

Concept Note for Round Table

Leveraging New Emerging and Strategic Technologies (NEST) for Marine Spatial Planning (MSP): Enabling SAGAR through the Underwater Domain Awareness (UDA) Framework

Background

India's vision of SAGAR (Security and Growth for All in the Region) emphasizes inclusive maritime cooperation, sustainable economic growth, and collective security across the Indian Ocean Region (IOR). For the Global South, particularly littoral and island nations, achieving these objectives is especially challenging given the dual pressures of developmental aspirations and ecological vulnerabilities. Addressing this complexity requires governance models that integrate technology, policy, and sustainability.

Marine Spatial Planning (MSP) has emerged as a critical instrument for balancing economic growth, ecological stewardship, and maritime security. However, advancing MSP in resource-constrained regions such as Africa, Latin America, and South Asia is hindered by limited capacity, climate risks, and institutional challenges. These realities call for innovative, cost-effective, and scalable approaches that can bridge the gap between aspirations and practical outcomes.

The Underwater Domain Awareness (UDA) Framework provides such an enabling architecture. By integrating security, sustainability, and growth, UDA operationalizes SAGAR through affordable, customizable, and collaborative solutions tailored to the tropical waters of the Global South. Unlike high-cost imported technologies, UDA emphasizes indigenous innovation, contextual adaptation, and collaborative application, making it a natural ally of MSP in shaping inclusive ocean governance.

India's NEST Division of the Ministry of External Affairs, established in 2020, strengthens this alignment by integrating foreign policy with emerging and strategic technologies, including AI, clean technologies, advanced connectivity, and data-driven platforms. Its mandate of constructive global engagement in technology governance directly complements the digital transformation required for MSP. By harnessing NEST for MSP through the UDA Framework, India not only builds its own strategic advantage but also offers a replicable model of maritime governance for the Global South.

The UDA Framework is of strategic importance for the Global South for the following reasons:

- **Holistic Maritime Governance:** Integrates security, environmental sustainability, and economic growth into a unified framework.
- **Affordable Customisation:** Provides cost-effective alternatives tailored to tropical conditions, avoiding dependency on expensive imports.
- **Decision Support:** Offers robust modelling, simulation, and analytics tools to strengthen policy formulation and operational planning.

- **Capacity and Capability Building:** Reinforces India's position as a trusted partner and teacher by equipping nations with knowledge and skills for long-term self-reliance.
- **Industrial Engagement:** Creates new opportunities for Indian industry through the provision of hardware and technology solutions customised for partner nations.
- **Enhanced Blue Economy:** Strengthens the ability of Global South nations to responsibly utilise marine resources, ensuring both ecological stewardship and economic gain.

By leveraging NEST for MSP through the UDA Framework, India can effectively enable SAGAR, positioning itself as both a global technology partner and a leader in shaping inclusive, sustainable, and secure maritime futures for the Global South.

Vision

India's leadership in the UDA Framework must be viewed as a long-term investment in collective resilience. By positioning itself as the capacity building partner, India ensures that its role in shaping maritime governance in the Global South will be permanently respected. The emphasis on solutions rather than products, and on empowerment and strategic autonomy rather than dependence, reinforces India's leadership in advancing the SAGAR vision, strengthening security, and enabling sustainable growth for all.

Objective

This roundtable aims to deliberate on how innovative, India-led technologies, coupled with the Underwater Domain Awareness (UDA) Framework, can contribute to robust and adaptive Marine Spatial Planning (MSP) strategies for the Global South. By fostering collaborative dialogue with policymakers, technologists, and maritime stakeholders, the event seeks to position India as a responsible partner and enabler of sustainable ocean governance. In this context, the specific objectives are:

- **To demonstrate** the relevance of the UDA Framework in advancing the SAGAR vision by linking maritime security with sustainable growth.
- **To support** Global South priorities by offering affordable and context-specific solutions for maritime governance and blue economy development.
- **To align** with diplomatic mechanisms and ongoing initiatives of the Ministry of External Affairs (MEA) in strengthening cooperation with the Global South.
- **To showcase** India's leadership in capacity and capability building through training, knowledge-sharing, and technology transfer.
- **To present** innovative technology solutions within the "See – Understand – Share" framework, including configurable hardware for tropical waters, indigenised data analytics, and advanced modelling and simulation for strategic decision-making.

Key Focus Areas

The discussions will highlight a suite of decision-support and analytic tools developed under the UDA framework, to ensure effective realization of the Security & Growth for All in the Region (SAGAR), including:

- *Shipping Radiated Noise (SRN) Assessment Tool – facilitating ecological risk assessment and mitigation in busy maritime zones.*
- *Coastal Management Decision-Support Tool – supporting climate resilience, habitat conservation, sustainable coastal infrastructure planning and community engagement.*
- *Sediment Management Framework – enabling data-driven approaches to dredging and silt management, enhancing port operations and freshwater management, while protecting ecosystems.*

These tools reflect India's growing capacity to offer technology-driven, cost-effective, and scalable solutions that address the needs of partner nations, particularly in the Global South, while supporting global sustainable development objectives.

Expected Outcomes

The roundtable is expected to generate outcomes that strengthen India's leadership in maritime governance while advancing the priorities of the Global South. These outcomes will encompass strategic, technological, economic, and diplomatic dimensions, ensuring both immediate impact and long-term sustainability.

Soft Power Projection through MAHASAGAR Vision Operationalising the Mutual and Holistic Advancement of Security and Growth Across Regions (MAHASAGAR) vision through the UDA Framework will reinforce India's maritime diplomacy. By integrating policy, technology, and capacity building in the Indian Ocean Region (IOR), India positions itself as a benevolent maritime power committed to inclusive regional development.

Strategic Digital Transformation and Economic Returns The integration of Marine Spatial Planning (MSP) and UDA using advanced digital tools will build enduring capacities across the Global South. This will not only give India a strategic leadership edge but also generate commercial opportunities for Indian technology and training providers under initiatives such as ITEC, delivering measurable economic dividends.

Contextual Focus on Tropical Realities Unlike Western-led frameworks, UDA reflects the oceanographic, ecological, and socio-economic characteristics of tropical waters. This contextual approach enhances India's intellectual leadership and adoption potential of UDA across IORA member states and other Global South nations.

Technology and Economic Multiplier Effects Implementation will catalyse a technology-driven ecosystem across the IOR, spanning acoustic capacity building,

marine infrastructure, blue economy sectors, and digital maritime governance. These initiatives will generate employment, foster innovation, and strengthen coastal resilience, creating long-term multiplier effects.

Strategic Autonomy and Regional Influence By providing indigenous and affordable solutions, UDA reduces dependency on extra-regional powers for technology and capacity building. This consolidation of self-reliance reinforces India's position as a net security provider and trusted regional partner, aligning regional priorities more closely with India's interests.

Sustained Capacity Building and Partnerships Through training programmes, e-learning platforms, and skilling modules, India can extend sustained technical assistance to IORA and Global South partners. This institutionalises Indian expertise, nurtures enduring partnerships, and consolidates goodwill—deepening both soft power and strategic depth.

Key Deliverables

- Structured capacity-building programmes and regional training initiatives for stakeholders across the Global South.
- Demonstration of innovative technologies and solutions under the “See – Understand – Share” framework.
- Collaborative research projects focusing on environmental monitoring, underwater noise management, port and coastal management, and sustainable blue economy.
- Policy briefs and recommendations for integrating UDA into SAGAR, IORA frameworks, and MEA's Global South initiatives.
- Platforms for Indian industry to engage in co-development and supply of cost-effective maritime technologies tailored for tropical waters.

Important Links and References

- [UDA Framework](#) - A comprehensive approach to sustainable ocean governance integrating science, technology, policy, and capacity building.
- [Maritime Research Center](#) - A technology-driven think tank advancing the Underwater Domain Awareness (UDA) framework for maritime strategy and blue economy governance.
- [NirDhwani Technologies](#) - An innovation-driven enterprise developing indigenous acoustic and digital solutions for underwater monitoring and maritime applications.
- [UDA Learning Center](#) - An e-learning platform offering courses and skilling programs on Underwater Domain Awareness, MSP, and blue economy.
- [UDA Digest](#) - A knowledge-sharing publication featuring insights, research, and updates on global underwater domain and maritime governance issues.
- [UDA Knowledge Center](#) - A curated repository of resources, research papers, tools, and case studies on UDA and sustainable maritime development.

- **Skilling Ecosystem** – MRC empowers students and professionals to drive impactful solutions. Their efforts bridge knowledge gaps, foster skill transfer, and promote sustainable career pathways in this vital field.

Program

Opening Remarks by NEST Division (10 minutes)

Introductory Remarks (40 minutes) on the Topic including Demo on MSP by Dr. (Cdr) Arnab Das, Founder & Director MRC.

Remarks by Key Guests (40 minutes)

**Vice Admiral S N Ghormade (Retd), Former Vice Chief of Indian Navy
Secretary General Colombo Security Dialogue**

Shri Amitabh Kumar, IRS, Former DG Shipping

Mrs. Nutan Kapoor Mahawar, Director General ICWA

Shri P K Srivastava, Scientist G, Ministry of Earth Sciences

Question & Answers (30 minutes)

Concluding Remarks by Amb Anup Mudgal (Retd) Former Diplomat (20 minutes)

Close

Contact Details

Dr (Cdr). Arnab Das, Founder & Director

Maritime Research Center (MRC), Pune.

Mobile - +91-9665033463

Email ID – director@maritimeresearchcenter.com