

MARITIME RESEARCH CENTER

FOUNDATION FOR UNDERWATER DOMAIN AWARENESS

Advancing **Marine Spatial Planning (MSP)** for **UNDERWATER DOMAIN AWARENESS (UDA)** in Tropical Waters

ANNUAL REPORT 2025

MARITIME RESEARCH CENTER
FOUNDATION FOR UNDERWATER DOMAIN AWARENESS

TABLE OF CONTENTS

- Letter from the Founder and Director 03

01 About Maritime Research Center 04
- 1.1 Mission and Vision 04
- 1.2 Organisational Structure 06
- 1.3 Strategic Approach: The Underwater Domain Awareness (UDA) Framework 08

02 Year in Review 11
- 2.1 2025 Highlights 11
- 2.2 Major Collaborations and MoUs 14
- 2.3 Outreach, Engage and Sustain 16

03 Research and Innovation 20
- 3.1 Ongoing and Completed Research Projects 20
- 3.2 Technological Innovations and Tools 22
- 3.3 Publications, Reports, and Technical Papers 25

04 Projects and Initiatives 28
- 4.1 Policy Intervention 28
- 4.2 Technology Intervention 32
- 4.3 Capacity and Capability Building 34

05 International Engagements 41
- 5.1 International Conferences and Dialogues 41
- 5.2 Strategic Partnerships and Joint Programs 44
- 5.3 Opportunity to Collaborate 49

06 Impacts and Outcomes 52
- 6.1 Community and Socio-economic Impact 52
- 6.2 Policy and Governance Impact 54
- 6.3 Shaping Public Opinion 56

07 Looking Ahead: Strategic Priorities for 2026 57
- 7.1 Corporate Social Responsibility 57
- 7.2 Opportunities for Collaboration 59
- 7.3 Future Strategies and Pathways to Progress 61

- Financial Report 63
- Media Library 65
- Reference 66

DR. (CDR) ARNAB DAS

Founder and Director, Maritime Research Center



As we reflect on 2025, it is evident that this year has been both defining and transformative for the Maritime Research Center. In a rapidly evolving maritime and underwater landscape, shaped by technological disruption, environmental stressors, and shifting geopolitical realities, our work has been guided by a singular purpose: to contribute meaningfully to the global understanding, governance, and sustainable management of the underwater domain. What began as a focused research initiative has steadily evolved into a platform that brings together research, policy engagement, technology, and capacity building to address some of the most complex challenges in the underwater domain.

Throughout the year, MRC's work remained focused on strengthening implementation of the Underwater Domain Awareness (UDA) and Marine Spatial Planning (MSP) Frameworks, with particular emphasis on tropical and developing maritime regions that are often underrepresented in global discourse. Seeing these ideas reflected in important research publications and policy-facing discussions has been both encouraging and humbling. By addressing the unique challenges of tropical waters, particularly in the Indo-Pacific region, our work has sought to move beyond inherited temperate-water paradigms and towards solutions grounded in regional realities.

One of the most rewarding aspects of 2025 has been the people and partnerships that have shaped our journey. Collaborations with institutions such as the Indian Council of World Affairs, Ratan Tata Maharashtra State Skills University, the World Trade Centre (Pune), and the Military Institute of Technology were not merely formal agreements, but shared commitments to building knowledge, skills, and long-term capacity. The launch of India's first skilling programme in Underwater Domain Awareness stands out as a particularly meaningful milestone, one that reflects our collective investment in the next generation of maritime professionals.

Technology has also played a quiet but influential role in our progress. Whether through the development of our Shipping Radiated Noise (SRN) Estimation Tool, Area, Production, Yield (APY) Tool for Shrimp and Seaweed Farming, and Marine Spatial Planning (MSP) Tool, the application of modelling and simulation techniques, or the revamp of our digital platforms, our aim has been simple: to make complex research more accessible, actionable, and relevant to those who need it most.

None of this would have been possible without the dedication of the MRC team. Their intellectual curiosity, discipline, and willingness to work across domains continue to inspire me. I am equally grateful to our advisors, collaborators, and stakeholders who have trusted us, challenged us, and supported our work.

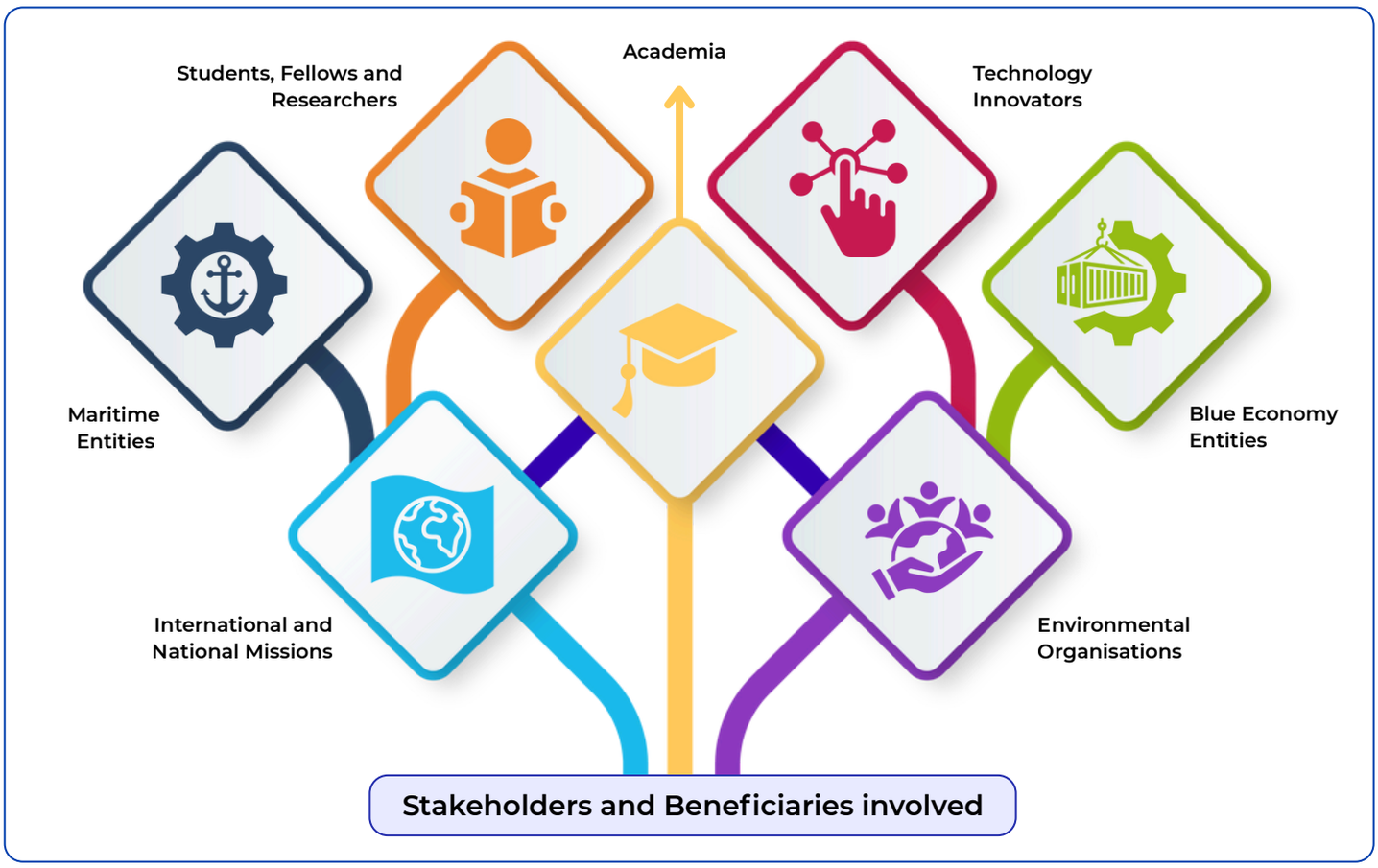
As we step into 2026, we do so with clarity and optimism. We will continue to deepen our research, expand our training and fellowship programmes, and refine our tools to support maritime and underwater governance at regional and global scales. As maritime challenges grow in complexity, the need for credible research institutions that can bridge science, policy, and practice becomes ever more critical. The Maritime Research Center remains committed to fulfilling this role and contributing constructively to the global underwater future.

1. About Maritime Research Center

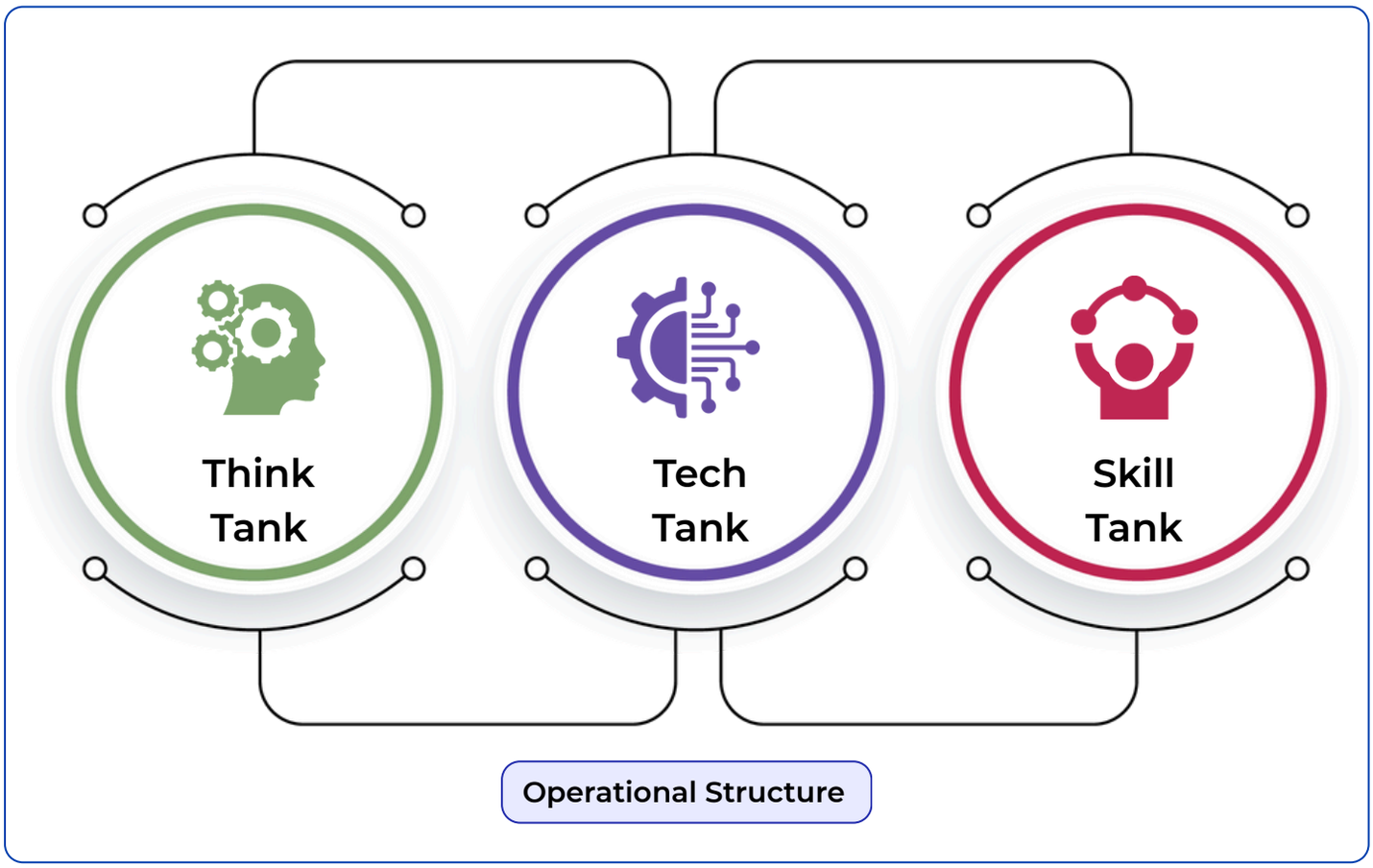
1.1 Mission and Vision:

Our mission, as a not-for-profit research and policy centre, is to advance the concept of Underwater Domain Awareness (UDA) and its Framework. Recognising the oceans' indispensable role in national security, food security and environmental sustainability, our work continues to focus on advancing the UDA Framework (explained in section 1.3) to strengthen our understanding of the marine ecosystem. Guided by a strong commitment to research, innovation, and informed policy development, the Maritime Research Center (MRC) aims to create awareness and engagement among stakeholders and decision-makers. Our efforts aim to enable a safe, secure and sustainable blue economy across the tropical littorals of the Indo-Pacific and beyond.

In the context of pressing global challenges, including population growth, resource depletion, and the intensifying impacts of climate change, there is an urgent need to explore and understand the vast underwater domain systematically. Despite covering nearly 70% of the Earth's surface, the oceans remain only marginally understood, with an estimated understanding of less than 5%. Bridging this gap necessitates a cohesive, policy-aligned, and technology-enabled framework that integrates scientific research, strategic planning, and capacity building. Through our ongoing work on the UDA Framework, we remain committed to facilitating an integrated approach that ensures ocean research and applications make meaningful contributions to national priorities and regional stability.



We operate as a think tank, tech tank, and skill tank, with a specialised network of distinguished advisors, subject-matter experts, and industry leaders to guide and support our mission.



Operational Structure

Think Tank: Driving strategic thought and policy innovation through the Underwater Domain Awareness (UDA) framework that allows collaboration and alignment among stakeholders for a safe, secure, and sustainable blue economy.

Tech Tank: By bridging traditional knowledge with innovation, we develop and apply technology solutions tailored to the unique challenges of tropical littoral waters across the Indo-Pacific region.

Skill Tank: Building the next generation of ocean professionals through capacity building, training, and knowledge exchange, ensuring a multi-disciplinary human resource base equipped to manage the complex UDA ecosystem.

1.2 Organisational Structure:

Governing Council	Dr. (Cdr) Arnab Das, Founder and Director, MRC Shri Praful Talera, Advisor on Blue Economy, MRC
Strategic Advisory Board	Lt Gen (Dr.) D B Shekatkar (Retd) PVSM, AVSM, VSM, Chairman, Shekatkar Committee and Strategic Defence Analyst Amb Anup Mudgal (Retd) Former Indian High Commissioner to Mauritius Vice Admiral DSP Varma (Retd) PVSM, AVSM, VSM, Former DG ATVP (Technology) Shri Ashwin Shroff Executive Chairman, Excel Industries Limited
Research & Advisory Board	Dr Satheesh Shenoi, Former Director, INCOIS Hyderabad Prof. Radhika Seshan, Former HOD, Department of History, SPPU Dr R Vijay Kumar, Department of Ocean Engineering, IIT Chennai Prof. Varsha Kelkar Mane, Professor and Head, University Department of Biotechnology, University of Mumbai

Our Team:

Core Team	Shridhar Prabhuraman Deputy Director, MRC
	Cathrine J, Research and Publications Head, MRC
	Nishtha Vishwakarma, Communication and Outreach Head, MRC
	Divya Nagarajan, Administration and HR Head, MRC
Research Fellows	Romit Kanware (**Sediment Management**)
	Shlok Nemani (**Digital Transformation**)
	Tejaswini Kaktikar (**Brahmaputra River and Water Security**)
	Professor Mimi Fabe (**Geopolitics on ASEAN**)
	Joan Andrea Toledo (**Coastal Communities in the Philippines**)
	Suchir Mamidala (**Digitalization of Fouling Process**)
	Ashwani Singh (**Modelling and Simulation of the Konkan Coast**)
Engineering & Outreach	Pranil Deshmukh
	Ayush Sawadh
	Jay Pinjarkar
	Shreya Waghmare
	Shubham Kalaskar
	Aanchala Dhanvijay
	Ganesh Anekar

We would like to thank all our Summer Interns of 2025 for being a part of our Internship Programme this year and for their thorough contribution.

1.3 Strategic Approach: The Underwater Domain Awareness (UDA) Framework:

India's extensive coastline, spanning over 11,000 kilometres, and its vast network of ports offer immense potential for blue economy growth, projected to contribute nearly US$1 trillion annually towards the national goal of becoming a US$10 trillion economy by 2030. This sector also holds promise for generating employment and attracting investment in fisheries, aquaculture, renewable energy, and marine minerals. However, to fully realise these prospects, India requires a robust infrastructure that aligns with the potential of underwater resources. Alongside supporting the economic benefits of the blue economy, the need for comprehensive UDA is critical to address existing gaps in policy, technology, research and strategic security. UDA refers to the knowledge, understanding, and real-time monitoring of underwater environments to ensure the safety, security, and sustainability of maritime operations.

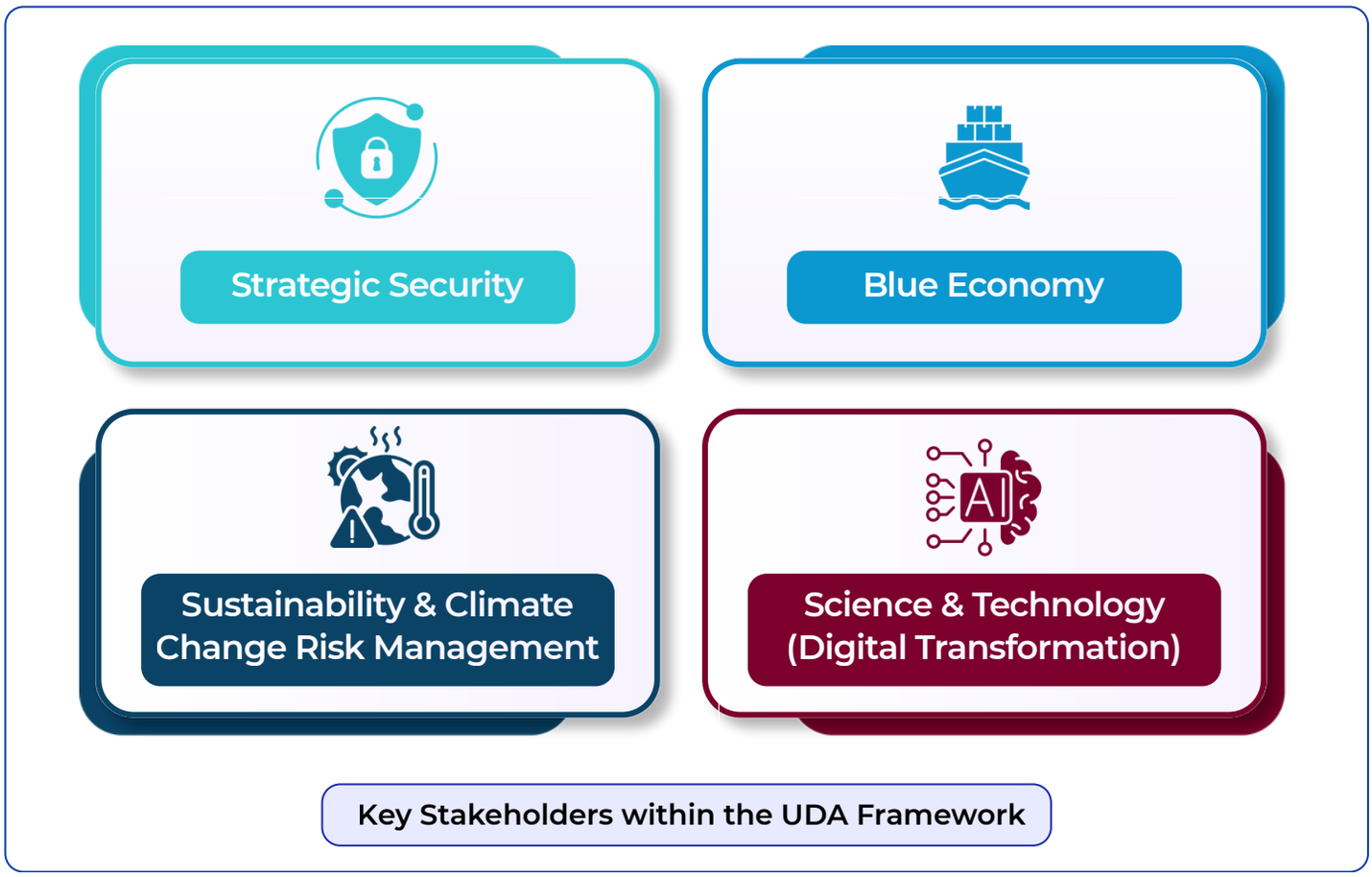
The UDA Framework, which has received the Copyright certificate from the Copyright Office, Government of India, provides a comprehensive, structured, and inclusive mechanism to ensure nuanced policy and technology interventions, acoustic capacity, and capability building to provide a safe, secure, and sustainable growth model for all in the tropical waters of the Indian Ocean Region (IOR). The figure below provides the schematic representation of the UDA Framework. It provides a holistic view and encourages the pooling of resources and the synergising of efforts to ensure optimal resource deployment for the global south.



UDA Framework Cube

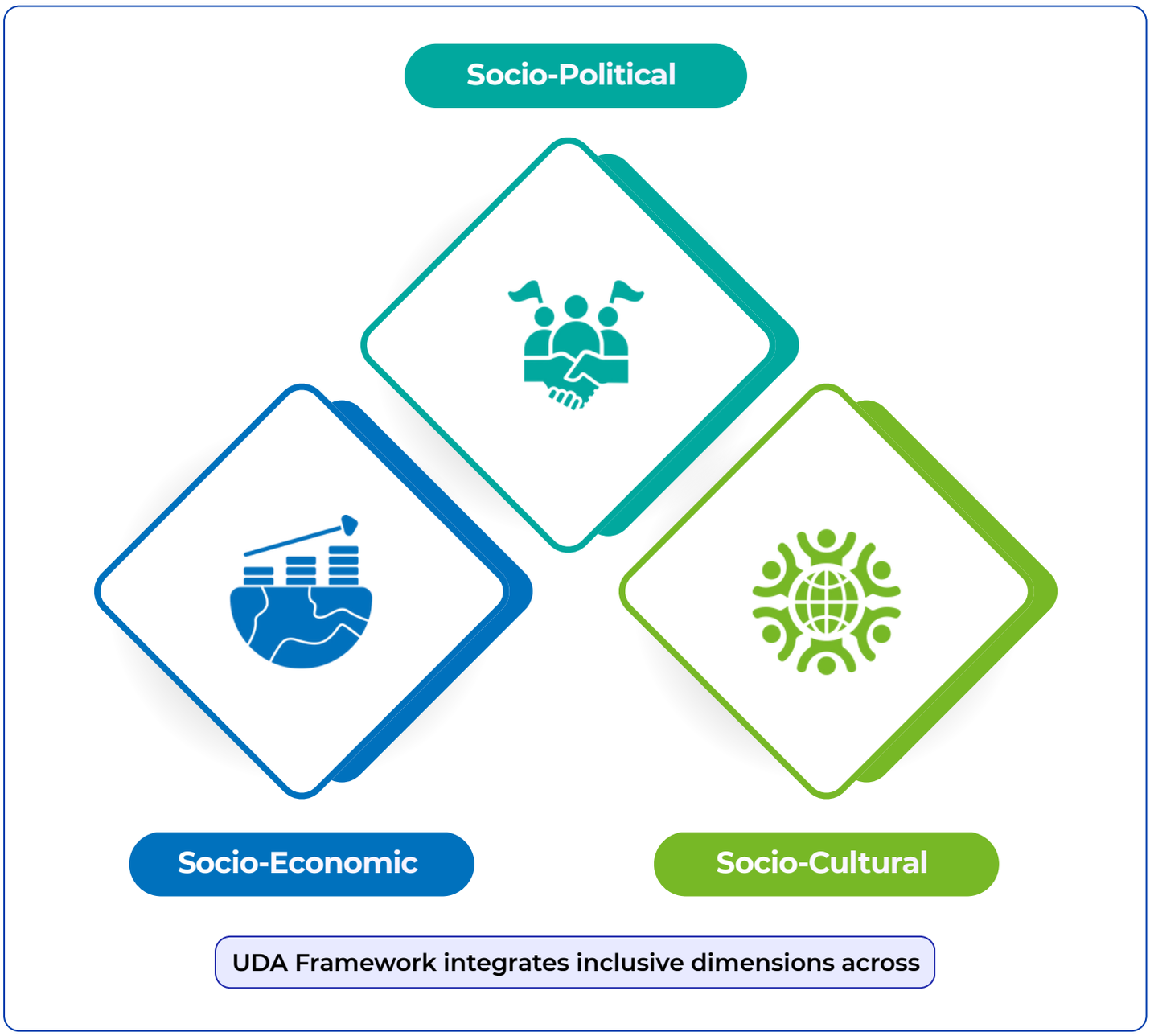
On a comprehensive scale, the UDA needs to be understood in its horizontal and vertical constructs. The horizontal construct would be resource availability, specific to the stakeholders, including technology, infrastructure, capability, and capacity. The stakeholders, represented by the four faces of the cube, will have their own particular 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, involves sensing the underwater domain for threats, resources, and activities. The second level would be making sense of the data generated to plan security, conservation, and resource utilisation strategies. The next level would be to formulate and monitor the local, national, and global regulatory framework.

There is significant fragmentation among the stakeholders: Strategic Security, Blue Economy, Sustainability & Climate Change Risk Management and Science & Technology (Digital Transformation). The individual cubes represent specific aspects that require attention. The user-academic industry partnership can be seamlessly formulated based on user requirements, academic inputs, and the industry interface defined by the particular cube. It will enable a more focused approach and a well-defined interactive framework. Given the appropriate impetus, the UDA framework can address multiple challenges the global community faces today. Meaningful engagement of the young and aspirational population is the most critical aspect that deserves attention. Multidisciplinary and multi-functional entities can interact and contribute to synergise their efforts towards a larger goal seamlessly.



Key Stakeholders within the UDA Framework

The inclusive aspect of the UDA Framework encompasses diverse socio-economic, socio-political, and socio-cultural native groups within the broader governance framework. The varied socio-economic strata of the society, particularly the coastal & riverine communities, are excluded from the conventional development models. Students need to prepare for real-world challenges and receive late exposure to the nuances of real-world issues. The political spectrum is always driven by social structure, with left- or right-leaning tendencies. The governance mechanism must address the concerns and aspirations of both parties. The cultural divide manifests in the traditional practices and beliefs that shape their livelihoods and social structure. The governance mechanism must address these divides and integrate everyone into a single national, regional, or global framework.



The international community is also advancing the triad of **people, economy, and nature** to enhance governance mechanisms. The people component encompasses the livelihoods and well-being of native communities, social dynamics, and other related aspects. The economic component refers to the growth and prosperity associated with these activities. The nature component addresses sustainability and climate change risk management. This is also measured using the Environmental, Social, and Governance (ESG) framework. The UDA Framework deliberately addresses all these varied measures of global good.

2. Year in Review

2.1 2025 Highlights:

Strengthening International Engagement

As part of our ongoing engagement with global ocean governance initiatives, we participated in the **Ocean Decade Fifth Foundations Dialogue**, held in Tokyo, Japan, from September 3 to 5, 2025. Invited to contribute to a high-level roundtable on the theme "*Asia-Pacific's Vision for the Ocean Decade: Advancing Regional Action to Honour the Ocean as the Mother of Life,*" we joined an esteemed panel of experts, policymakers, and practitioners from across the region. The Dialogue was jointly hosted by the Ocean Policy Research Institute and the Sasakawa Peace Foundation (SPF), in collaboration with UNESCO, the Nippon Foundation, and the IOC-UNESCO. During the discussions, MRC emphasised the critical importance of UDA as a framework for achieving sustainable and inclusive ocean governance. The Centre's interventions focused on advancing community-driven approaches, technology-enabled solutions, and cross-sectoral collaboration to strengthen regional capacity and address the evolving challenges of the Indo-Pacific region. Our participation has reinforced our commitment to fostering science-driven, cooperative, and sustainable management of ocean resources, aligning with the objectives of the **UN Decade of Ocean Science for Sustainable Development**.







Advancing Regional Cooperation

We actively contributed to the *Special Course for Diplomats from IORA Countries*, hosted by the Sushma Swaraj Institute of Foreign Service (SSIFS) under the Ministry of External Affairs, Government of India, in New Delhi. The programme aims to nurture the next generation of diplomats by enhancing their understanding of key regional priorities and collaborative mechanisms under the *Indian Ocean Rim Association (IORA)* framework. As part of this initiative, Dr (Cdr) Arnab Das conducted an Experiential Learning Session on the "*Six Priorities of IORA*." The session provided an in-depth overview of IORA's six core pillars: Maritime Safety and Security, Fisheries Management, Disaster Risk Management, Blue Economy, Academic, Scientific, and Technological Cooperation, and Institutional and Broadening Engagements.







Building future maritime leaders

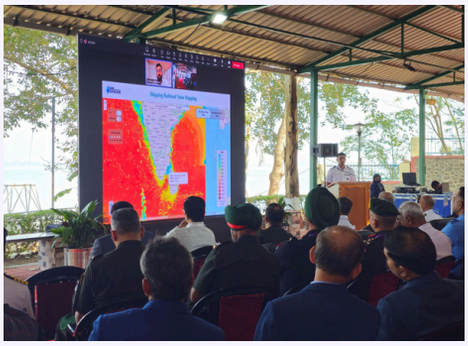
In 2025, we continued to advance our mission of nurturing the next generation of UDA professionals through our Summer Internship Program on UDA. From over a thousand applications received from premier institutions such as IIT Bombay, IIT Delhi, IIT Kharagpur, IIT Madras, IIT Kanpur, and St. Stephen's College, a select group of highly talented students was chosen to participate. The program also welcomed exceptional candidates from leading global universities, including University College London, the University of Virginia, Sciences Po, and the Symbiosis School of Liberal Arts, reflecting MRC's growing international reach. Following the successful completion of their internships, a select group of outstanding participants was offered the opportunity to continue their engagement with us as Research Fellows.

Empowering the Strategic Community

We conducted specialised training sessions at the *Military Institute of Technology (MILIT)*, Pune, focused on operational applications of UDA for defence and strategic studies officers. The sessions strengthened cross-sector understanding of maritime technology, policy integration, and strategic awareness.

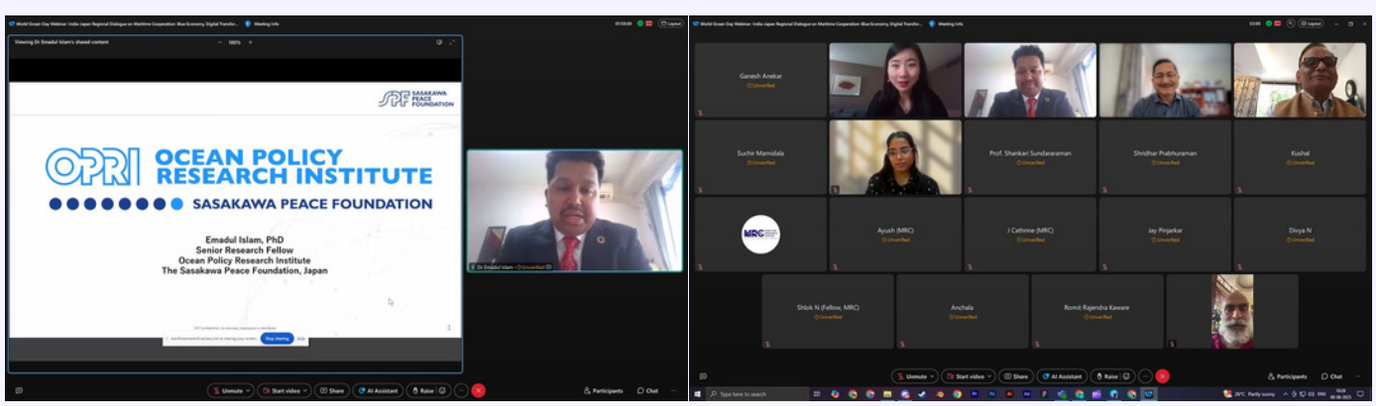






Promoting Ocean Awareness

To mark *World Oceans Day 2025*, we hosted a thought-provoking webinar featuring distinguished experts and practitioners. The discussions revolved around ocean sustainability, technological innovation, and the critical role of data-driven maritime governance in achieving the SDGs. Besides, we conducted multiple other similar sessions on UDA to mark and commemorate other important days, including World Maritime Day and World Environment Day.



2.2 Major Collaborations and MoUs:

In 2025, MRC strengthened its strategic footprint through several Memoranda of Understanding (MoUs) and collaborative commitments with leading institutions, industry partners and international organisations. These partnerships demonstrate our ongoing effort to link research, technology, and on-the-ground application to advance UDA.

We signed an **MoU with the Military Institute of Technology (MILIT)**, Pune, to establish a strategic partnership focused on enhancing capacity-building among Armed Forces officers. Through this collaboration, MRC and MILIT have been jointly developing advanced training modules, research initiatives, and knowledge-sharing platforms that strengthen maritime awareness and defence preparedness. The partnership aims to integrate MRC's expertise in UDA with MILIT's operational and strategic insights to drive innovation, technological advancement, and the development of national security capabilities.

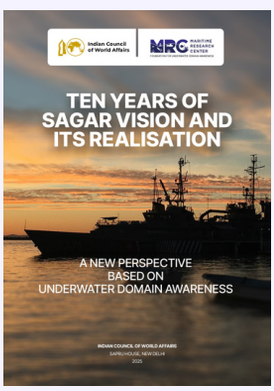
We further signed an MoU with **Ratan Tata Maharashtra State Skills University (RTMSSU)** to formally launch India's first-ever skilling programme in UDA. This collaboration marks a landmark step in institutionalising UDA-focused education and training within the national skilling ecosystem. Under the partnership, MRC and RTMSSU will co-develop specialised curricula, training modules, and certification pathways to build a skilled workforce for the maritime and underwater sectors. The initiative is expected to create tangible career opportunities, strengthen India's blue economy capabilities, and position the country as a regional leader in underwater technology and policy expertise. In addition, we signed an MoU with **O.P. Jindal Global University, Sonipat**, aimed at strengthening academic engagement by providing students with curated learning resources and access to the UDA Toolkit, thereby supporting capacity building and advancing research in the underwater domain. Another MoU with the **National Institute of Technology (NIT), Meghalaya**, marks a significant step toward advancing joint research, capacity building, and technological innovation in underwater science and technology. Further, we entered into an MoU with the **World Trade Center (WTC) Association, Pune**, under which MRC will design and deliver industry-aligned courses, internships, and specialised workshops through WTC. This collaboration will focus on key thematic areas, including the **Blue Economy, Ocean Governance, and marine and freshwater sustainability**.

In 2025, the **Indian Council of World Affairs (ICWA)** partnered with us. It released a Special Publication titled "*Ten Years of the SAGAR Vision and its Realisation – A New Perspective based on Underwater Domain Awareness (UDA)*". This joint effort represents a significant step in bridging strategic research and policy formulation on maritime issues. The publication, comprising eleven chapters, integrates the UDA Framework within India's SAGAR (Security and Growth for All in the Region) doctrine, highlighting its role in advancing maritime security, the blue economy, climate resilience, regional diplomacy, and community empowerment. Led by Dr (Cdr) Arnab Das, Founder and Director of MRC, along with a diverse group of diplomats, academicians, and practitioners, the publication reflects a shared commitment by ICWA and MRC to promote evidence-based policymaking and collaborative knowledge generation in the maritime domain. This partnership has strengthened institutional linkages between research and diplomacy, positioning UDA as a key framework for India's underwater and marine future.

As part of its industry–research engagement, we collaborated with **Excel Industries Limited** to conduct a field validation exercise at Veraval, Gujarat, focused on testing the Area Production Yield (APY) Tool —an innovative in-house solution developed by Nirdhwani Technology Private Limited, MRC's technology arm. The Veraval field visit provided a valuable opportunity to validate the tool's performance in real-world conditions, enabling refinements in its analytical models and enhancing its applicability for Digital Transformation. The success of this field exercise has opened avenues for future joint projects and large-scale deployments to strengthen India's marine spatial and environmental monitoring capabilities.













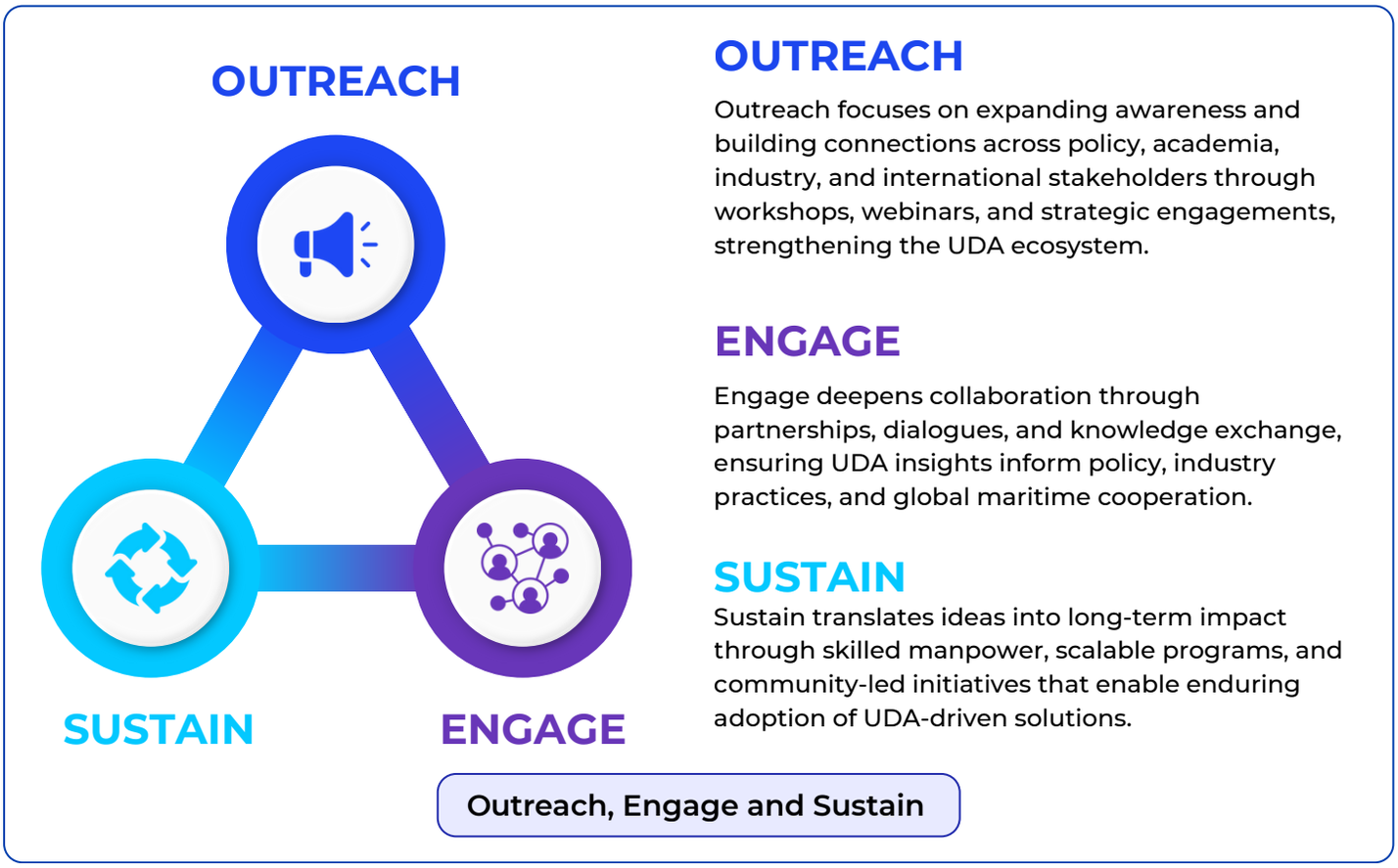




MRC signed various MoUs and collaborated with key partners to drive the cause of UDA

2.3 Outreach, Engage and Sustain

Since UDA is a unique concept, it requires a highly structured approach to make it implementable at various levels and amongst multiple stakeholders. This structured approach is called the 'Outreach, Engage and Sustain' approach.

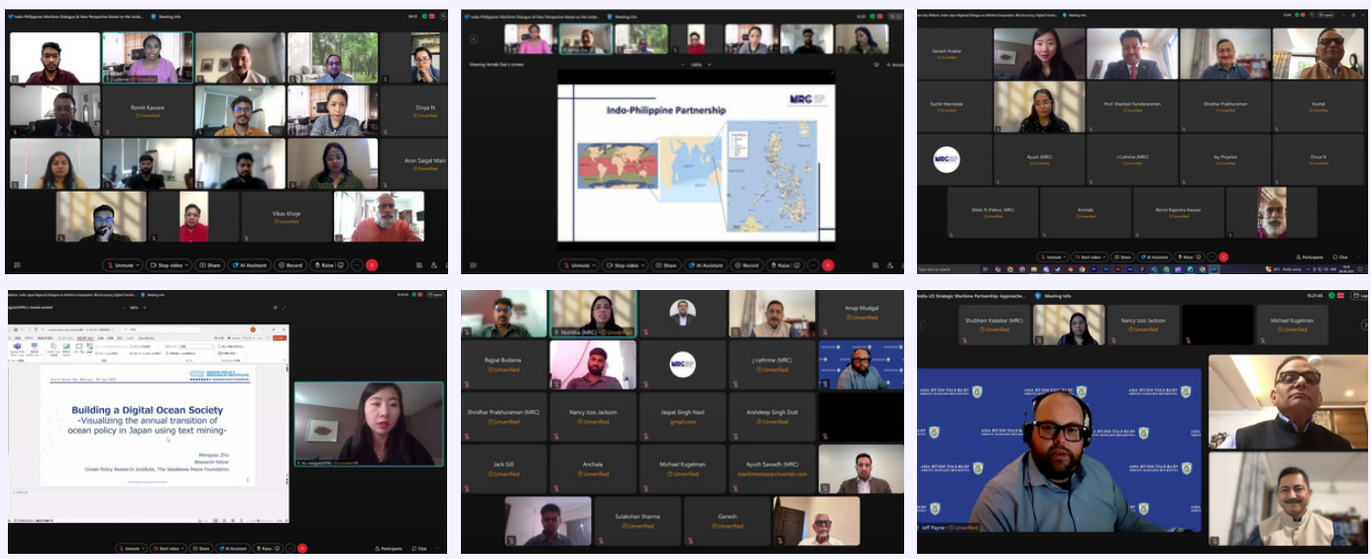


Outreach: Through this initiative, we aim to calibrate the cross-section of entities to ensure they integrate seamlessly into our ecosystem. Our team utilises webinars, seminars, workshops, symposia, and various other interactive tools. Additionally, we conduct UDA Workshops and hold meetings with stakeholders from policy-making, research, and academic fields as part of our outreach initiative.

In 2025, we significantly expanded our outreach footprint through diverse strategic engagements, capacity-building initiatives, and international collaborations. The year featured multiple high-impact webinars on maritime partnerships, coastal management, blue economy transitions, and regional cooperation across the Indo-Pacific. The Centre also conducted dedicated UDA workshops across leading academic institutions, fostering awareness and technical capability among students and young professionals. In addition, MRC engaged with key stakeholders through numerous bilateral meetings with diplomats, defence representatives, policymakers, and institutional leaders, enabling deeper cooperation on issues of maritime security, environmental sustainability, and technology adoption. Collectively, these activities advanced MRC's mission to build a collaborative, knowledge-driven maritime ecosystem and to strengthen India's leadership in UDA and sustainable ocean governance.



UDA Workshops conducted for 'Outreach' purposes in academic institutes



UDA Webinars held for 'Outreach' purposes

Engage: We deepened stakeholder engagement through a series of strategic interactions to foster collaboration, knowledge exchange, and policy alignment. We strengthened our industry and sustainability linkages through engagements with Clima Crew and Excel Industries Limited, exploring avenues for integrating UDA-driven environmental insights into operational and governance frameworks. MRC continued its close association with the Indian Council of World Affairs (ICWA), contributing to strategic dialogues on maritime security and Indo-Pacific partnerships. Engagement with the student community remained a priority, with the Centre providing access, learning opportunities, and exposure to UDA concepts to young scholars across institutions. MRC also expanded its diplomatic outreach, conducting targeted engagements with diplomats from IORA member countries and hosting a delegation from the South African High Commission to discuss regional priorities and potential collaborations. As part of its global maritime engagement, MRC continued its involvement with the International Maritime Organization under the GloNoise Project, contributing technical expertise on underwater radiated noise mitigation.

The year also saw several important visits to the UDA Centre, offering stakeholders firsthand insight into MRC's research, tools, and vision for a more secure and sustainable underwater domain. Collectively, these engagements reinforced MRC's commitment to building a cooperative ecosystem that advances UDA adoption across policy, industry, academia, and international maritime communities. MRC actively participated in premier national and global forums, including economic dialogues, ocean and fisheries conferences, and policy roundtables, bringing its Underwater Domain Awareness (UDA) framework to the forefront of maritime governance discussions.

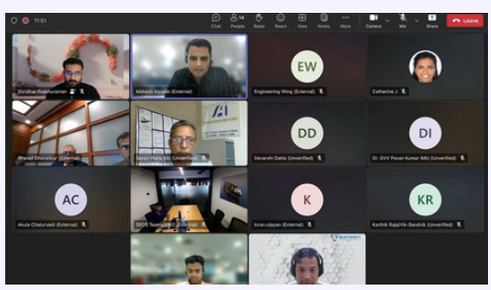


We participated in major national and international conferences as part of our "Engage" initiative

Sustain: To truly sustain impact, ideas must evolve into long-term implementation projects that deliver policy and technology interventions directly on the ground. This year, we continued to advance this vision by strengthening turnkey initiatives that bridge research, community needs, and actionable solutions. The skilled manpower nurtured through our internship, fellowship, and capacity-building programs now forms the backbone of this third pillar of our three-fold approach, leading field deployments and supporting institutional adoption of UDA-driven practices. To ensure continuity and scalability, MRC is further advancing flagship programmes such as the *100 Coastal Warriors* and *100 River Warriors* initiatives, community-anchored models designed to build resilience, enhance maritime governance, and empower local stakeholders. Given the diverse challenges along India's coastline and riverine systems, replicating such pilot projects across all regions remains essential for long-term national impact.

The full list of activities from our 'Outreach, Engage and Sustain' part has been mentioned in the references part of this annual report.









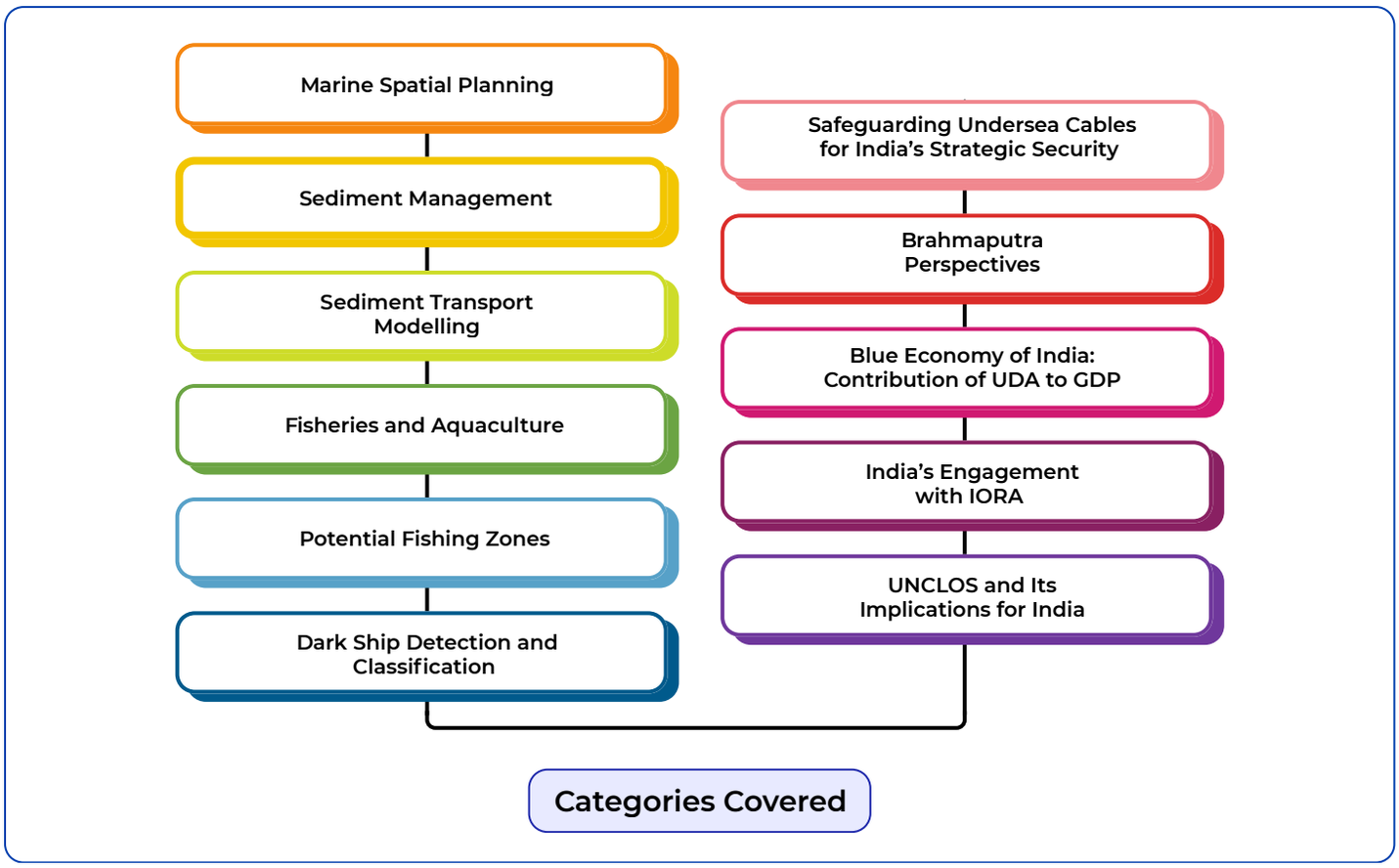


This included our 'Capacity and Capability Building' initiatives

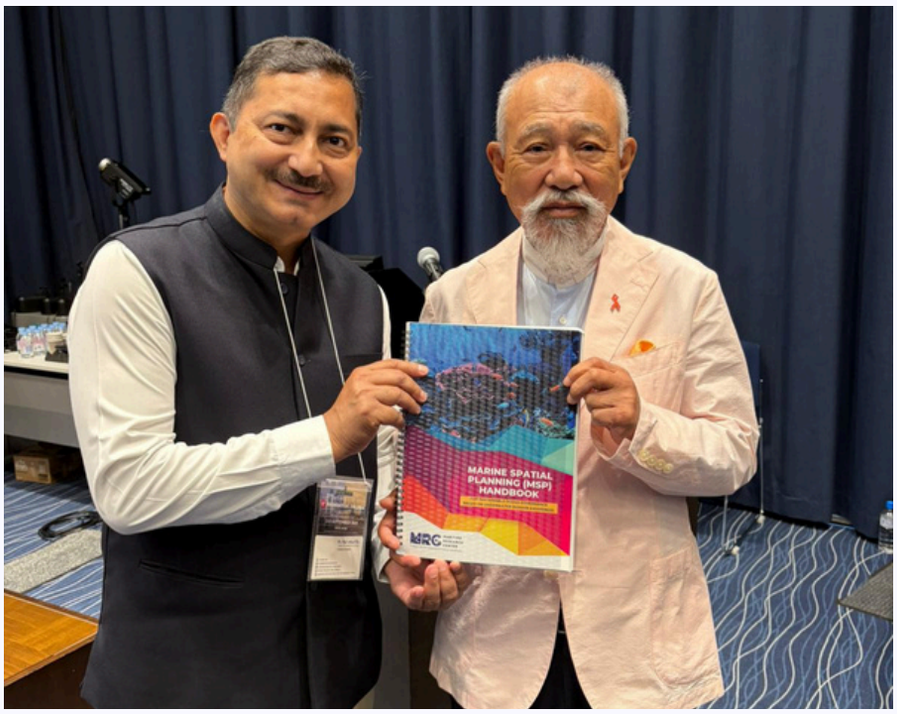
3. Research and Innovation

In 2025, we advanced a strong portfolio of research and innovation projects focused on addressing maritime, coastal and underwater domain challenges. Our work combined applied research with advanced tool development to generate actionable insights for students, policymakers, innovators, practitioners and researchers. Key efforts included refinement and demonstration of the Shipping Radiated Noise (SRN) Estimation Tool and progress on the Marine Spatial Planning (MSP) Tool, supporting evidence-based decision-making for sustainable maritime operations. Through collaborative research with national and international Think Tanks, Policy Research Institutes, International Institutes, Academic Institutes and Government Agencies, we were able to strengthen our focus on UDA, Environmental Impact Assessment (EIA), and capacity-building-oriented innovation. Through these initiatives, we have reinforced our commitment to translating research into practical solutions that enhance maritime safety, environmental stewardship, and long-term coastal resilience.

3.1 Ongoing and Completed Research Projects of 2025



Our Research Team undertook an ambitious and diverse portfolio of research projects, many of which were driven by intellectual leadership and on-ground efforts of our Research Fellows and Interns. These projects reflect our interdisciplinary approach, spanning ocean governance, maritime security, environmental sustainability, and the blue economy. A central focus area was Marine Spatial Planning (MSP), culminating in the development of a comprehensive **Marine Spatial Planning Handbook**, one of our most extensive research initiatives to date, which has been drafted to support evidence-based, integrated coastal and ocean management in India and beyond.



We handed over the draft MSP Handbook to Mr. Yohei Sasakawa, Honorary Chairman of SPF/Nippon Foundation in Tokyo, Japan.

Significant research was also conducted on Sediment Management and Sediment Transport Modelling, addressing critical challenges in port development, coastal erosion, and river-sea interactions. Complimenting this, the team worked extensively on fisheries and aquaculture-related studies, including Potential Fishing Zones (PFZs), and produced two major policy-oriented outputs: a White Paper and a Gap Analysis Paper on Seaweed Farming and the Shrimp Sector in India, highlighting regulatory, technological, and market opportunities for sustainable growth in these sectors. On the maritime security and strategic front, Fellows and Interns contributed to projects on 'Dark Ship Detection and Classification,' 'Safeguarding Undersea Cables for India's Strategic security,' and broader UDA themes. Research on India's engagement with the Indian Ocean Rim Association (IORA), UNCLOS and its implications for India, and the contribution of Underwater Domain Awareness (UDA) to India's GDP under the Blue Economy framework strengthened our policy-relevant scholarship. Region-specific work, such as the Brahmaputra Perspectives project, further underscored the Center's commitment to linking inland waterways with maritime strategy.

In addition to thematic research projects, we drafted and submitted the Draft Silt Policy for India, drawing on sediment research and stakeholder consultations. Collectively, these projects not only deepened our research but also demonstrated the role of early-career researchers in shaping high-impact outputs that bridge science, policy, and practice. Our research resources don't just come in the form of reports and papers; they are also published as research articles, book chapters, journal articles, e-learning modules, webinar presentations, and workshop presentations. In this regard, around 220+ research resources are available on our website, reflecting the research work we have been doing since our establishment.



Our Research Output at a Glance

A snapshot of MRC's research outputs till 2025, highlighting the scale, diversity, and formats of research output produced across policy, technical, and academic domains.

3.2 Technological Innovations and Tools

This year, our team significantly strengthened our technological backbone, positioning digital innovation and tool development as core enablers of research impact, policy outreach, and capacity building. The year 2025 marked a transition from concept-driven research to technology-supported, decision-ready solutions for governments, industry stakeholders, researchers, and coastal practitioners. Our technological initiatives were designed to improve data accessibility, analytical capability, and user engagement across the underwater, maritime and coastal ecosystem.



Our team showcased advanced tools addressing UDA Challenges to the CAPSTAR Officers at our workshop at MILIT in January 2025

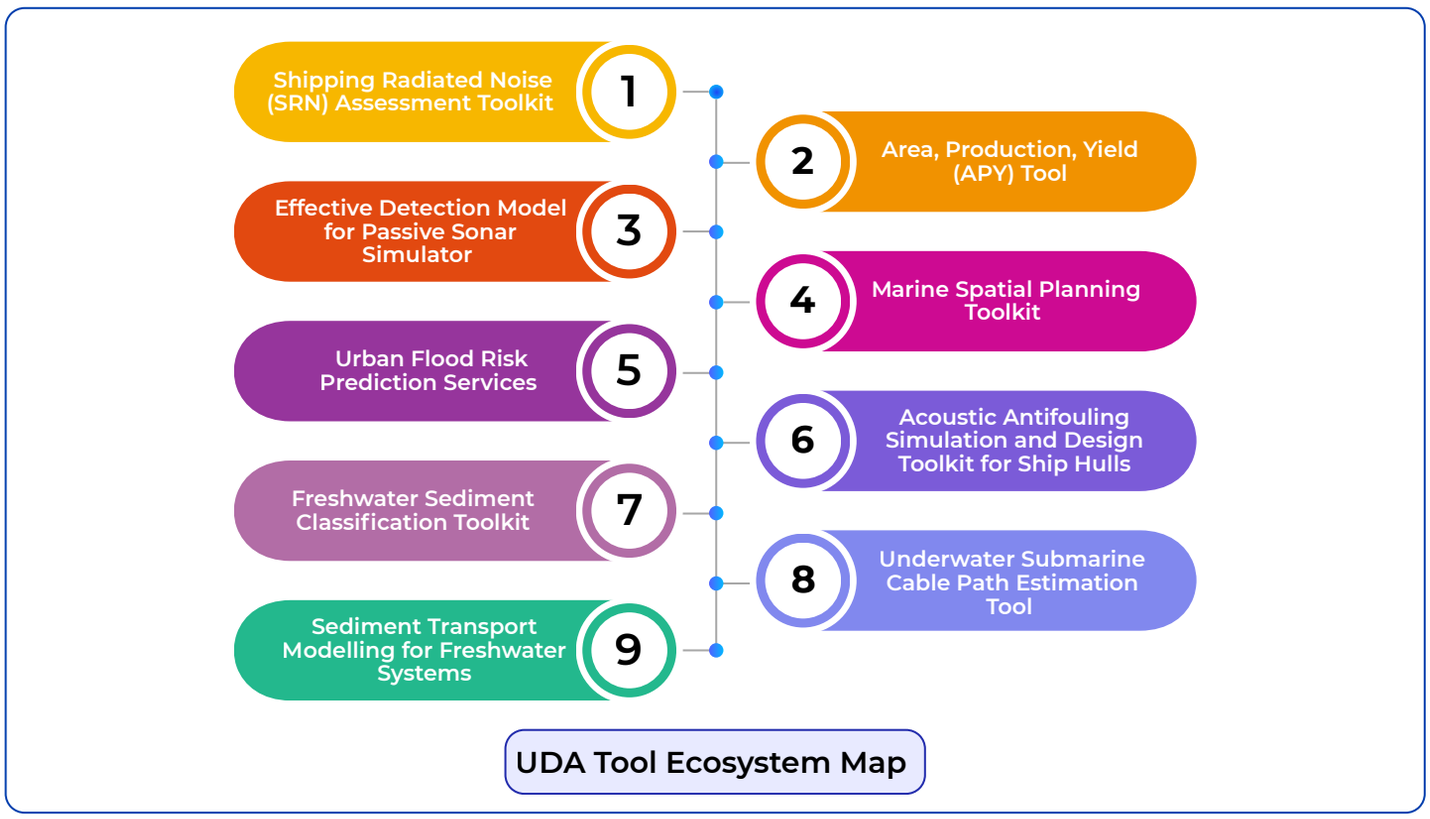
A key focus area during 2025 was the continued development and refinement of technology-driven analytical tools that support maritime governance and environmental decision-making. Our flagship tools, such as the Marine Spatial Planning (MSP) Tool and the Shipping Radiated Noise (SRN) Management Tool, are being further enhanced to improve usability, scalability and policy relevance. These tools are intended to assist planners and regulators in visualising spatial conflicts, assessing environmental impacts, and designing evidence-based maritime and coastal interventions. In parallel, groundwork was laid for advancing additional tools in areas such as sustainable fisheries management, sediment management, and coastal risk management.



Our team showcasing the progress we have made in developing our technological capability

Alongside tool development, 2025 also saw a significant push towards strengthening MRC's digital presence and outreach infrastructure. The in-house engineering team successfully executed a comprehensive revamp of our websites, improving their architecture, navigation, performance, and visual identity. The redesigned website now serves as a dynamic knowledge platform, enabling easier access to research outputs, tools, publications, events, and capacity-building initiatives. An essential feature of the website revamp was the creation of dedicated thematic webpages to showcase our core areas of work in a more structured, user-friendly manner. Individual webpages were developed for MSP, URN Management, and Sediment Management, providing consolidated information on research, tools, publications, case studies, and policy engagements under each theme. These pages serve as entry points for policymakers, researchers, and collaborators seeking domain-specific insights.

Additionally, active work is underway on a comprehensive Coastal Management webpage that will integrate content on coastal resilience, fisheries, aquaculture, and community-focused initiatives. This will further enhance our digital knowledge repository. To enhance engagement and improve comprehension of complex technical concepts, we began integrating visual communication and data storytelling into our digital platforms. Strategic use of infographics and visual elements is envisioned as a key feature of future updates.



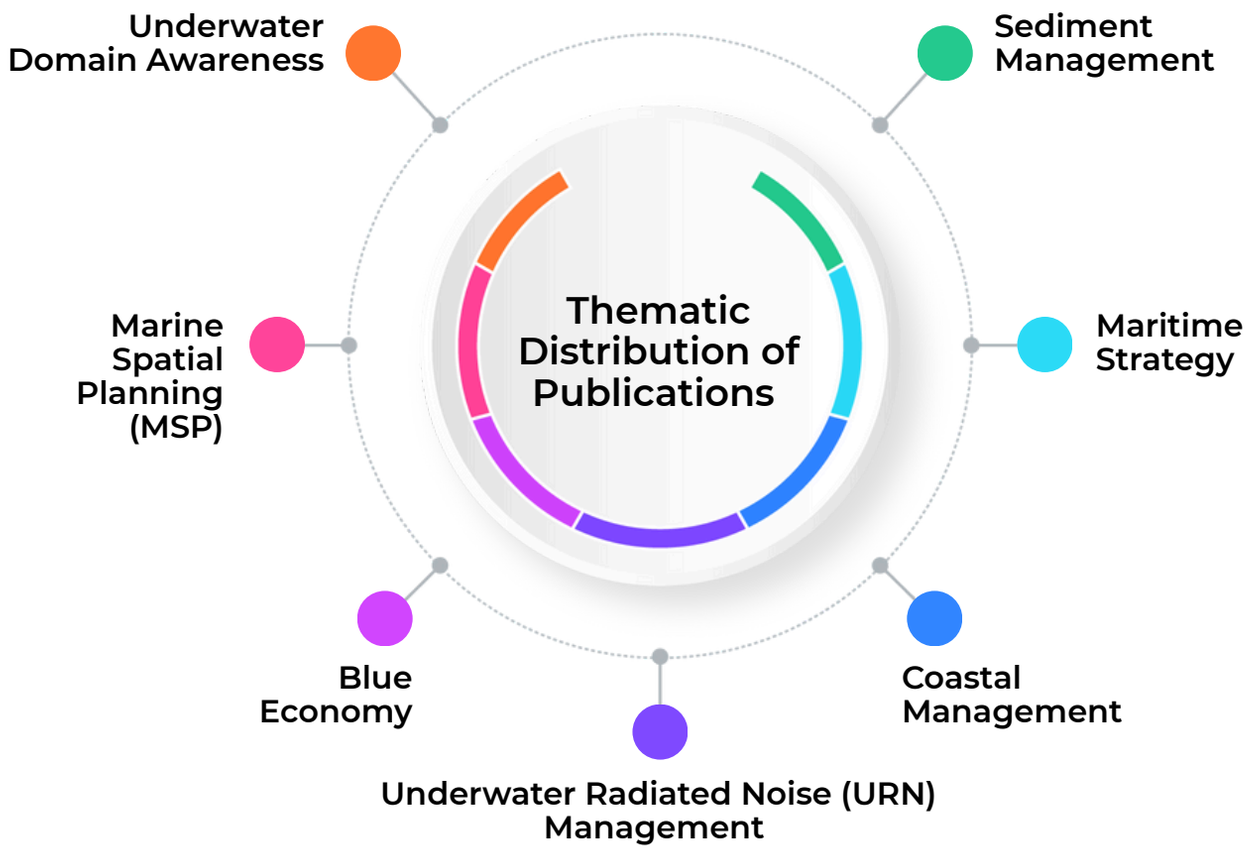
Collectively, these technological innovations and digital initiatives reflect our commitment to making research more accessible, actionable, and impact-driven. By investing in developing tools, digital platforms, and user-centric designs, we aim to bridge the gap between data, policy, and practice, ensuring that technological innovation remains at the heart of sustainable underwater and coastal governance.

3.3 Publications, Reports, and Technical Papers

In 2025, we strengthened our role as a knowledge and policy thought leader by producing research outputs that bridged science, technology and governance, directly supporting decision-making, capacity building, and tool development across the maritime and underwater domains.

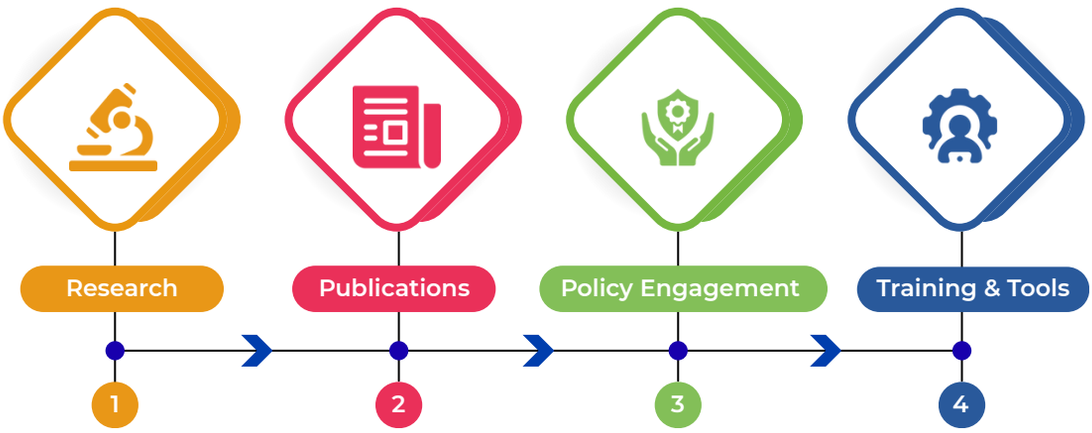
Our publications during the year were anchored across its core thematic pillars, including UDA, Marine Spatial Planning, Blue Economy, Underwater Radiated Noise (URN) Management, Coastal Management, Sediment Management, Maritime Security and Maritime Sustainability. Rather than operating in silos, these outputs adopted a system-based approach that integrated technical insights with environmental and strategic perspectives.

Distribution of MRC's publications across key thematic areas, reflecting strategic alignment with national maritime and underwater priorities.



Thematic Distribution of Publications

MRC's publications are designed to move beyond analysis, supporting policy dialogues, capacity building programmes, and the development of practical decision-support tools.



Research-to-Impact Flow

A key highlight of 2025 was our contribution to flagship national and policy-facing publications, including edited volumes and compendiums that address India's coastal, underwater, and maritime priorities. We contributed a research paper to the Indian Council of World Affairs (ICWA) January 2025 publication on the "Underwater Domain Awareness (UDA) Framework in the tropical waters of the Indo-Pacific." In this paper, Dr (Cdr) Arnab Das emphasised that the Indo-Pacific region can only be effectively governed, managed, and monitored through a deeper understanding of UDA, particularly given the complex acoustic, environmental, and strategic characteristics of tropical waters. We also contributed a book chapter to the Centre for Public Policy Research's (CPPR) *Indian Coastal Alliance Compendium*, where Dr Das examined the evolution of Maritime Domain Awareness (MDA) and highlighted the UDA Framework as a critical enabler for transforming MDA in the tropical Indian Ocean Region (IOR). The chapter underscored the limitations of legacy, surface-centric approaches and advocated for integrated underwater perspectives to strengthen coastal and maritime security. In addition, MRC contributed two peer-reviewed journal papers to the Indian Journal of Geo-Marine Sciences (IJMS) on the following themes: (1) Transforming Sri Lanka's Maritime Future through the UDA Framework and (2) A Physical Parameters–Driven Model for Predicting Shrimp Growth in Aquaculture. These papers reflected MRC's interdisciplinary research approach, spanning strategic maritime studies and applied marine science.

Further, the All India Disaster Mitigation Institute (AIDMI) published MRC's research paper on "Extreme Weather Events in the Tropical Waters of the Indian Ocean Region," which highlighted that sea surface temperature trends in the IOR have been among the most severe across global oceans, with significant implications for coastal resilience and disaster preparedness. A major publication milestone of the year was the release of a special compendium titled *"Ten Years of SAGAR Vision and its Realisation."* Developed in collaboration with the Indian Council of World Affairs, this publication brought together MRC's research team and domain experts to deliver eleven integrated chapters that embedded the UDA Framework within India's SAGAR doctrine, offering forward-looking perspectives on regional security, cooperation, and maritime governance.

MRC's publications in 2025 were developed through collaborations with academic institutions, think tanks, and partners in India and abroad, strengthening the global relevance of its research.



Contribution and Collaboration Map

Collaboration remained a defining feature of MRC's publication strategy. Research outputs in 2025 were developed in partnership with academic institutions, policy think tanks, industry stakeholders, and international organizations, reinforcing our growing national and global research footprint. These collaborative efforts enabled cross-disciplinary perspectives and strengthened the credibility and reach of our work. Beyond traditional academic formats, MRC expanded its knowledge dissemination through Issue Briefs, Concept Papers, Technical Reports, Background Documents, and related materials, ensuring accessibility for a diverse audience ranging from policymakers and practitioners to students and researchers. Collectively, these publications underscore our evolving role as a knowledge integrator who supports evidence-based decision-making, tool development, and long-term capacity building in India's underwater and marine ecosystem.

4. Projects and Initiatives

This section is broadly divided into three parts, wherein we discuss our initiatives through three types of interventions: (1) Policy Intervention, (2) Technology Intervention, and (3) Acoustic Capacity and Capability Building.

4.1 Policy Intervention

As part of our policy intervention initiatives, we have collaborated not only with policymakers and policy institutions in India but also with global bodies that shape implementable rules for the world. These efforts directly and indirectly influence the blue economy sector and our key stakeholders across domains such as maritime governance, security, blue economy, and digital transformation. Outlined below are four major policy intervention initiatives we undertook in 2025, aimed at creating meaningful impact—from the highest levels of decision-making to grassroots implementation.

4.1.1 UDA Workshop for Government Officials under the 'Forestry Training and Capacity Building' scheme of MoEFCC

In November 2025, our team conducted an intensive three-day training workshop for government officials who expressed a strong interest in understanding the maritime security, blue economy, and digital transformation dimensions of UDA. This programme was organised in partnership with the Union Ministry of Environment, Forest and Climate Change, as part of its ongoing *Forestry Training and Capacity Building* scheme, which focuses on strengthening institutional capability through knowledge-driven engagement.

The workshop brought together officers from multiple state and central government departments, creating a diverse and collaborative learning environment. Over three days, participants were introduced to the scientific foundations, strategic relevance, and operational applications of the UDA framework. Our team delivered a series of comprehensive sessions that combined conceptual discussions with live demonstrations of in-house tools and technologies tailored for coastal and riverine management.

Some of the major topics covered included detailed explorations of the Blue Economy, Marine Spatial Planning, the '100 Warriors' initiative, Digital Transformation in the maritime domain, Sediment and Watershed Management, and the intersection of UDA and Artificial Intelligence. Each session was designed to highlight how data-driven and technology-enabled approaches can support sustainable development, environmental conservation, and national maritime preparedness. The workshop not only enhanced participants' understanding of UDA but also encouraged interdepartmental dialogue, enabling officials to identify new use-cases and collaborative opportunities relevant to their respective sectors. A field visit and the practical integration of UDA Concepts followed.



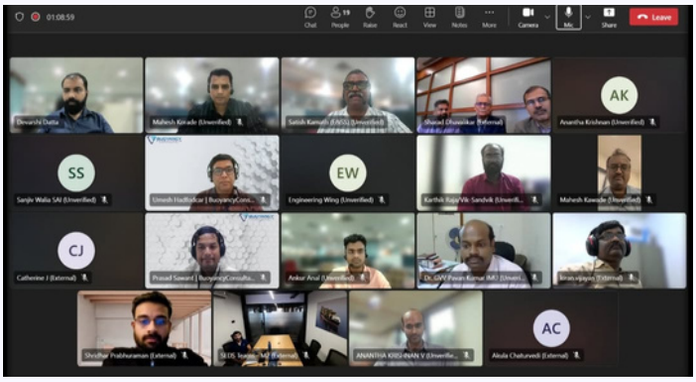
4.1.2 Participation in the National Task Force meetings for IMO's 'Global Partnership for Mitigation of Underwater Noise from Shipping' project

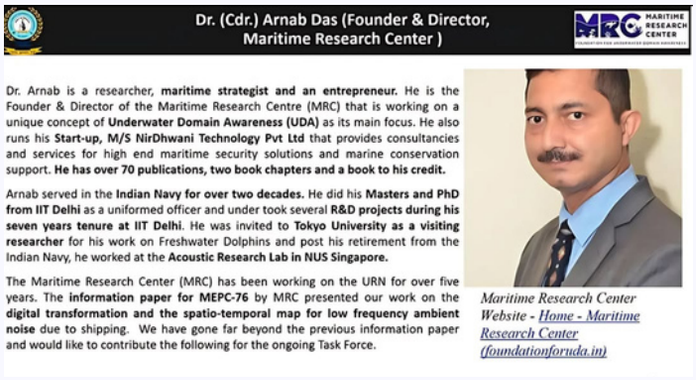
The Director General (DG) of Shipping, Government of India, has established a dedicated National Task Force for an International Maritime Organisation (IMO)–led project under the Global Partnership for Mitigation of Underwater Noise from Shipping. As part of this initiative, our team actively participated in the inaugural Shipbuilding Committee Meeting convened by the DG Shipping earlier this year.

During the meeting, we contributed to critical technical and policy-oriented discussions focused on enhancing India's maritime regulatory preparedness. Our inputs centred on bridging existing gaps between naval and commercial shipbuilding practices, particularly in acoustic design. They underscored the importance of aligning national efforts with the IMO's Underwater Radiated Noise (URN) reduction guidelines. We also highlighted the urgent need to incorporate tropical water-specific acoustic modelling, alongside AI/ML-based simulation frameworks, into India's emerging regulatory ecosystem to ensure accurate, context-sensitive decision-making.

This engagement reinforced the significance of India's active participation in the IMO's Experience Building Phase (EBP), a crucial step in shaping global benchmarks for environmentally responsible shipping. In addition to this meeting, our team has been involved in several other IMO-linked consultations and expert discussions, contributing scientific insights and technical recommendations that support evidence-based international policymaking.

These efforts collectively represent a vital stride toward positioning India as a global leader in sustainable maritime practices, while ensuring that national policy frameworks evolve in tandem with global standards.





4.1.3 Contributed during the Ministry of Earth Sciences' Brainstorming Workshop on Blue Economy Investments

Our team participated in the Brainstorming Workshop on Blue Economy Investments organised by the Ministry of Earth Sciences, Government of India. This engagement provided a vital platform to strengthen our ongoing efforts toward advancing science-driven, sustainable ocean development at the national level. Over the years, through our work, we have consistently highlighted the centrality of Marine Spatial Planning, data-driven decision tools, and Underwater Domain Awareness in unlocking the full potential of India's Blue Economy. Our participation in this workshop enabled us to present these perspectives in a broader policy forum, reinforcing the need for innovative financial instruments such as blue bonds, debt-for-nature swaps, blended finance mechanisms, and other climate-aligned investment structures to accelerate responsible maritime growth. We also emphasised the significance of integrated governance, inter-agency cooperation, and long-term capacity building to ensure that India's marine and coastal sectors develop in a resilient, inclusive, and environmentally secure manner.

By contributing to national-level deliberations on trade, investment, innovation, and the ease of doing business within the Blue Economy framework, we further strengthened our voice as a key technical and research partner in shaping India's emerging National Blue Economy Investment Strategy. This participation marks another step in our commitment to informing evidence-based policymaking and enabling sustainable ocean stewardship nationwide.





4.1.4 Contributions during the 'Ocean Decade Fifth Foundations Dialogue'

This year, we contribute to the *Ocean Decade Fifth Foundations Dialogue*, held in Tokyo, Japan, from 3–5 September 2025. Convened by the Ocean Policy Research Institute of the Sasakawa Peace Foundation, in partnership with UNESCO, The Nippon Foundation, and UNESCO Ocean, the dialogue served as a high-level platform for experts, policymakers, philanthropic organisations, and practitioners across the Asia-Pacific to collectively reflect on regional priorities for the United Nations Ocean Decade. MRC's participation in this forum provided a significant opportunity to articulate the growing relevance of UDA as a unifying framework for sustainable ocean governance.

Through contributions to the regional roundtable discussions, MRC emphasised the need for improved underwater sensing, data integration, and transparent knowledge-sharing systems to support evidence-based decision-making in the Indo-Pacific. The discussions also underscored the importance of empowering coastal communities, strengthening institutional capacities, and adopting context-appropriate technologies that address both ecological vulnerabilities and socio-economic dependencies within the region.

This international engagement further amplified MRC's voice in the global discourse on sustainable ocean management. By highlighting the links between UDA, community-led stewardship, and technology-enabled conservation, MRC helped draw attention to the often-overlooked underwater dimension of ocean governance. The insights shared during the dialogue are expected to inform ongoing deliberations under the UN Ocean Decade, particularly in areas related to blue economy planning, marine spatial governance, and integrated ocean management.

The participation also strengthened MRC's collaborations with leading regional and global institutions, creating pathways for future joint research, policy contributions, and multi-country initiatives. As international attention increasingly shifts toward the health and resilience of the world's oceans, MRC's continued engagement in such forums ensures that India's perspectives, which are rooted in science, sustainability, and community empowerment, contribute meaningfully to shaping emerging policies and long-term strategies for ocean conservation.



4.2 Technology Intervention

This section showcases the technological progress, projects, and innovations that the Maritime Research Center has driven or supported within the maritime sector. It outlines the tools, systems, and solutions we have developed, tested, or implemented, and highlights how these advancements are contributing to the evolution of maritime practices. Through this overview, we aim to demonstrate MRC's role in strengthening technology adoption and shaping the industry's future.

4.2.1 Digital Transformation through the Area Production Yield (APY) Analysis Tool

Aquaculture in tropical waters faces persistent challenges, including low productivity, environmental stress, and inefficient utilisation of underwater space. Recognising the need for science-driven decision-making tools to strengthen India's aquaculture value chain, our Research Team, in collaboration with the Engineering Team, has developed the Aquaculture Productivity & Yield (APY) Tool, which is a specialised technological system designed to enhance yield, optimise spatial planning, and support the long-term sustainability of underwater living resources.

The APY Tool integrates with UDA principles with environmental modelling, habitat assessment, and data analytics to provide actionable insights for policymakers, aquaculture managers, and field-level practitioners. Built for tropical conditions, where high temperature, turbidity, and dynamic sediment movement often hinder resource productivity, the tool offers both policy-level and tactical interventions for key species such as Shrimp, Seaweed, and Common Carp (freshwater).

At the policy level, the APY Tool supports evidence-based planning by analysing carrying capacity, predicting ecological stress zones, and identifying optimal cultivation sites. At the operational level, it guides farmers and local administrators with real-time parameters for stock management, site selection, and yield enhancement. Its integrated approach ensures that aquaculture development does not compromise ecological balance while enabling higher economic returns for coastal and riverine communities. The impact of this technology lies in its ability to bridge the gap between scientific research and field-level decision-making. By offering a unified tool tailored to the realities of tropical aquaculture ecosystems, we are enabling more sustainable production systems, strengthening livelihoods, and contributing to national food security objectives.

As India expands its Blue Economy ambitions, the APY Tool stands as a key technological enabler that promises to support innovation, resilience, and responsible underwater resource management.



4.2.2 Shipping Radiated Noise (SRN) Estimation Tool

The global maritime domain has witnessed a rapid increase in shipping activity, leading to a significant rise in underwater noise levels. This noise, primarily generated by propeller cavitation, onboard machinery, and hydrodynamic flow, disrupts marine ecosystems and impairs communication among marine mammals. This further intensifies strategic vulnerabilities in sensitive waters. Recognising this emerging challenge of the underwater domain, our engineering team has developed the 'Shipping Radiated Noise (SRN) Estimation' tool, which we consider an advanced data-driven capability that supports improved maritime environmental governance and addresses acoustic habitat degradation.

The SRN Estimation Tool integrates acoustic modelling, vessel traffic analytics, and oceanographic parameters to estimate underwater radiated noise from diverse ship categories. It leverages Automatic Identification System (AIS) data (and wind data) and environmental datasets to generate high-resolution spatiotemporal noise footprints. This is particularly relevant in the low-frequency range, where noise from ships and wind is most dominant. The frequency of this noise falls within the range used by marine mammals, making this tool crucial for understanding and mitigating the impacts of these sensitive species. This enables a better understanding of noise hotspots and the assessment of cumulative effects from the commercial shipping industry, port operations, and naval deployments in the Indian Ocean Region and beyond.

Beyond environmental considerations, SRN presents strategic implications in the UDA framework. Excessive acoustic pollution can mask signals critical for surveillance, anti-submarine warfare, and underwater communication networks. The tool's predictive analytics, therefore, support defence agencies in identifying stealthy vulnerabilities and strengthening underwater security in the IOR.

As India continues to expand its Blue Economy initiatives, ensuring ocean health while maintaining maritime growth becomes a priority. The SRN Estimation Tool is a pioneering technology intervention by MRC that advances scientific assessment, enables regulatory reform, and empowers operational resilience in underwater environments. With scope for real-time enhancement and multi-stakeholder collaboration, the tool is poised to become a cornerstone in India's sustainable and secure maritime future.

4.2.3 Our other innovative projects and ideas for Technology Intervention

1. Comprehensive Marine Spatial Planning (MSP) Tool

Marine Spatial Planning (MSP) is a critical decision-support tool for the sustainable governance of marine and coastal resources in tropical environments. MRC's MSP initiatives integrate advanced Modelling and Simulation techniques to enable scenario-based planning, optimise resource allocation, and enhance monitoring efficiency. This is complemented by customised sonar systems designed for tropical conditions and the integration of data analytics and artificial intelligence to process large volumes of underwater and surface data. Through 3D spatiotemporal, multi-sectoral mapping, leveraging AIS and wind data, the MSP tool enables real-time assessment and prediction of changes such as underwater noise from shipping and environmental factors, supporting informed, timely, and effective maritime governance.

2. Sediment Management Tool

This tool will aim to allow effective sediment management across multiple applications like– Water Resource Management, Navigability in (a) Inland Waters, (b) Coastal Waters, and (c) Constrained Waters. The other critical applications of the sediment management tool include port management, coastal management and construction of water bodies.

3. Submarine Deployment Tool

The submarines are critical war machines that must be deployed with utmost care and effectiveness. The tool will make sure we can rationalise the detection capability and vulnerability assessment uniquely for both types of submarines, namely– (1) Conventional (diesel-electric propulsion) Submarines and (2) Strategic (nuclear-powered) Submarines.

4. Environmental Impact Assessment (EIA)

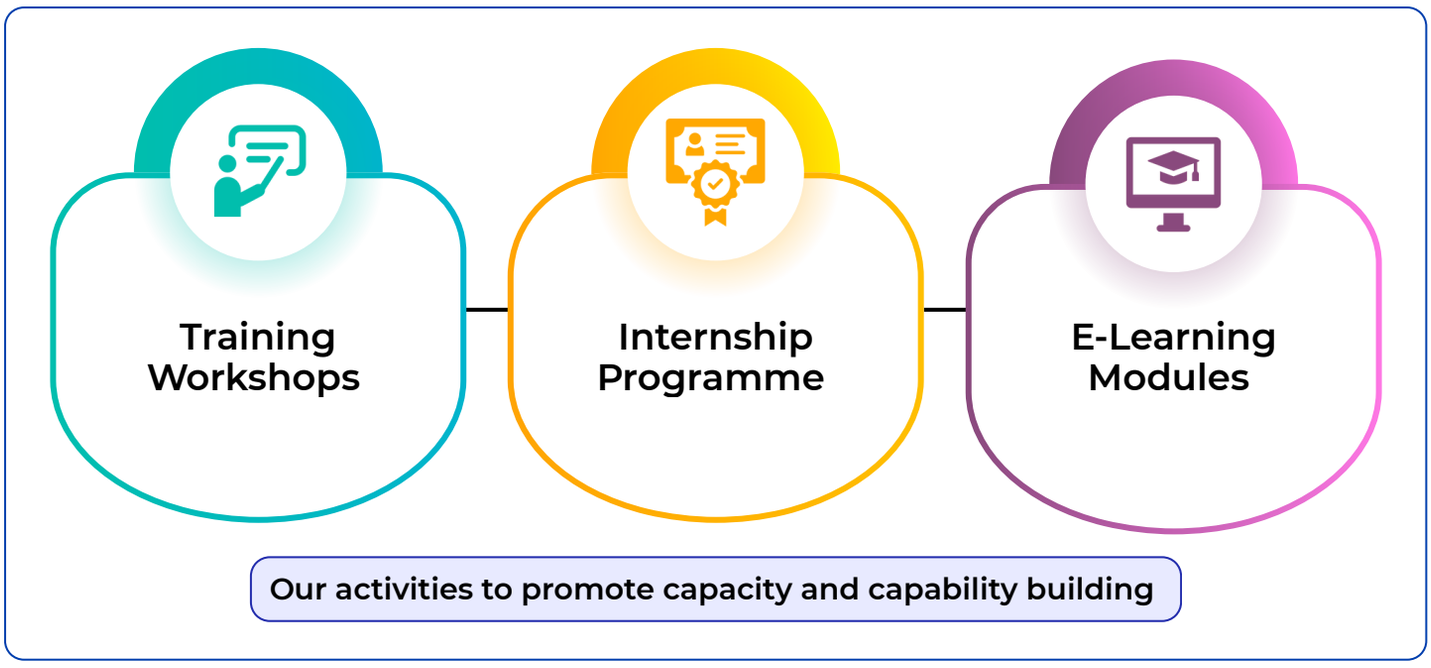
A comprehensive EIA is essential for sustainable growth and for containing climate change risk. The Underwater Domain will be the most critical player in global sustainability and climate change risk monitoring.

5. Collision Avoidance System

Marine platforms, both surface and subsurface, must ensure effective navigation on the surface and the bottom. Collisions against any surface obstacle and grounding due to low water below the keel are serious limitations to a marine platform's seamless navigability. A comprehensive digital tool equipped with Artificial Intelligence (AI)- based data analytics will be a game changer, able to manage collision avoidance on the surface and prevent grounding from the bottom.

4.3 Capacity and Capability Building

In this section, we present our efforts dedicated to training stakeholders in Underwater Domain Awareness. It includes significant workshops, programmes, events, and other activities aimed at strengthening capacity and capability. The figure below provides an overview of these core initiatives.



4.3.1 Training (UDA) Workshops

At the core of MRC's mandate is a commitment to strengthening national preparedness in the underwater domain through structured knowledge dissemination and technical training. The workshops and training programmes conducted during the year were conceptualized with a vision to equip diverse stakeholders with the competencies required to understand and apply UDA in their respective fields. These interventions spanned sectors such as maritime security, blue economy management, environmental sustainability, policy, and academia, thereby widening the reach of UDA-driven decision-making.

UDA Training Workshop for CAPSTAR Officers – MILIT, January 2025

In January 2025, we collaborated with the Military Institute of Technology (MILIT), Pune, to conduct a focused UDA capacity-building programme for CAPSTAR officers of the Indian Armed Forces. The workshop featured expert-led sessions, including a detailed discourse on "The UDA Framework for Safe, Secure and Sustainable Growth for All in the New Global Order." The session highlighted how UDA-based knowledge systems can support strategic national priorities such as food security, water security, energy independence, and climate change resilience, especially in an evolving geopolitical landscape. To bridge theory with practice, our team demonstrated the deployment of passive sonar systems and the in-house Shipping Radiated Noise (SRN) Estimation Tool. CAPSTAR officers were also provided hands-on experience through a technology demonstration zone that showcased informative modules on Digital Transformation in the Underwater Space, Sediment Management Solutions, and Underwater Radiated Noise (URN) Mitigation. This comprehensive engagement enabled participants to understand both technological methodologies and policy impacts associated with UDA.



Experiential Learning for IORA Diplomats – SSIFS, Ministry of External Affairs

MRC also contributed to global capacity development by conducting an interactive learning session on the 'Six Priorities of the Indian Ocean Rim Association (IORA)' as part of a Special Training Course for diplomats from IORA member countries. The programme was hosted by the Sushma Swaraj Institute of Foreign Service (SSIFS) under the Ministry of External Affairs, Government of India, in New Delhi. This initiative aimed at nurturing young foreign service professionals, emphasizing the growing strategic and economic relevance of UDA in international cooperation and Blue Economy governance.





Three-Day Training Programme for Government Officials – November 2025

In November 2025, MRC delivered an intensive three-day UDA training workshop for government officials under the Forestry Training and Capacity Building Scheme of the Ministry of Environment, Forest and Climate Change (MoEFCC). The programme attracted participants from a range of central and state departments, creating an interdisciplinary platform to explore the governance, environmental, digital, and security dimensions of UDA. Through scientific case discussions, strategic modelling, and live demonstrations of MRC's proprietary tools and technologies, participants were exposed to UDA's applications in coastal and riverine management, environmental risk mitigation, and Blue Economy planning. This workshop reinforced the need for evidence-based policymaking driven by data, acoustics, and multidisciplinary technical insight.







Academic Outreach and Awareness Programs

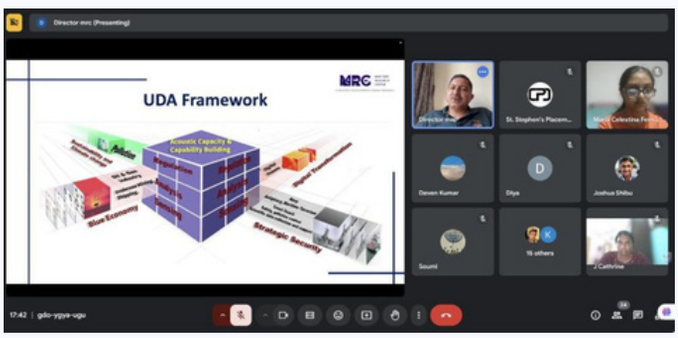
In addition to sectoral training, MRC significantly expanded its outreach to higher education institutions. UDA awareness workshops were hosted at prestigious universities and colleges, including St. Stephen's College, Jawaharlal Nehru University (JNU), O.P. Jindal Global University, South Asian University, and others. These sessions were aimed at fostering early-stage research interest, promoting UDA as a future-oriented discipline, and encouraging student involvement in maritime studies, ocean policy, and underwater technology.















4.3.2 UDA Summer Internship Programme:

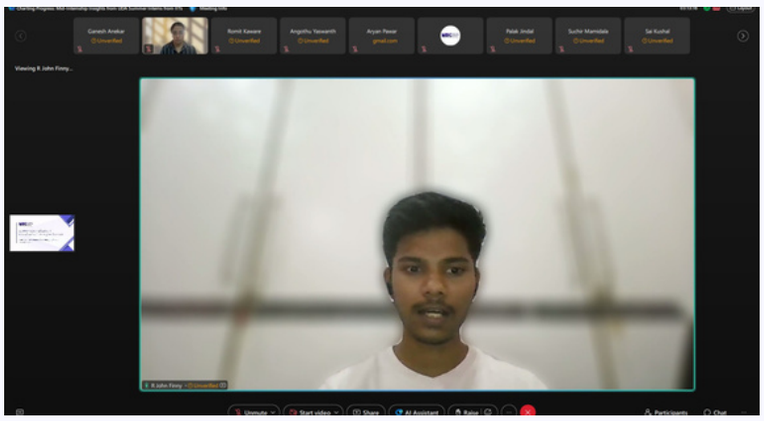
This year's UDA Summer Internship Programme 2025 received an overwhelming response, with thousands of applications from across India. After a rigorous selection process, only 25+ highly promising students were chosen to join the programme, reflecting MRC's commitment to nurturing only the most dedicated and capable young researchers. Our internship programme is a collaborative effort with premier academic institutions, providing students with immersive training and real-world research experience in critical areas of UDA. The initiative focuses on key domains such as Underwater Radiated Noise (URN) Management, Collision Avoidance Systems, Climate Change Risk Modelling, Sediment Management, Digital Transformation in Underwater Systems, and other strategic and scientific dimensions of maritime technology and governance. Through these collaborations, we continue to nurture the next generation of underwater professionals, innovators, and policy thinkers who can advance sustainable and strategic marine practices.

This year, the UDA Summer Internship 2025 welcomed exceptional students from leading Indian institutions, including IIT Bombay, IIT Kharagpur, IIT Madras, IIT Delhi, IIT Kanpur, St. Stephan's College, University of Virginia, University College London, Symbiosis School of Liberal Arts, etc. These institutions are known for their cutting-edge technical research and academic excellence, making them ideal collaborators in our mission to strengthen India's maritime research ecosystem. Interns begin their journey with structured training modules on acoustics, marine ecology, ocean governance, AI-based maritime analytics, and UDA frameworks, delivered by domain experts and industry leaders. They are then assigned live research projects in which they apply theoretical concepts to solve real-world underwater challenges.

Outstanding performers are given the opportunity to continue their association with MRC as Research Fellows to lead UDA-based projects, contribute to research and technology development and represent MRC at seminars, workshops, and national/international forums.

Over the course of the internship, students supported ongoing research in underwater acoustics, climate adaptation for coastal communities, AI-based vessel detection, and sediment budgeting models. The teams contributed to prototype development of noise quantification tools, preliminary policy briefs on sustainable marine governance, and techno-economic assessment models relevant to the Blue Economy. These outcomes strengthen our focus on building actionable research that connects science, technology, and policy for the Indian maritime sector.

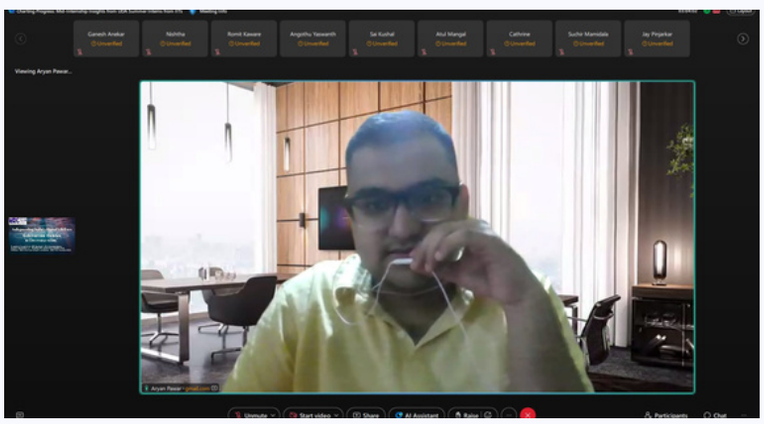
This year, we hosted the UDA research exposition, offering interns a platform to present their findings to marine conservation leaders, policymakers, technologists, and academic experts. The showcased projects demonstrated innovative solutions ranging from sustainable marine practices to advanced underwater sensing systems—all aligned with India's broader maritime security and Blue Economy vision. This knowledge exchange session enabled meaningful dialogue between young innovators and experienced professionals, reinforced our commitment to research-driven maritime capacity building, and celebrated the achievements of our emerging underwater science community. It further emphasised our purpose: to inspire, train, and empower new generations of UDA specialists who will drive sustainable ocean governance and technological advancement for India and the Indo-Pacific region.



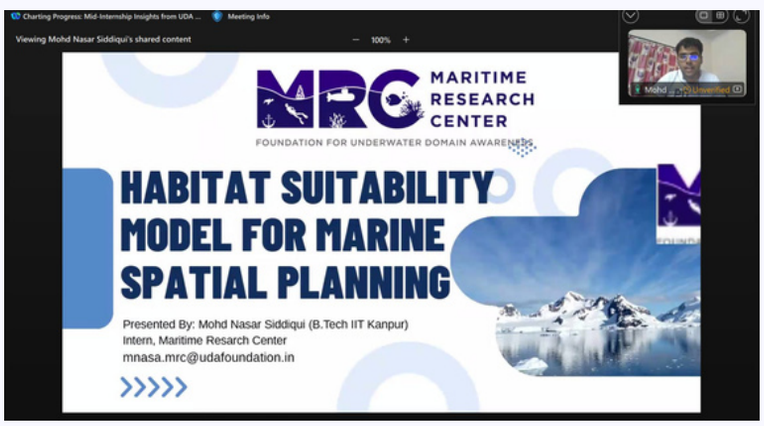














UDA Summer Internship Programme

4.3.3 E-Learning Modules

In alignment with our mission to strengthen national capability in UDA, our team develops a structured suite of digital e-learning modules that serve as a foundational element of our capacity and capability-building ecosystem. These modules are designed to equip stakeholders with both conceptual understanding and applied knowledge, enabling them to address emerging maritime, ecological, and technological challenges with confidence and competence.

The e-learning series covers a broad spectrum of critical themes, including the Blue Economy and sustainable ocean governance; Sediment Management for ecological stability; Digital Transformation in underwater systems; Underwater Radiated Noise Management; and Climate Change Risk Assessment for coastal and riverine environments. Each module has been meticulously designed to present real-world applications, data-driven frameworks, and actionable solutions, thereby bridging the gap between policy, science, and technology in underwater domain management.

These digital learning components form an integral part of the UDA Learning Center, MRC's centralised platform for continuous maritime education and professional development. Through this platform, users gain access to up-to-date knowledge resources, expert-led learning pathways, and curated content that strengthens technical literacy in UDA while fostering interdisciplinary collaboration. The platform aims to build a community of informed practitioners, policymakers, researchers, students, and innovators who contribute to sustainable underwater governance.

As part of MRC's capacity-building workflow, all interns, trainees, and research associates are first advised to complete these e-learning modules upon joining our programmes. This ensures a uniform understanding of UDA concepts and prepares them for advanced research, field exposure, and hands-on technology training. By grounding their work in a strong theoretical and analytical base, the modules enhance their ability to contribute to high-impact projects undertaken at MRC.

Integrating these e-learning modules into our broader UDA Platforms ensures that stakeholders across sectors, including defence, environmental management, policy bodies, and academia, are equipped with the skills and insights required to respond effectively to existing and emerging underwater challenges. This effort reinforces our commitment to building a future-ready maritime workforce capable of driving strategic, scientific, and sustainable advancements in the underwater domain.

5. International Engagements

This section highlights our expanding global footprint through high-impact research collaborations, participation in internationally recognised scientific forums, and contributions to global-level multidisciplinary UDA studies. As a research-driven think tank, we continue to contribute meaningfully to international studies on underwater acoustics, sustainable Blue Economy strategies, marine resource management, climate-linked ocean risks, sediment dynamics, underwater radiated noise mitigation, and advanced digital transformation for maritime governance. By engaging with institutions, policy bodies, conservation groups, and technological networks worldwide, we support research that benefits populations dependent on ocean resources across diverse geographies. Through this approach, we work to ensure that UDA knowledge systems are nationally relevant and capable of strengthening global ocean stewardship, scientific innovation, and sustainable maritime development.

5.1 International Conferences and Dialogues

In 2025, we strengthened our international presence by actively participating in high-level multilateral dialogues, policy forums, and scientific conferences across the Indo-Pacific and beyond. These platforms enabled us to position UDA as a strategic imperative for sustainable ocean governance, global security, and the transformation of the blue economy. Our participation at these events reflects our continued commitment to advancing acoustic capacity building, ecosystem understanding, responsible ocean stewardship, and technology-driven marine development.

One of the year's key highlights was our representation at the Asia Economic Dialogue (AED) 2025, held in Pune and hosted by the Pune International Centre (PIC) in collaboration with the Ministry of External Affairs (MEA), Government of India. Dr. (Cdr) Arnab Das, Founder and Director, MRC, was a distinguished speaker in the thematic session titled "Blue Economy in India's Extended Neighbourhood." In his address, he underscored the immense yet underutilised potential of underwater ecosystems across the Indo-Pacific. He highlighted how UDA, Artificial Intelligence (AI), and digital transformation can address critical challenges such as deep-sea mining governance, illegal fishing, climate change risks, and underwater resources management. The session witnessed an insightful exchange with leading international and national dignitaries, including Puneet Agrawal, Additional Secretary (IOR), MEA, India; Mr Greg Johannes, Chair, Blue Economy CRC, Australia; and Ms Subhanshini Abeysinghe, Research Director, Verité Research, Sri Lanka, who collectively highlighted the importance of adopting a science-led, cooperative approach to maritime development.





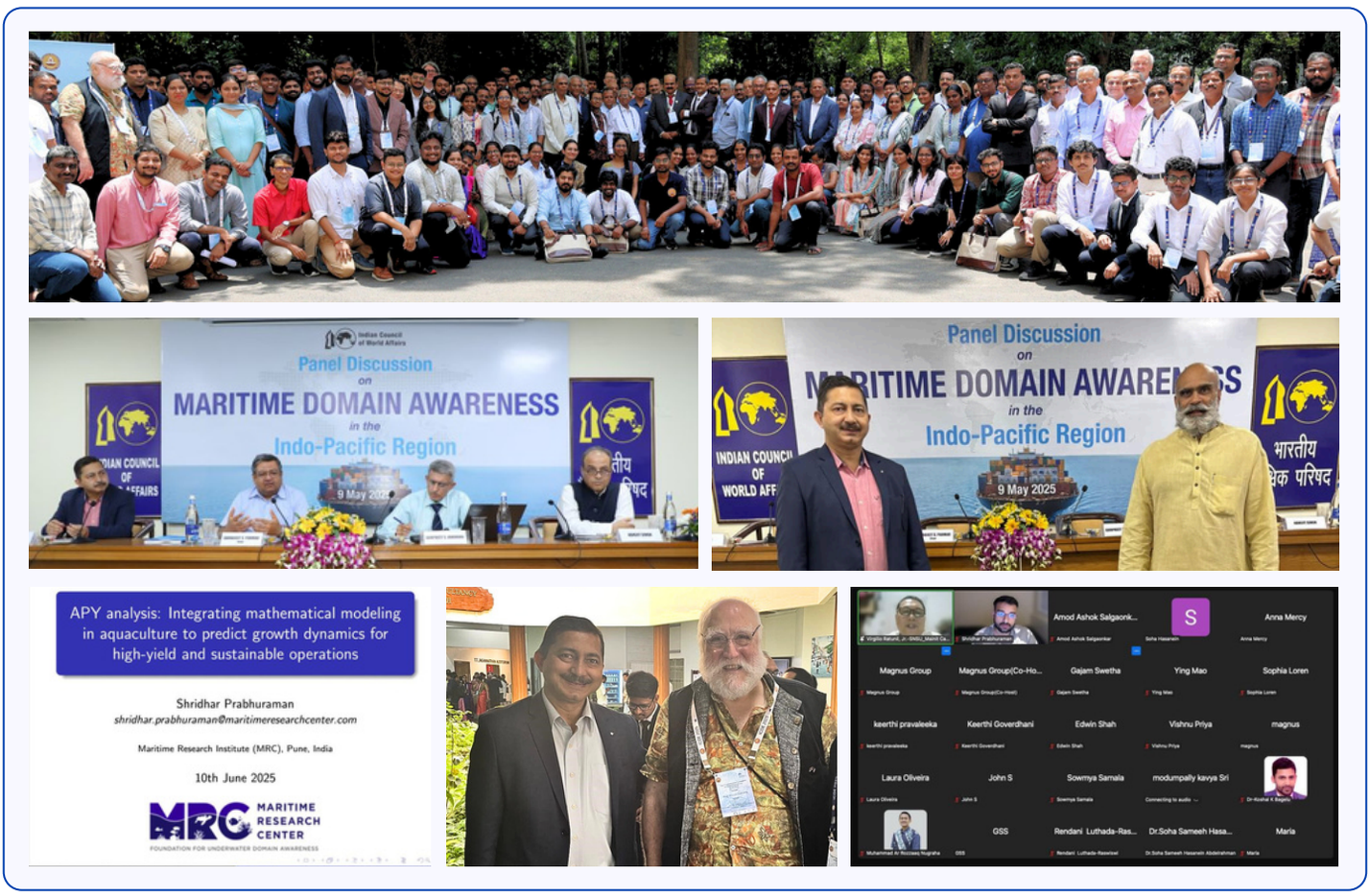
Expanding our footprint globally, MRC was invited to participate in the prestigious Ocean Decade Fifth Foundations Dialogue, held in Tokyo, Japan, and hosted by the Sasakawa Peace Foundation (SPF), the Nippon Foundation, UNESCO, IOC-UNESCO, and other key institutions. Dr. (Cdr) Arnab Das contributed to a high-level roundtable on the theme, "Asia-Pacific's Vision for the Ocean Decade: Advancing Regional Action to Honour the Ocean as the Mother of Life." Representing India on a global platform, Dr Das emphasised the centrality of UDA in shaping inclusive ocean policies, promoting community-driven coastal interventions, and deploying technology-enabled, data-driven solutions to enhance ocean stewardship. His address also stressed the critical need for regional collaboration, capacity building in acoustic science, cross-sectoral partnerships, and democratised access to ocean science, particularly for emerging maritime nations. The 3-day dialogue provided a unique opportunity to engage with global thought leaders, including Mr Yohei Sasakawa (Honorary Chairman, SPF/Nippon Foundation), Mr Vidar Helgesen (Executive Secretary, IOC-UNESCO), and Mr Atsushi Sunami (President, SPF), reinforcing MRC's role in shaping Indo-Pacific maritime priorities.



In addition to these flagship engagements, we participated in three other prominent international events that further amplified scientific collaboration and policy advocacy. These included:

1. A panel discussion on **"Maritime Domain Awareness in the Indo-Pacific Region"** hosted by the Indian Council of World Affairs (ICWA), which focused on strategic cooperation, capacity building for small island and littoral nations, and the need for multi-stakeholder data frameworks.
2. The **7th International Conference on Ocean Engineering (ICOE)** at IIT Madras, Chennai, where we interacted with and presented our research outputs to the global scientific community on acoustic monitoring systems, ocean technology innovations, and sustainable marine engineering solutions.
3. The **World Aquaculture, Fisheries and Seafood Conference 2025**, which served as a platform to explore the integration of acoustic tools in ecosystem monitoring, climate-resilient fisheries, marine biodiversity conservation, and livelihood protection.

These international engagements underscore our strategic mission to mainstream UDA as a global tool for science-based decision-making, security preparedness, resource management, climate resilience, and community welfare. In the coming years, we aim to deepen our network of partnerships and expand its roles in capacity building, technology deployment, and collaborative research across the Indo-Pacific and other maritime regions. These forums have recognised us as a pioneering institution working at the intersection of policy advocacy, technology innovation, and blue economy development.



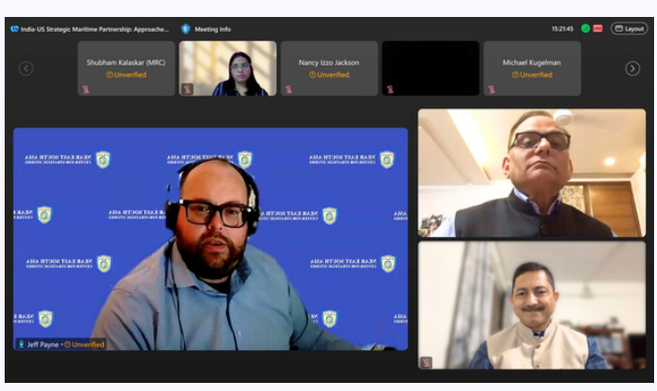
5.2 Strategic Partnerships and Joint Programs

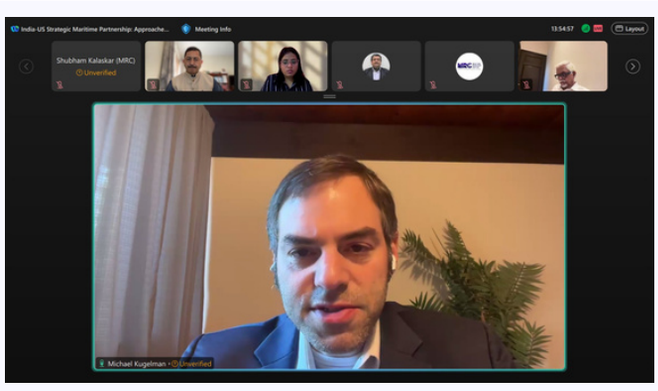
In keeping with our mandate to strengthen underwater research and maritime governance, this year we expanded our strategic partnerships that support policy innovation and cooperative security in the underwater domain. Through engagements with Indo-US, Indo-Japan, Indo-Philippines, and Indo-South Africa platforms, we contributed to dialogues on maritime security, resource protection, blue economy framework, and regional interoperability for sustainable ocean management. Engagement with regional platforms, such as the Indian Ocean Rim Association (IORA), enabled us to align national priorities with regional policy agendas focused on environmental stewardship, strategic security, and socio-economic development. Our collaboration with the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) enabled discussions and potential future collaborations on high-end research, exchange of laboratory facilities, and joint scientific studies on ocean observation and modelling. These alliances collectively advance our mission to build a robust, evidence-based maritime research ecosystem.

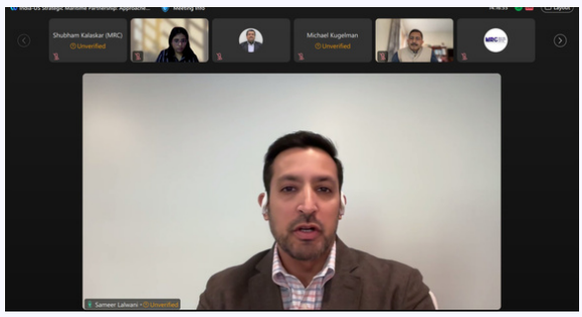
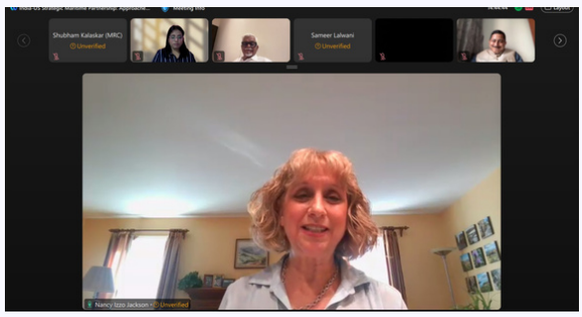
Indo-US

Our engagement with stakeholders in the United States of America (USA) remains one of our most significant strategic collaborations in advancing UDA. Our ongoing association with institutions such as the Near East South Asia Centre for Strategic Studies (NESA) and the International Maritime Organisation (IMO) reflects this sustained commitment.

In March 2025, we jointly organised a high-level webinar with NESA titled “India–US Strategic Maritime Partnership – Approaches Both Partners Bring to the Maritime Domain.” This high-level event brought together a diverse group of strategic thinkers, domain experts, policymakers, academicians, researchers, and other key stakeholders, all united by a shared interest in enhancing the India-US maritime partnership. The webinar provided a platform for engaging discussions on the evolving dynamics of the strategic maritime relationship between India and the United States. Participants explored various aspects of this partnership, including the complementary approaches each nation brings to securing maritime interests, ensuring regional stability, and advancing shared goals in the Indo-Pacific and beyond. UDA emerged as a recurring theme, with experts pointing to its critical role in disaster preparedness, maritime security, and sustainable ocean governance—particularly in tropical waters, where sonar performance is significantly degraded. A notable acknowledgement of our work came when our report was featured in the NESA Centre’s quarterly newsletter, reinforcing our thought leadership in this critical domain.





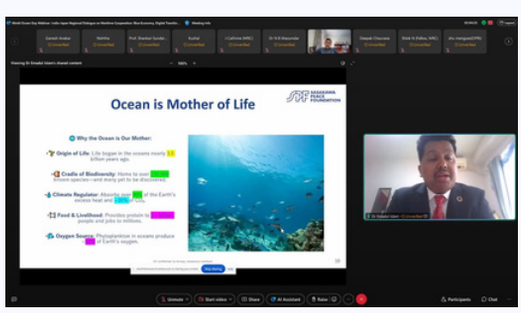



Additionally, our team participated in a committee meeting established under the IMO's GloNoise Project to address URN mitigation in the commercial shipping sector. During the meeting, our team contributed to the discussions on bridging gaps between naval and commercial shipbuilding practices in acoustic design and the importance of aligning IMO URN reduction guidelines. This meeting reinforced the importance of active engagement in the Experience Building Phase, marking a key step toward positioning India as a global leader in sustainable maritime practices.

Indo-Japan

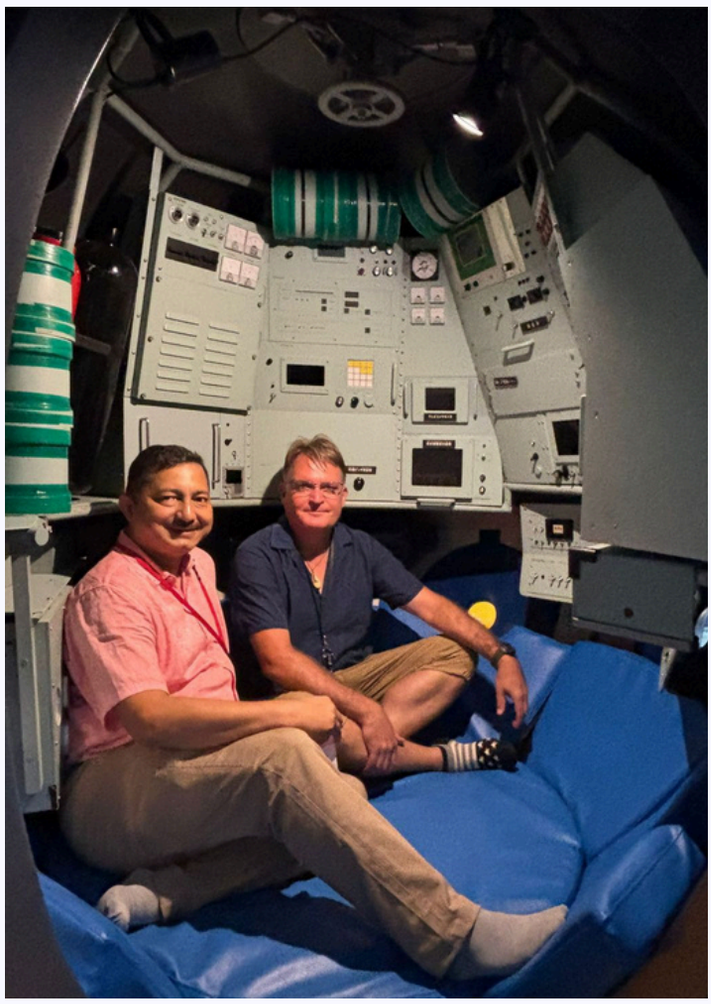
We have maintained meaningful collaborations on the Indo-Japan front through sustained engagements with organisations such as SPF, The Nippon Foundation, JAMSTEC, and others. We have also maintained our cooperation with the Tokyo University for our research endeavours on the Indo-Pacific front. Besides engaging with the SPF and participating in the 'Ocean Decade Fifth Foundation Dialogue 2025 in Tokyo,' we also had several high-level interactions and visits in Tokyo. We co-hosted a webinar with the SPF, Japan, titled "India-Japan Regional Dialogue on Maritime Cooperation: Blue Economy, Digital Transformation & Marine Spatial Planning (MSP) in the Indian Ocean," on the occasion of World Oceans Day 2025, on 08 June 2025. This webinar brought together experts and strategic thinkers from both India and Japan to deliberate on this crucial topic. As two leading maritime nations in the Indo-Pacific, both countries are uniquely positioned to co-create frameworks that align ecological priorities with economic development, particularly through MSP, digital innovation, and stakeholder empowerment.



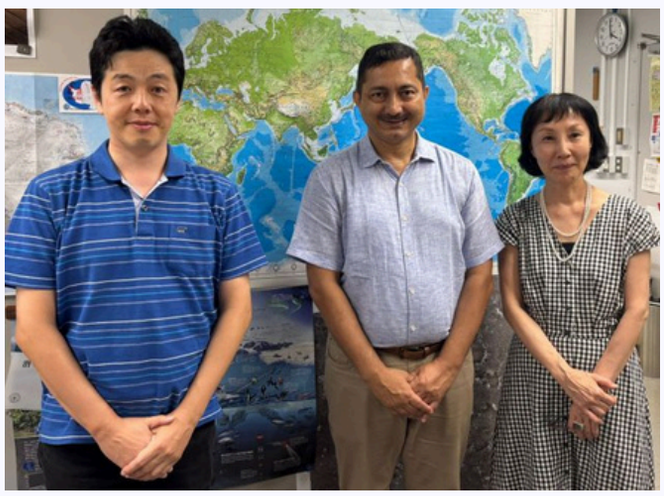




During his visit to Tokyo, Japan, to attend the Ocean Decade Dialogue, Dr (Cdr) Arnab Das also visited JAMSTEC, a global leader in ocean science. He explored pioneering technologies and discussed marine innovation and UDA with Dr Dhugal Lindsay, Senior Staff Scientist. The interaction, joined by Mehul Sangekar and Leah Bergman from JAMSTEC, highlighted our commitment to international collaboration and sustainable maritime growth. Besides, he also visited Tokyo University, where he had been invited earlier as a visiting researcher for his pioneering work on Freshwater Dolphins. During this visit, he held meetings with Researchers and Tokyo University who have expertise in underwater platform systems. These discussions provided a valuable opportunity to share the work we are advancing on UDA, and these engagements reflected our continued commitment to developing and maintaining meaningful international partnerships for collaborative research and technology innovation.



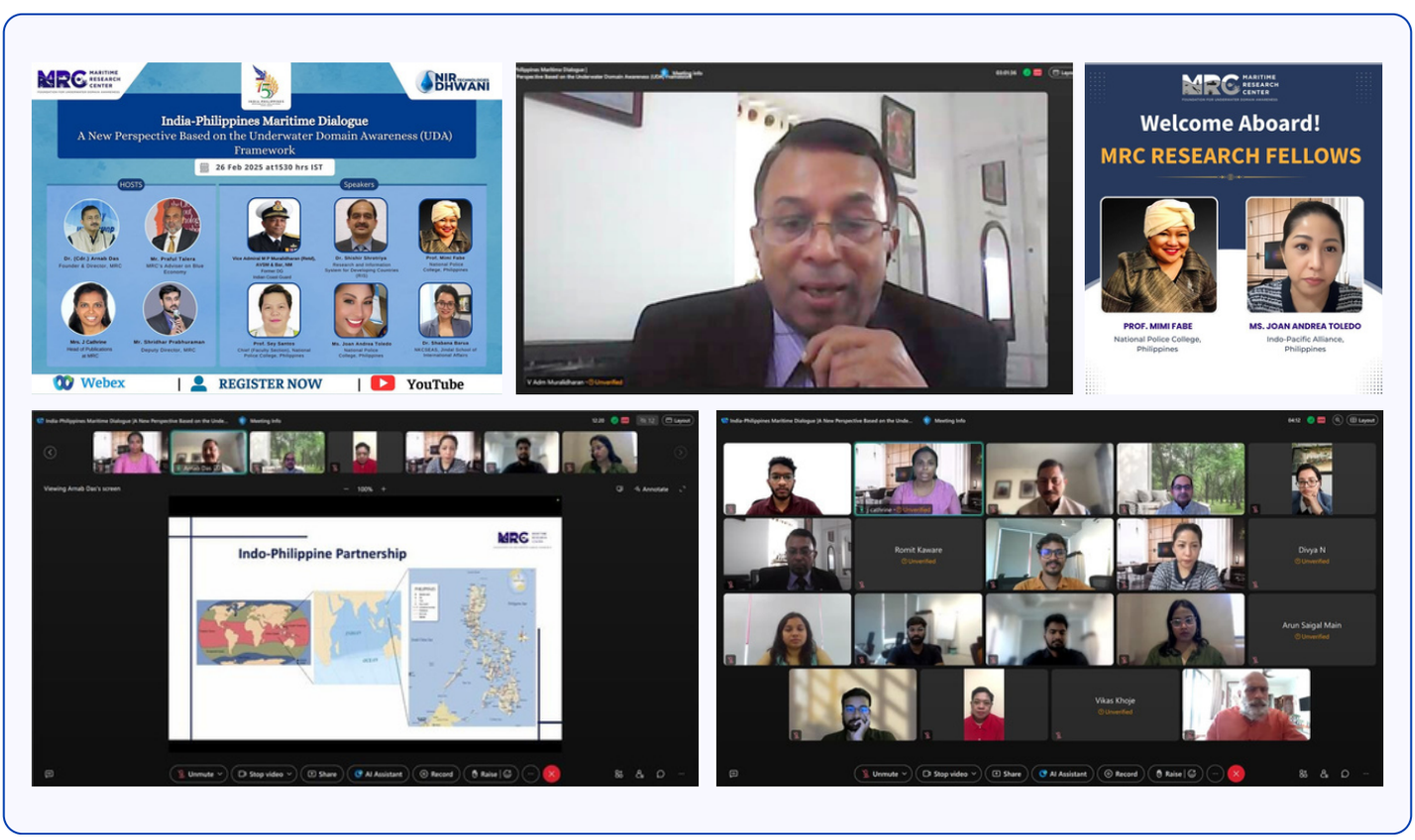




Indo-Philippines

The Indo–Philippines collaboration continues to be a critical engagement for us as it expands our research footprint in the ASEAN region and strengthens our work on maritime governance in the Indo-Pacific. In 2025, we conducted a webinar titled "*Indo–Philippines Regional Dialogue 2025*," featuring distinguished speakers Ms. Mimi Fabe and Ms. Joan Andrea Toledo from the National Police College, Philippines. The session focused on key maritime security and coastal management concerns in the Philippines and highlighted how India's indigenous underwater technologies can support regional efforts to enhance maritime safety, domain awareness, and coastal resilience. This partnership deepened further as both Ms. Fabe and Ms. Toledo joined our Fellowship Program. They are currently working closely with our Research and Publication team to advance research on regional maritime governance, community-centric ocean security, and technology adoption for coastal protection.

Building upon these collaborative efforts, we jointly organized a two-hour thematic webinar on coastal management, which examined the challenges faced by coastal communities and identified areas where organizations like ours can support local ecosystems, capacity-building, and sustainable ocean stewardship.



Indo-South Africa

In 2025, our engagement with South Africa witnessed significant progress through a series of strategic in-person meetings with diplomats at the South African High Commission in New Delhi. In April 2025, Dr (Cdr) Arnab Das held a focused discussion with Mr. Mashudubele (Sedula) Mamabolo, representing the South African High Commission. This interaction explored avenues for advanced maritime cooperation between India and South Africa, particularly by leveraging UDA to advance regional maritime security and blue economy development. Furthering this dialogue, in September 2025, our team delivered a presentation titled "*Underwater Domain Awareness (UDA)–Driven Port Management in Tropical Waters of the Indian Ocean*." The session was attended by a delegation from the Government of South Africa and facilitated discussions on shared challenges and technological advancements in port and harbour management across India and the wider IOR. The exchange highlighted the mutual interest in adopting UDA-based frameworks to support efficient, secure, and sustainable port operations.

Building on this momentum, both sides have expressed interest in co-developing UDA-centric capacity-building initiatives, technology demonstrations, and joint research about tropical port operations and maritime infrastructure safety. Through this collaboration, we aim to enhance our research endeavours across both India and South Africa, thereby supporting a knowledge-driven blue economy in the IOR.







5.3 Opportunity to Collaborate

In this section, we highlight our growing opportunities to collaborate and establish future partnerships with international stakeholders who were not covered in the preceding sections. These potential collaborators represent institutions and agencies with whom conversations are currently at different stages, from initial dialogue to exploratory discussions, and are steadily progressing toward formal engagements. While these relationships are still evolving, they reflect the expanding global interest in our work and are a direct outcome of our sustained 'Outreach' initiatives. Together, these emerging associations strengthen the foundation for long-term cooperation, knowledge exchange, and impactful global action in the underwater domain.

5.3.1 Engagement with the French Embassy in India

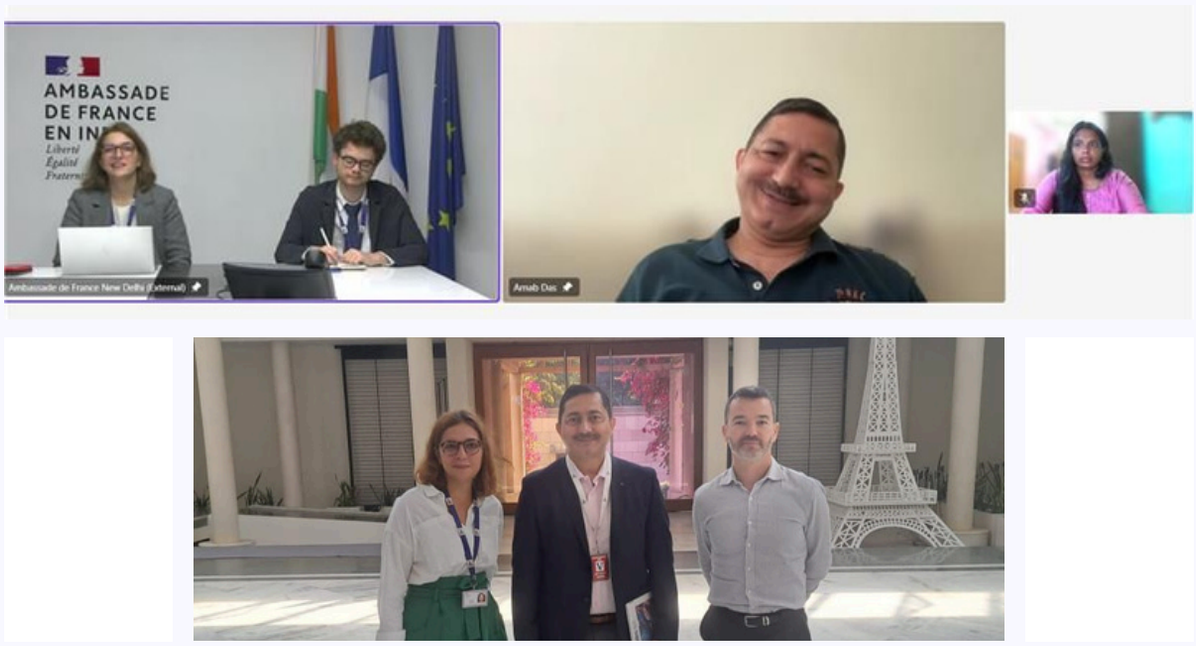
With a vast Exclusive Economic Zone (EEZ) in the Indian Ocean, France plays a pivotal role in strengthening regional maritime security, particularly in underwater assets and infrastructure. In January 2025, our team held discussions with officials from the French Embassy in India, focusing on the strategic relevance of submarine cable security and its intersection with Maritime Domain Awareness (MDA), Underwater Domain Awareness (UDA), and broader geopolitical imperatives. The dialogue underscored the increasing vulnerability of submarine cable systems, critical to global connectivity and economic stability, and emphasized the need for a more structured, diagnostic approach to safeguard them.

Key takeaways from this engagement included:

- **Identifying critical gaps in regulatory frameworks and infrastructure monitoring**, particularly in deep-sea cable protection.
- **Balancing national security imperatives with private-sector ownership and commercial priorities** is a growing challenge given the globalized nature of cable networks.
- **Recognizing India's expanding maritime ambitions**, reinforced through partnerships with strategic global actors including the United States, United Kingdom, France, Australia, and Japan.

The discussions concluded that long-term security of submarine assets must integrate not only advanced maritime technologies and surveillance systems, but also capacity building, ecological stewardship, and sustainable governance practices.

Furthering this dialogue, in March 2025, we met with Colonel Emmanuel Peltraiaux, Defence Attaché at the French Embassy in India, to explore collaborative pathways in UDA and evolving maritime security priorities. With India and France emerging as key partners in securing vital international waters, the conversation highlighted the urgency of developing joint technological capabilities, knowledge-sharing mechanisms, and strategic frameworks that can address emerging underwater threats. As global maritime challenges intensify, continued engagement between India and France becomes essential, particularly in the domain of UDA, which remains foundational for protecting undersea infrastructure and enabling safe, secure, and sustainable maritime growth.



5.3.2 Engagement with the diplomats at the Embassy of Costa Rica in New Delhi

In April 2025, we held a significant meeting with a senior diplomat at the Embassy of Costa Rica in New Delhi, marking an important step toward strengthening bilateral maritime cooperation. The interaction centred on advancing collaboration in marine research, sustainable ocean development, and technology-driven capacity building, particularly relevant for small and medium maritime nations that are increasingly vulnerable to climate change, resource exploitation, and emerging underwater security concerns. This engagement underscores our commitment to fostering meaningful global partnerships that promote sustainability, knowledge exchange, and scientific innovation in the maritime space.



Looking ahead to 2026, MRC aims to translate this dialogue into actionable cooperation, with potential initiatives including capacity-building workshops, joint research on blue economy priorities, and leveraging the UDA framework for enhancing marine governance. By deepening ties with countries like Costa Rica, we intend to expand a network of strategic maritime collaborators beyond the Indo-Pacific, thereby contributing to a more inclusive, resilient, and globally informed underwater domain ecosystem.

5.3.3 Engagement with Joint Secretary (JS) Indo-Pacific and ASEAN in New Delhi

In May 2025, we strengthened our strategic engagement with India's foreign policy ecosystem through a high-level meeting between Dr (Cdr) Arnab Das and Ms. Nabanita Chakrabarti, Joint Secretary (Indo-Pacific & ASEAN), Ministry of External Affairs (MEA), Government of India. The dialogue focused on the dynamic geopolitical landscape of the Indo-Pacific, underscoring the growing importance of maritime security, sustainable economic growth, and scientific cooperation across the region. A key aspect of the discussion was the centrality of the UDA framework as an instrument to strengthen maritime governance and reinforce India's position as a responsible actor in the Indo-Pacific. This engagement reflects the recognition of UDA as a strategic enabler for safeguarding critical underwater infrastructure, supporting blue economy aspirations, and driving collaborative policy initiatives. Going forward, this interaction with MEA will serve as a foundation for multi-stakeholder partnerships, actionable research, and capacity-building initiatives that align with India's Indo-Pacific vision in 2026 and beyond.



6. Impacts and Outcomes

6.1 Community and Socio-economic Impact

A key aspect of our work is promoting UDA, which involves a comprehensive understanding of underwater ecosystems and their interaction with human activities. In February 2025, we conducted a field visit to Veraval in Gujarat, where our team was deployed for a few days to interact with coastal communities and engage with government authorities to help them understand the existing gaps. This field visit also focused on assessing the feasibility and potential benefits of deploying our in-house Area Production Yield (APY) tool in the local aquaculture sector, specifically for shrimp and seaweed farming. This tool is designed to optimise farming practices, enhance sustainability, and improve yield predictions.

This visit was not only a technical milestone but also a meaningful engagement aligned with our broader '100 Coastal Warriors' initiative, which aims to empower coastal communities through sustainable aquaculture and climate-resilient livelihoods. Over the course of several days, our team interacted closely with the local fishing community and actively engaged in seaweed cultivation. The community's response was encouraging, with many expressing enthusiasm for tools tailored to their environmental and economic realities. We also discussed future tools in development, designed to be fully customisable and responsive to the unique challenges of each coastal region.





One of the most immediate gaps identified was the lack of consistent administrative support for emerging livelihood activities such as seaweed farming. While interest in aquaculture is growing, communities continue to face bureaucratic hurdles in obtaining permission to allocate farm sites. This challenge is further complicated by limited awareness among local authorities and community leaders about the long-term ecological and economic potential of seaweed cultivation, making advocacy and education crucial to gaining institutional backing. There is also a significant gap in access to technology and technical training. Although the APY tool offers a promising solution to improve yield predictions and promote sustainable aquaculture, many community members are unfamiliar with digital tools and data-driven decision-making. This digital divide was especially evident among older seaweed farmers and women-led self-help groups, underlining the urgent need for tailored capacity-building programs and user-friendly interfaces in local languages.

From an environmental perspective, the field visits revealed the high vulnerability of coastal cultivation systems to climate variability and extreme weather events. Farmers consistently reported difficulties in managing seaweed farms during periods of high wind velocity, cyclones, and unseasonal temperature fluctuations. These environmental stressors, compounded by poor access to real-time data and forecasting tools, highlight the need for climate-resilient aquaculture models and adaptive planning strategies.

On the socio-economic front, there is an apparent disconnect between livelihood potential and infrastructure availability. In all three regions visited, communities cited challenges such as high transportation costs, poor road connectivity, and limited access to boats and marine equipment. Furthermore, frequent power outages and weak digital infrastructure hamper communication and limit local entrepreneurs' ability to scale operations or engage with markets beyond their immediate geography. The field team also observed gender-based and class-based disparities in access to opportunities. For instance, women from landless families described how they are often left out of formal training programs and financial support mechanisms. Addressing these gaps is essential to the success of both the APY tool deployment and the broader objectives of the '100 Coastal Warriors' initiative. By grounding our interventions in the lived realities of coastal communities, we remain committed to building an integrated, resilient, and equitable model of coastal development, where data meets tradition, and innovation meets inclusion.



6.2 Policy and Governance Impact

This year, our policy-level impact was marked by significant progress across major national initiatives. We collaborated with the Indian Council of World Affairs (ICWA), New Delhi, to publish a Special Publication titled "*Ten Years of the SAGAR Vision and its Realisation – A New Perspective based on Underwater Domain Awareness.*" This comprehensive compendium of eleven chapters integrates the UDA Framework into the SAGAR doctrine, Security and Growth for All in the Region, emphasising its growing relevance in maritime security, blue economy development, climate resilience, regional diplomacy, and community empowerment through grassroots initiatives such as '100 Warriors'. The publication brings together diverse perspectives from academics, diplomats, researchers, and practitioners, and is led by Dr. (Cdr) Arnab Das. It offers not merely a retrospective on SAGAR, but a forward-looking roadmap for India's maritime future, advancing underwater governance through strategy, sustainability, and innovation to shape an evolving MAHASAGAR Outlook.

In addition to the Special Publication, Dr. (Cdr) Arnab Das contributed a dedicated research paper for the ICWA publication on Maritime Domain Awareness titled "*UDA Framework – A New Perspective for Maritime Domain Awareness (MDA) in the Tropical Waters of the Indo-Pacific Strategic Space.*" Before its release, Dr. Das also held a discussion with Ms. Nutan Kapoor, Additional Secretary at ICWA, where he underscored the critical relevance of UDA for the Indo-Pacific's strategically vital waters. His paper highlights that effective governance, resource management, security, and ecological monitoring in this region cannot be achieved without a comprehensive understanding of the underwater domain. Dr. Das further participated in a panel discussion hosted by ICWA on "*MDA in the Indo-Pacific Region,*" where he presented a practical pathway toward achieving MDA through MRC's three-step strategy of Outreach, Engage, and Sustain. The publication and the panel featured contributions from dignitaries representing the Indian Navy, the Observer Research Foundation (ORF), and the Council for Strategic and Defence Studies, reflecting a strong convergence of strategic perspectives across leading maritime and policy institutions.





Our policy influence further extended to contributing to the Underwater Radiated Noise (URN) Mitigation Committee of the Directorate General of Shipping (DG Shipping) and the IMO, along with formalising a partnership with the MILIT to enhance capacity building for the Indian Armed Forces under the UDA Framework. Through this engagement, we emphasised the need for India's proactive leadership in developing regulatory standards, indigenous monitoring systems, and data-driven mitigation strategies that support both maritime sustainability and national strategic interests. Our collaboration with the MILIT aims to institutionalise structured training, simulation-based learning, and applied research modules for naval, air, land, and joint-command officers, enabling them better to address emerging security challenges in the underwater domain. Together, these initiatives reinforce India's policy preparedness in underwater governance, bridging scientific insights with strategic action to enhance long-term maritime capability.



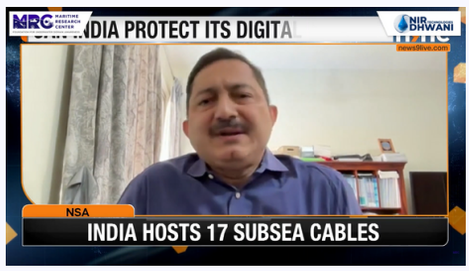
6.3 Shaping Public Opinion

This section includes our key media interactions, expert commentary, podcasts, and notable features across leading print and digital platforms, through which we sought to translate complex underwater challenges into accessible, public-facing narratives. These engagements enabled us to reach broader audiences beyond the strategic community, influence perceptions of critical underwater and maritime issues such as security, sustainability, and the blue economy, and position UDA as an indispensable component of national maritime policy and public discourse.



Dr. (Cdr) Arnab Das on News9: Rising Threats to Undersea Cables & Global Connectivity in February 2025

TUNE-IN NOW



Dr. (Cdr) Arnab Das on News9: China's Deep Sea Cables on 24th March 2025

TUNE-IN NOW



Pondicherry University Hosts National Seminar on 'Andaman & Nicobar Islands: Multidimensional Perspectives'

READ NOW



Asia Economic Dialogue 2025 Concludes in Pune, Emphasizing Economic Resilience Amid Global Fragmentation

READ NOW



MEA-PIC Asia Economic Dialogue 2025: Exploring Blue Economy in India's Extended Neighborhood

READ NOW

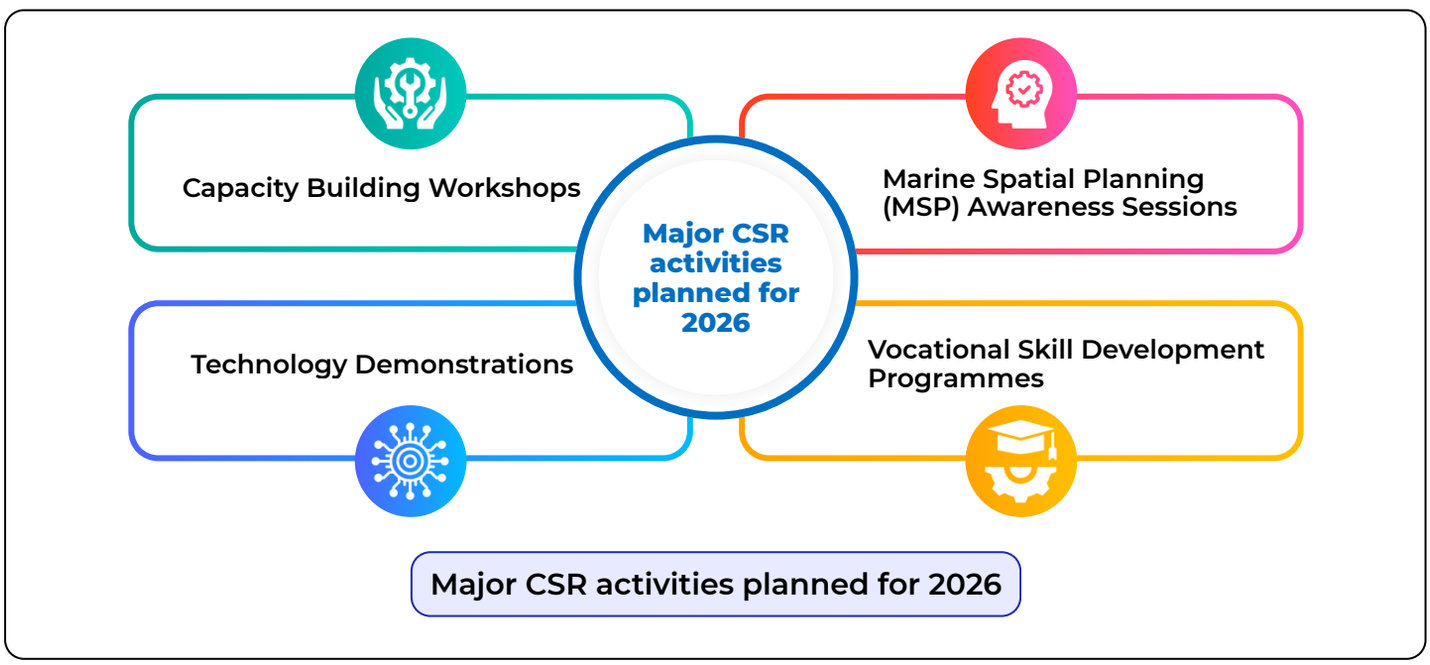
7. Looking Ahead: Strategic Priorities for 2026

In 2026, we will focus on strengthening advocacy for UDA to make everyone aware of the benefits of harnessing its opportunities, while also emphasising the various challenges currently present underwater. We will focus on expanding our social, scientific and strategic footprint through inclusive growth, collaborative innovation and evidence-based policy support. Our Corporate Social Responsibility (CSR) priorities will emphasise building ocean literacy, skill development and technology-driven marine conservation initiatives that will benefit coastal communities and young innovators. We will pursue deeper 'Opportunities for Collaboration' with government agencies, global research institutions, industry leaders and defence organisations to co-develop solutions in underwater technology, maritime security and blue economy growth. Guided by these partnerships, our 'Future Strategies and Pathways to Progress' will work to scale indigenous tools, strengthen engagement, and establish robust capacity-building initiatives that enable the world to pursue environmentally responsible and strategically secure maritime development.

7.1 Corporate Social Responsibility

At MRC, Corporate Social Responsibility (CSR) goes beyond outreach; it is a strategic commitment to empowering stakeholders through education, capacity building, and technology-driven environmental stewardship in the UDA Framework. Our CSR philosophy aligns directly with the objectives listed under **Schedule VII (ii, iv, ix) of Section 135 of the Companies Act 2013**, as we work to advance education and vocational skills, promote environmental sustainability, conserve natural resources, and support technology incubation through academic and research endeavours.

Our wide-ranging CSR initiatives are driven by a core goal of transforming knowledge into actionable impact. Through structured strategies, specialised collaborations, and industry-backed technical expertise, we facilitate learning that enables real-world solutions. The efforts are delivered through a range of programmes.



These programmes are built for students, researchers, coastal communities, policymakers, defence personnel, and industry practitioners. Indigenous tools such as the SRN Tool, MSP Tool, APY Tool, Passive Sonar Simulator, etc., are demonstrated and used to enhance practical understanding of marine environmental sustainability and security imperatives, thereby supporting informed decision-making at operational, regulatory and policy levels. By developing collaboration between academia and industry, nurturing young innovators across India and abroad, and championing marine conservation through scientific awareness, our CSR initiatives actively contribute to a more informed, capable and proactive UDA ecosystem.

Our mission strongly aligns with global sustainability priorities, especially the **United Nations Sustainable Development Goals (SDGs)**. The impact of our CSR efforts closely supports the following goals:



United Nations Sustainable Development Goals (SDGs)

As we march towards 2026, we remain committed to advancing UDA across these SDGs, enabling safe, secure and sustainable maritime growth in tropical waters. With support from key stakeholders in maritime security, blue economy, environmental conservation, disaster management, and research and innovation, we intend to continue building a collaborative ecosystem that strengthens India's leadership in responsible ocean management and technological innovation.

7.2 Opportunities for Collaboration

As the maritime landscape evolves across the Indo-Pacific, the need for collaborative knowledge creation and technology-driven capacity building has never been more urgent. We recognise that advancing UDA requires collective efforts and participation across government, industry, academia, coastal communities, and global actors. In this context, collaboration isn't just a pathway, it is a strategic imperative that enables shared growth, environmental responsibility, and innovation in coastal and underwater practices. We offer diverse, structured collaboration avenues to bring together experts, institutions, and citizens in building a sustainable and secure maritime future. These opportunities span research partnerships, training programs, technology adoption, membership-based engagements, coastal empowerment initiatives, and global knowledge exchange platforms. Together, they will contribute to a vibrant ecosystem where stakeholders can jointly influence policy, strengthen ocean literacy, drive technological development, and co-create practical solutions.

7.2.1 Membership Programme

We offer two forms of memberships: (1) Corporate Membership and (2) Individual Membership. Our **Corporate Memberships** are designed to meet the needs of startups, think tanks, non-profit organizations, and commercial entities, promoting deeper engagement at various levels. Members benefit from a range of advantages, including access to valuable insights, regular interactions, research outcomes and publications, invitations to exclusive events, opportunities to participate in research activities, and the ability to host stakeholder projects. The diverse membership options for different types of organizations provide a gateway to a wide array of collaborative opportunities, making a significant contribution to UDA and its real-world applications. Our **Individual Membership** program is designed to accommodate a wide range of engagement levels, welcoming both enthusiasts and professionals to join the dynamic field of Underwater Domain Awareness. With five membership tiers, from Student Members to Patrons, this program provides an opportunity to participate in UDA-related activities and decision-making processes actively. Memberships, which are valid for a specific period, offer various levels of involvement in UDA initiatives, ensuring an inclusive platform for participation.

7.2.2 Internship and Fellowship Programme

We offer internships and fellowship opportunities throughout the year for any individual, student, research professional, or academic institution looking to advance our research on UDA and enhance their understanding of UDA. In 2026, our central focus will be to equip students with the critical skills and knowledge necessary to excel in the underwater domain. This will involve not only enhancing their understanding of maritime ecosystems, underwater technologies, and climate risk assessment but also preparing them to address the evolving challenges of oceanic exploration and conservation. To achieve this, we will forge strategic partnerships with leading academic institutions, enabling us to provide specialised training programs, workshops, and research opportunities. Through these collaborations, we aim to create a dynamic learning environment that fosters greater engagement with the underwater field. By connecting students with cutting-edge research and real-world applications, we aim to cultivate a new generation of experts well-prepared to contribute to the sustainable development of the underwater domain and the broader blue economy. This initiative will help ensure that the next wave of professionals is equipped with the expertise needed to drive innovation, conservation, and technological advancement in this critical sector.

Together, these programmes build a pipeline of skilled youth who can support research, policy, innovation, and deployment of technology across key maritime sectors such as defence, fisheries, offshore energy, and port infrastructure.

7.2.3 UDA Skilling Programme

In alignment with national skill development priorities, we will launch a set of specialised skilling courses in collaboration with the **Ratan Tata Maharashtra State Skills University (RTMSSU)**. These programmes focus on subjects such as blue economy, digital transformation, sediment management, underwater radiated noise, environmental impact assessment, etc. These courses will address the acute shortage of trained manpower in underwater technology and marine sustainability. Designed for our key stakeholders, the programme aims to create a new generation of professionals who can support blue economy growth, marine environmental governance, and maritime security operations. Graduates will be prepared to take on roles in maritime technology firms, environmental consulting agencies, offshore infrastructure companies, naval research establishments, and global research institutions.

7.2.4 '100 Warriors' Initiative: Empowering Coastal Communities

We believe that the coastal community must be at the heart of sustainable maritime growth. The '100 Warriors' Initiative focuses on empowering youth from coastal, riverine and other water-resource-dependent communities through skill development, vocational training, entrepreneurship support and education on marine sustainability. These warriors will be trained to support community-based marine conservation, contribute to climate and disaster resilience programmes, engage in sustainable blue economy jobs, participate in ocean literacy programmes, UDA awareness campaigns, and build entrepreneurial ventures in eco-tourism, maritime services, etc. Collaboration opportunities under this initiative span sponsorships, training partnerships, technology deployment, local entrepreneurship incubation, and educational programmes for these communities. Various stakeholders from industry, government, philanthropy, and academia can join hands to build a resilient, informed, and empowered coastal and riverine society.

Besides, as discussed in the above sections of this report, we offer multiple tools that our stakeholders can adopt, deploy, or co-develop. These include the SRN Tool, the MSP Tool, the APY Tool, the Passive Sonar Simulator, the Sediment Management Tool, etc. Organisations can collaborate through licensing and purchasing tools, joint development and customisation, data-driven, consultative projects, and regulatory and environmental advisory engagements. These tools offer transformative value to ports, navies, environmental agencies, research institutions, shipping companies, and renewable energy developers. Through these collaboration pathways, we will continue building a diverse ecosystem where knowledge, technology, governance, and community empowerment converge. Partners across sectors and borders can collectively transform UDA into a force for sustainable maritime development, strategic security, and inclusive growth. We invite organizations, institutions, and individuals to join us in shaping a responsible and future-ready maritime world.

7.3 Future Strategies and Pathways to Progress

As we look ahead to 2026, our focus remains firmly anchored in deepening impact, expanding collaboration, and translating research into actionable outcomes for maritime governance, sustainability, and security. Building on the momentum generated in recent years, we envision a future defined by stronger collaborations, enhanced capacity building, and innovative technological solutions that address evolving maritime and coastal challenges.

A key pillar of our 2026 strategy is expanding collaborations across government agencies, academia, industry, and international institutions. Through these partnerships, we aim to co-create knowledge, share best practices, and jointly develop and deploy solutions that respond to regional and global underwater/maritime priorities. Collaborative engagements will also underpin our growing portfolio of training and capacity-building programmes, designed to equip policymakers, practitioners, and young professionals with the skills and insights to navigate complex underwater and blue economy domains.

Capacity Building will continue to be strengthened through a diverse range of training programmes, workshops, and specialised courses, tailored to emerging needs in underwater research, coastal management, environmental protection, and national security. In parallel, we will scale up our internship and fellowship programmes, offering students, early-career researchers, and practitioners meaningful opportunities to engage with cutting-edge research, policy analysis, and field-based initiatives. These programmes are central to nurturing the next generation of maritime leaders and fostering a vibrant, skilled talent pool.

Technological research will remain at the core of our future pathways. Significant progress is planned to develop and refine our innovative tools, with particular emphasis on the MSP Tool. In 2026, the MSP Tool will be further enhanced to support integrated, data-driven decision-making for sustainable use of marine and coastal spaces. Alongside this, other analytical and decision-support tools will be upgraded and newly developed to strengthen capabilities in coastal management, environmental assessments, and underwater and national security planning. Through these strategic priorities, we aim to reinforce our role as a trusted knowledge partner and solutions provider. By advancing collaboration, investing in people, and innovating with purpose-driven tools, we are committed to shaping resilient, secure, and sustainable maritime futures in the years ahead.

Sincere gratitude to our partners and affiliates:



Financial Report

FOUNDATION FOR UNDERWATER DOMAIN AWARENESS
Company Identification Number- U85300PN2019NPL182720
REGISTERED UNDER SECTION 8 OF THE COMPANIES ACT 2013
102,Cordia,Nyati Estate,Mohammadwadi,Hadapsar,Pune- 411060

BALANCE SHEET STATEMENT AS ON 31ST MARCH,2025

Rs. in '000

PARTICULARS	Notes	As at 31st March 2025		As at 31st March 2024	
		Rs.	Rs.	Rs.	Rs.
LIABILITIES					
CORPUS FUNDS					
(a) Trust & Copus Fund	3	100.00		100.00	
(b) Reserves and Surplus	4	1,212.24		1,565.77	
(c) Money received against share warrants					
			1,312.24		1,665.77
NON-CURRENT LIABILITIES					
(a) Long-term borrowings					
(b) Deferred Tax liabilities (Net)					
(c) Other Long term liabilities					
(d) Long-term Provisions					
CURRENT LIABILITIES					
(a) Short term borrowings					
(b) Trade payables					
(i) Total outstanding dues of micro and small enterprises					
(ii) Ttotal outstanding dues of creditors other than micro and small enterprises					
(c) Other current liabilities	5	630.04			
(d) Short term provisions					
			630.04		0.00
			1,942.28		1,665.77
ASSETS					
NON-CURRENT ASSETS					
(a) Property, Plant & Equipments and Intangible assets	6				
(i) Property, Plant and Equipment		268.42		254.08	
(ii) Intangible assets					
(iii) Capital work-in-progress					
(iv) Intangible assets under development					
(b) Non-current investments					
(c) Deferred tax assets (net)					
(d) Long-term loans and advances					
(e) Foreign Currency Monetary Item Translation Diff					
			268.42		254.08
CURRENT ASSETS					
(a) Current investments					
(b) Inventories					
(c) Trade receivables					
(d) Cash and Bank Balances	7	459.29		325.94	
(e) Short-term loans and advances	8	100.00		100.00	
(f) Other current assets	9	1,114.56		985.75	
			1,673.86		1,411.69
			1,942.28		1,665.77
See accompanying notes forming part of the financial statements	1-36				

As per our report of even date attached.

For Anupam Kharat & Company
Chartered Accountants
Firm Reg No. 147153W

ANUPAM KHARAT & CO * Chartered Accountants * M.No. 183039 FRN. 147153W

Mr. Anupam Kharat
Proprietor
M.No.-183039
UDIN : 25183039BMOSPX3550
Place : Pune
Date : 10/09/2025

For and Behalf of the Board of Directors of
FOUNDATION FOR UNDERWATER DOMAIN AWARENESS

Praful Talera
Director
DIN : 00337983

Arnab Das
Director
DIN : 07657449

FOUNDATION FOR UNDERWATER DOMAIN AWARENESS

Company Identification Number- U85300PN2019NPL182720
REGISTERED UNDER SECTION 8 OF THE COMPANIES ACT 2013
102,Cordia,Nyati Estate,Mohammadwadi,Hadapsar,Pune- 411060

STATEMENT OF INCOME AND EXPENDITURE FOR THE YEAR ENDED 31ST MARCH,2025

Rs. in '000

PARTICULARS	Notes No	As at 31st March 2025		As at 31st March 2024	
		Rs.	Rs.	Rs.	Rs.
Revenue from operations:	10				
Course Fees			1,840.10		60.00
Donations			9,410.14		9,650.00
Other Income	11		0.00		50.95
Total Income			11,250.24		9,760.95
Expenses					
Cost of Materials Consumed					
Changes in inventories of finished goods, work in progress and Stock-in- trade					
Other Manufacturing expenses					
Employee benefits expense	12	5,847.99		692.34	
Finance Costs	13	0.59		0.03	
Depreciation and amortization expense	6	30.66		33.67	
Other Expenses	14	5,724.54		9,076.01	
Total Expense			11,603.77		9,802.03
Profit before exceptional and extraordinary items and tax			-353.53		-41.08
Exceptional Items					0.00
Profit before extraordinary items and tax			-353.53		-41.08
Extraordinary items					0.00
Profit before tax			-353.53		-41.08
Tax expense:					
(1) Current tax					
MAT Payable					
MAT Receivable					
(2) Deferred tax					
					0.00
Profit/(Loss) for the period from continuing operations			-353.53		-41.08
Profit/(Loss) for the period from discontinuing operations					0.00
Tax expense of discontinuing operations					
Profit/(Loss) from discontinuing operations (after tax)					0.00
Profit/(Loss) for the period			-353.53		-41.08
Earnings per equity share:					
(1) Basic					
(2) Diluted					
See accompanying notes forming part of the financial statements	1-36				

As per our report of even date attached.

For Anupam Kharat & Company
Chartered Accountants
Firm Reg No. 147153W

ANUPAM KHARAT & CO. M.No. 183039 FRN. 147153W Chartered Accountants

Mr. Anupam Kharat
Proprietor
M.No.-183039
UDIN : 25183039BMOSPX3550
Place : Pune
Date : 10/09/2025

For and Behalf of the Board of Directors of
FOUNDATION FOR UNDERWATER DOMAIN AWARENESS

Praful Talera
Director
DIN : 00337983

Arnab Das
Director
DIN : 07657449

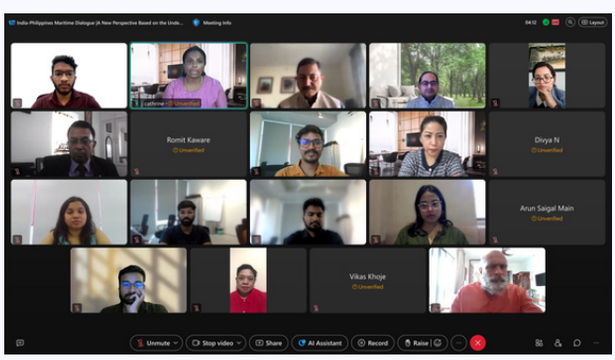
Media Library



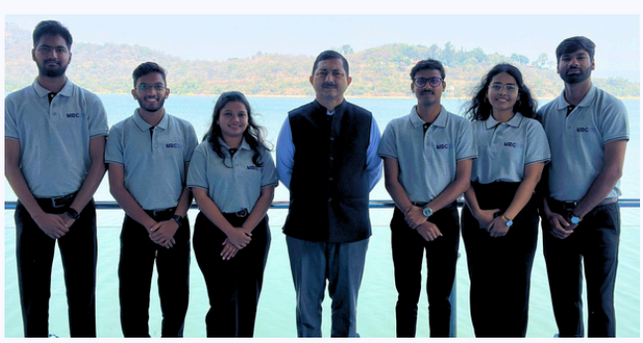


















References

***Note**: This section highlights all our activities under the 'Outreach, Engage, and Sustain' framework. The 'Outreach' component encompasses our key workshops, participations, and webinars. The 'Engage' aspect focuses on our primary engagement efforts with various stakeholders. Lastly, the 'Sustain' component includes activities that have been developed into long-term partnerships or collaborations.*

Outreach:

Webinars

1. India Philippines Maritime Dialogue 2025: A New Perspective Based on UDA Framework
2. India-US Strategic Maritime Partnership- Approaches Both Partners Bring to the Maritime Domain
3. Marine Spatial Planning (MSP) through Indigenous Innovation- A Live Demonstration of the Shipping Radiated Noise (SRN) Tool
4. Enhancing Coastal Management: Interaction with the Coastal Communities in the Tropical Waters– MRC's Initiative
5. A Decade of SAGAR Vision with Reality through the UDA
6. World Oceans Day 2025 Webinar (India-Japan Regional Dialogue on Maritime Cooperation)
7. Charitng Progress: Mid-Internship Insights from UDA Summer Interns from IITs- PART 1
8. Charitng Progress: Mid-Internship Insights from UDA Summer Interns from IITs-PART 2
9. Charitng Progress: Mid-Internship Insights from UDA Summer Interns from Liberal Arts Background
10. Startup Opportunities in the New Global Order- A New Perspective based on the UDA Framework
11. Marine Spatial Planning and the UDA Framework: Navigating the Future of Safe, Secure and Sustainable Growth in the IOR
12. World Maritime Day 2025 Webinar

Important UDA Workshops

1. **January 2025:** UDA Workshop for CAPSTAR Officer of the Indian Armed Forces at MILIT, Pune
2. **February 2025:** UDA Workshop at O.P. Jindal Global University, Sonipat, Haryana
3. **February 2025:** UDA Workshop for Coastal Community in Veraval, Gujarat
4. **February 2025:** UDA Workshop for students from St. Stephen's College, Delhi University.
5. **March 2025:** UDA workshop at South Asian University, New Delhi
6. **March 2025:** 'UDA in Coastal India' Workshop, conducted by the CPPR
7. **April 2025:** IORA Workshop at Sushma Swaraj Institute of Foreign Services
8. **April 2025**: 2nd UDA Workshop at O.P. Jindal Global University, Sonipat, Haryana
9. **November 2025:** UDA Workshop for Government Officials

10. **September 2025:** We conducted a UDA Workshop on Port Management for the senior diplomats of the South African High Commission.
11. **October 2025:** UDA Workshop at the Jawahar Lal Nehru University (JNU)
12. **October 2025:** UDA Workshop for the Indian Navy on 'AI in Strategic Planning and Simulation of Naval Operations- UDA Framework'

Important Meetings and Online Interactions

1. Meeting with Capt. Kosuga Hiroyuki, Naval Attache at the Embassy of Japan in India
2. Meeting with Col. Emmanuel Peltriaux, Defence Attaché at the French Embassy in India, New Delhi
3. Meeting with Ms. Nutan Kapoor Mahawar, Additional Secretary at ICWA, New Delhi.
4. Meeting with Ms Nabanita Chakrabarti, Joint Secretary (Indo-Pacific & ASEAN), Ministry of External Affairs, Government of India
5. Meeting with Mr Yohei Sasakawa, Honorary Chairman of SPF/Nippon Foundation, and Mr Vidar Helgesen, Executive Secretary of IOC-UNESCO
6. Meeting with Mr Atsushi Sunami, President of the Sasakawa Peace Foundation
7. Meeting with Ms Antonella Vassallo, Managing Director of the International Ocean Institute (IOI)
8. Two Meetings with Dr Ajay Kumar, Honourable Chairperson of the Union Public Service Commission (UPSC), Government of India (GoI), in New Delhi.
9. Two Meetings with Vice Admiral Gurcharan Singh, Commandant of the National Defence Academy (NDA).
10. Meeting with Shri Amitabh Kumar, IRS, the Former Director General of Shipping, Government of India.
11. Meeting with Rear Admiral V. Ganapathy, Commandant of the Military Institute of Technology (MILIT), Pune.
12. Meeting with Mr Kodero Jiro, Counsellor (Economy and Development), and Mr Sasaki Kie, Coast Guard Attaché (Political Affairs) at the Embassy of Japan in India, New Delhi
13. Meeting with Mr Mashudubele (Sedula) Mamabolo from the South African High Commission in New Delhi.
14. Meeting with senior diplomats at the Embassy of Costa Rica in India.
15. Meeting with Dr. Dhugal Lindsay, Senior Staff Scientist, JAMSTEC, Japan. Mehul Sangekar and Leah Bergman from JAMSTEC joined him.
16. Meeting with Ambassador Sudhir Devare, Chairperson of the Society for Indian Ocean Studies
17. Meeting with Mr Punnoose George, Executive Chairman at Saintgits Group of Professional Institutions, and Mr Naveen John Punnoose, Chief Digital Officer at Saintgits College of Engineering.
18. Meeting with Mr Sudhakar Dalela, Secretary (Economic Relations), Ministry of External Affairs, Government of India (GoI), in New Delhi.
19. Meeting with Admiral Karambir Singh (Retd), Former Chief of the Naval Staff and Chairman of the National Maritime Foundation.
20. Meeting with H.E. Mr Sanjiv Ranjan, Secretary-General of the IORA Secretariat.
21. Meeting with Ms Julia Hsiang-Wen Huang, Deputy Minister at the Ocean Affairs Council, Taiwan, on the sidelines of IPRD 2025.
22. Meeting with Amb. Riva Ganguly Das, Former Secretary (East), Ministry of External Affairs, GOI.

23. Meeting with Mr. MicheaL C. Huang, Senior Research Fellow at the Ocean Policy Research Institute, Sasakawa Peace Foundation (SPF), Japan.
24. Online interaction with Mr Gopal Krishna Pillai, Former Home Secretary, GOI
25. Online meeting with Dr. Emadul Islam (Nayan) from the Sasakawa Peace Foundation, Japan.
26. Online meeting with the officials from the French Embassy in India
27. Online meeting with Mr. Joel Ruet and team from The Bridge Tank (France) in February 2025

Engage:

Important Participations:

1. **February 2025**: Participation at the Asia Economic Dialogue 2025
2. **June 2025**: Participation at the World Aquaculture, Fisheries and Seafood Conference 2025
3. **September 2025**: Participation at the 'Ocean Decade Fifth Foundations Dialogue' in Tokyo, Japan
4. **January 2025**: Participation at the 'National Seminar on Andaman and Nicobar Islands: Multidimensional Perspectives,' which was organised by the UGC Centre for Maritime Studies, Pondicherry University.
5. **August 2025**: Participation in the 'Indian Coastal Alliance Conference' on "Priorities and Challenges in the Indian Coastal Region: Environmental, Economic and Geopolitical Perspectives" held on August 21–22, 2025, in Kochi, Kerala.
6. **July 2025**: Participation in the inaugural 'Shipbuilding Committee Meeting' convened by the DG Shipping, GoI, on July 25, 2025. This committee has been established under the International Maritime Organization's (IMO) GloNoise Project to address URN mitigation in the commercial shipping sector.
7. **July 2025**: Participation in the Brainstorming Workshop on 'Blue Economy Investments, ' organised by the Ministry of Earth Sciences on July 25, 2025, in New Delhi.
8. Participation in the 7th International Conference on Ocean Engineering (ICOE 2025), hosted by the Department of Ocean Engineering, IIT Madras
9. **August 2025**: Participation in the Round Table Discussion hosted by the All-India Disaster Mitigation Institute (AIDMI) on "Coastal Disasters with a Focus on Extreme Heat: Perspectives on South Asia."
10. **March 2025**: Participation in a webinar on 'UDA in Coastal India', which was conducted by the Centre for Public Policy Research (CPPR).
11. **September 2025**: Participation in the 'National Workshop on Strengthening the Science–Management Interface: Embedding Evidence and Technology in Marine Fisheries Governance,' held in Chennai.
12. **May 2025**: Participation at the panel discussion on 'Maritime Domain Awareness in the Indo-Pacific Region,' organised by the Indian Council of World Affairs (ICWA) in New Delhi
13. **May 2025**: Participation in the Federation of Indian Chamber of Commerce and Industry (FICCI)'s Dredging India Conclave 2025.
14. **October 2025**: Participation at the 'Ocean Discussion' hosted by the Taiwan Chamber of Commerce, Mumbai.
15. **October 2025**: Participation at the Indo-Pacific Regional Dialogue (IRD) 2025.

16. **October-November 2025**: Participation at the India International Symposium on Acoustics (IISA 2025).
17. **December 2025:** Participation at the Blue Economy Summit during the Geo Smart India Summit 2025 held in New Delhi.
18. **December 2025:** We participated in the International Conference on 'The World Ocean- A Space for Cooperation and Competitions,' hosted by the Primakov National Research Institute of World Economy and International Relations, Russian Academy of Sciences (RUSSIA).

Important visits to our UDA Center

1. MRC hosted Guardinger Advanced Technologies in January 2025
2. MRC hosted Mr. Vishal Thakkar and Mr. Rahul Jain from Pune Angels, along with Mr. Roshan Talera, Executive Director of Dynamic Logistics.

Sustain

1. Our partnership with the Military Institute of Technology (MILIT)
2. Our collaboration with Ratan Tata Maharashtra State Skills University (RTMSSU)
3. Our partnership with World Trade Center (Pune)
4. Our collaboration with the National Institute of Technology (NIT), Meghalaya
5. Our collaboration with Excel Industries Limited and Clima Crew
6. Our Internship and Fellowship Programmes for Students from the top 5 Indian Institutes of Technology (IITs)
7. Working on International Maritime Organisation's (IMO's) GloNoise project on URN Management.



Let’s collaborate !!

For General Inquiry & CSR Collaborations

DR. (CDR) ARNAB DAS

Founder and Director, MRC

+91-96650-33463

www.maritimeresearchcenter.com

director@maritimeresearchcenter.com

For Inquiries Related to UDA Digest

NISHTHA VISHWAKARMA

Communication and Outreach Head, MRC

+91-97178-52729

www.digest.udafoundation.in

nishtha.vishwakarma @maritimeresearchcenter.com

Address -

Maritime Research Center, Koregaon Bhima, Pune, Maharashtra – 412216