division, French Development Agency (AFD).

(j) Dr. Brehaut Christian, Scientific Director, Geneva Water Hub (GWH), Global Observatory for Water and Peace (GOWP).

(k) Dr. Schmeier Susanne, Associate Professor, Water Law and Diplomacy, Institute for Water Education (IHE), Delft.

(m) Mr. Eric Tardieu, Director General International Office for Water (OIEau).

Multiple experts joined online from multiple locations and institutes to make it a very rich interaction with cross cutting ideas and inputs to make this world a better place. The concept notes and other details of the conference are attached.

MRC participated actively in the session-3 of the conference dedicated to Innovative Tools for a Revisited Hydro-Diplomacy. The UDA framework found significant relevance across all the multiple dimensions of the Hydro-diplomacy for international rivers through good governance to minimise conflict and stress. Local communities need to be supported with the digital transformation and their traditional practices scaled up using modern science & technology tools. Tropical conditions need special attention to map the site-specific conditions to modern knowhow. Developing world, right from Africa to South Asia, require far more innovative tools to enhance water governance and diplomacy. Transparency in freshwater management with the UDA framework could ensure effective collaboration and minimize misgivings among communities and neighbours.

The conference was a good platform for MRC to connect with the larger community of experts, policy makers and water managers across the world and apprise them on the unique UDA framework. The tropical waters are of interest for majority of the experts, given the unique challenges and opportunities. Collaborations and cooperation's across the multiple players and stakeholders are the only way forward and the participants acknowledged that the UDA framework could be an effective driver for such partnerships to ensure safe, secure, sustainable growth model.



Dr (Cdr) Arnab Das participated in the “World Water for Peace Conference” on 06 Dec 2022 in Paris



The event brought together experts from across the world



The High-Level Dialogue on Hydro-Diplomacy was hosted by The Bridge Tank in Paris

Indian Ambassador to France

The Honourable Indian Ambassador to France, His Excellency Mr. Jawed Ashraf, was extremely kind to interact with Dr (Cdr) Arnab Das and discuss the UDA framework at multiple levels. HE Mr. Jawed Ashraf, has been instrumental in drafting the SAGAR vision of the Honourable Prime Minister, while he was part of the Prime Minister's Office (PMO). This unique distinction, made it even more compelling for MRC to present the UDA framework to him and seek his guidance to build bridges across the globe for the effective realization of the SAGAR vision. HE Mr. Jawed Ashraf made the following specific points:

- (a) The UDA framework could be a critical component of the India-France Strategic Maritime Partnership. Lot of intense interactions have been ongoing in the recent past and India and France have been seriously looking at strategic partnerships for security and other aspects.
- (b) Partnership on acoustic capacity & capability building could be a good way forward, where a private agency like MRC could contribute. Specific areas of strength on either side need to be identified for a nuanced partnership.
- (c) Digital transformation will be the key for the future and India could play a pivotal role in building the Digital Ocean construct, backed by a sound UDA framework. The French expertise in specialized areas could be dovetailed into this larger Digital Ocean construct.
- (d) The Indo-Pacific strategic space is a critical aspect and the Indo-French partnership backed by the UDA framework could be a significant game changer in the global power play.
- (e) The SAGAR vision of the Honourable Prime Minister could be better served with an effective UDA framework on the ground.



Dr (Cdr) Arnab Das met the Honourable Indian Ambassador to France, His Excellency Mr. Jawed Ashraf in Paris

Brussels (12 & 13 Dec 2022)

The visit to Brussels had significance in terms of reaching out to the EU and the specific Ocean innovation hubs in Flanders.

Oostende

The visit somehow coincided with one of the coldest weeks in the region, however the people were the warmest ever one can expect. As one of my hosts described, it was an icy and sunny day. The visit to Oostende was planned and coordinated by the Office of the Flanders Investment and Trade in Mumbai. Their contact person, Ms. Rucha was outstanding in managing multiple interactions, in-spite of the very short window of time and being in the middle of holiday season.

The meeting at the newly built InnovOcean Campus, was well planned, where all presented their work and vision to each other. The meeting was attended by Mr. Pieter Embo from Oostende Science Park, Mr. Erwin Leys representing the Blue Cluster and the GeoXYZ company in particular, Dr. Ann-Katrien Lescauwat Director International Relations at the Flanders Marine Institute VLIZ and Ms. Juana Jimenez, International Liaison Officer at the VLIZ.



Dr (Cdr) Arnab Das's important interaction in Oostende in Brussels

Ms. Juana and Mr. Embo were kind enough to accompany us to the VLIZ Marine Station Research Infrastructure, including ICOS and Life Watch Labs and the Marine Robotics Center. The ultra-modern facilities on the water front were very impressive and futuristic. The deeper connect of the innovation labs with the industry and the academia was worth learning from. The University of Ghent and other academic institutions in Belgium have a local presence to collaborate and bring fresh research and innovation ideas into the ecosystem. The industry component is well represented and actively involved in absorbing the new findings into the real world. Companies like GeoXYZ have a massive presence and are actively involved in the incubation of the ocean innovation at multiple levels. Such User-Academia-Industry partnerships can go a long way in building meaningful collaborations across the multiple regions and sectors. The visit was worth the one-hour train journey out of Brussels.



Dr (Cdr) Arnab Das with Mr. Pieter Embo from Oostende Science Park



Dr (Cdr) Arnab Das with Ms. Juana Jimenez, International Liaison Officer at the VLIZ

Secretary General PIANC

Mr. Geert Van Cappellen, who wears two hats namely the Secretary General of PIANC that is the World Association for Waterborne Transport Infrastructure, established in 1885 and the Managing Director of Flanders International Technical Agency (FITA), was kind enough to give significant amount of time to understand the MRC efforts in progressing the UDA framework. PIANC in its close to 140 years of history has contributed significantly to the evolution of the waterborne transport infrastructure knowhow and realization on the ground. He was interested in building collaborations with India and the region. He recognized the uniqueness of the tropical condition and also the merit of progressing acoustic capacity & capability building.



Dr (Cdr) Arnab Das met Mr. Geert Van Cappellen, who is the Secretary General of PIANC and the Managing Director of Flanders International Technical Agency (FITA)

Ambassador of India to the EU

The Honourable Indian Ambassador to the EU and Belgium, His Excellency Shri Santosh Jha, was extremely kind to afford significant time with MRC to understand the UDA framework and its relevance in the ongoing geopolitical and geostrategic developments. The Honourable Ambassador give a very insightful perspective on the ongoing geopolitical and geostrategic developments and how India could leverage the same. He has been the head of the Policy and Plans Division of the Ministry of External Affairs and thus has a deep insight of the larger dynamics at play. As India's Ambassador to the EU, there was no one else, who could guide MRC in building collaborations with such institutions. The present energy crisis in the EU, Russia-Ukraine war, and its global ramifications, post pandemic geo-economic scenario, the multi-polar global order, India in the new global order and many important aspects were succinctly covered by the Honourable Ambassador. India's unique position was certainly acknowledged by him, but also warned about the massive internal capacity & capability building we need to work on. The HE Santosh Jha made the following specific points:

- (a) The private entities with specialized domain expertise like the MRC have a significant role to play in the new world order. India will be able to compete with the rest of the world, only if such entities are encouraged to contribute to the strategic requirements.

(b) The EU's role and footprint in the Indo-Pacific is going to increase significantly soon. India will be a significant partner to the EU's Indo-Pacific focus, so we must prepare ourselves accordingly.

(c) The EU will be happy to support organizations like the MRC and the specific UDA framework proposed by them. There is definite future for a structured approach like the UDA framework in building partnerships and collaborations.

(d) The digital transformation does have a very bright future and India is well placed to take the leadership role. The global sustainable blue economy efforts and the India-EU collaboration can certainly encourage the UDA framework to build the geopolitical and geostrategic partnerships at a global level.



Dr (Cdr) Arnab Das met Honourable Indian Ambassador to the EU and Belgium, His Excellency Shri Santosh Jha in Belgium

MRC would like to acknowledge the critical role of Shri Pankaj Phukan, First Secretary at the Embassy of India at Belgium for facilitating interactions with the Honourable Ambassador and the EU DG MARE. His inputs in initiating the interaction with the EU officials was extremely valuable. Shri Phukan has a deep understanding of the Brahmaputra River and the local and geopolitical dynamics.

Director General Maritime Affairs and Fisheries (DG MARE) The all-important meeting with DG MARE officials at the EU was coordinated by the Indian Embassy at Belgium. The following members were present at the meeting:

- (a) Dr. LAMOTTE Alessandra, Policy Assistant International Relations.
- (b) Dr. GOULET Raphael, Head of Unit for Ocean Governance.
- (c) Dr. SHEPHERD Iain, Senior Expert Marine Innovation.
- (d) Dr. CAUMONT Pauline, Sustainable Blue Economy Sectors.



Dr (Cdr) Arnab Das held an important meeting with Director General Maritime Affairs and Fisheries (DG MARE) officials at the EU

The meeting was extremely meaningful and both the sides presented their activities and vision. The following aspects were identified as possible areas of cooperation:

- (a) The Underwater Noise and associated Acoustic Habitat Degradation.
- (b) Marine Spatial Planning (MSP), particularly in the tropical waters of the Indo-Pacific and beyond.
- (c) Seaweed Cultivation and Management is one of the growing sectors with multi-dimensional applications of sustainable blue economic growth across the world.
- (d) Digital transformation in the underwater domain is of significant interest. However, the issue of data exchange is a complicated subject and needs far more safe guards and reassurance for the regulatory authorities to open-up.
- (e) MRCs ability to extend acoustic capacity & capability building support across the tropical waters of the Indo-Pacific region was found valuable.

Way Ahead

The first round of interactions with all the entities were very positive and warm. The UDA framework being a new concept will require several rounds of iterative exchanges in varied forms to build the partnerships that will make serious impact. For any collaboration or partnership to be successful, a three-step process needs to be followed:

(a) **Domain :** The UDA framework probably needs no more debate on its relevance and urgency. All the entities are convinced that it is critical for the ongoing geopolitical and geo-strategic developments across the marine and freshwater systems. Governance mechanisms across the geographies and sectors need a structured framework like this.

(b) **Partner:** Recognition of MRC as a valuable partner is the next step. The Unique UDA framework has been proposed by the MRC and in the last five years, has been relentlessly progressing this concept on multiple forums and dimensions. The body of work that has been built is unparalleled. All the five dimensions, namely research, innovation, skilling, academic and policy have been covered by the MRC. The three pillars of policy & technology intervention along with acoustic capacity & capability building is being pursued.

(c) **Mechanism:** The specific mechanism of interaction can be formalized based on the vision and priorities of the individual entity. MRC is willing to negotiate any model of interaction and collaboration.

To arrive at a much better level of clarity and comfort to enter partnership, many more interaction will be required. To give a little more structure to these interactions, the following three step mechanism is proposed:

(a) **Outreach:** Webinars, online/offline workshops and even seminars could be organized with more specific topics for deliberations to sensitize the practitioners and decision makers. Varied aspects could be discussed with multi-disciplinary and multi-functional panellist.

(b) **Engage:** Based on the initial outreach and sensitization, some specific areas of interest will have to be identified for priority engagement. Fellowships and exchange programs could be initiated to build confidence. Massive acoustic capacity & capability building will have to come out from this stage.

(c) **Sustain:** The specific areas of interest will have to then converted to project proposals for funding and external support. Even policy and technology interventions will have to come out from these projects. Infrastructure creation and large investments will come out of these measures.

The MRC will follow-up with proposals for multiple webinars and workshops, as part of the second round of outreach. It is requested that all the esteemed partners (potential), may respond positively to the proposals and guide the interactions as per their comfort levels. Suggestions from the esteemed partners (potential) is more than welcome to shape future activities and interactions. MRC will continue to update all these entities with their regular quarterly newsletters.

Enclosure-1

Underwater Domain Awareness (UDA) Framework

The concept of Underwater Domain Awareness (UDA) in a more specific sense will translate to our eagerness to know what is happening in the undersea realm of our maritime areas. This keenness for undersea 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. However, just the military requirement may not be the only motivation to generate undersea domain awareness. The earth's undersea 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 undersea 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 undersea 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.

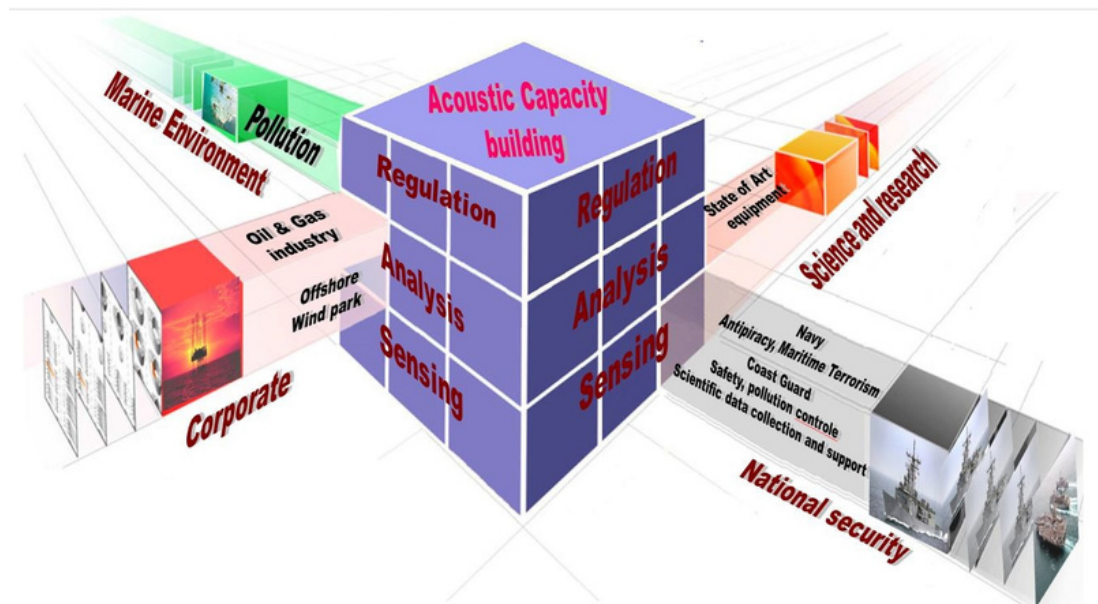


Fig. 1 Comprehensive Perspective of Undersea Domain Awareness

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 <http://foundationforuda.in/mrc/>.