

# U D A

## UNDERWATER DOMAIN AWARENESS

### E-NEWSLETTER



**4<sup>TH</sup>**

**QUARTER  
AT A  
GLANCE**

**200+**

Internship  
Applications  
Received

**40+**

Esteemed  
Speakers

**13**

UDA Digest  
Articles

**3**

Webinars

**500+**

Participants

**2 Lac+**

Social Media  
Reach



# TABLE OF CONTENTS

(Click on the Content to Read)



## 01

### MRC UPDATES / INTERACTIONS

## 02

### WEBINARS

**UNDERWATER DOMAIN AWARENESS (UDA) FRAMEWORK AND THE SAGAR VISION**  
TUESDAY 07 NOV 2023 | 1530 HRS

**LEAD SPEAKER**  
SHRI AJAY KUMAR  
Former Defence Secretary

**DISCUSSANT**  
VICE ADMIRAL A R KARVE  
PVSM, AVSM (retd)

**MODERATOR**  
CMDE UDAY BHASKAR (RETD)  
General Secretary SPS, New Delhi

**HOST**  
DR (CDR) ARNAB DAS  
Founder & Director Maritime Research Center, Pune

**"Charting a New Course: India's Aquaculture Renaissance in Sync with G20's Human-Focused Paradigm"**



## 03

### UDA DIGEST ARTICLES

## 04

### MEDIA ARTICLES



The UDA framework has to address the safety concerns, given the growing concerns of extreme weather events originating from the Oceans and the other water bodies. The security issue is real with the political volatility in the region. The sustainability and climate change risks are real and the global community needs to bring a nuanced way forward."

**NEW FRONTIERS OF INDIA'S UNDERWATER SECURITY: THE NEED FOR CMF IN UDA THROUGH ICET**  
by Commodore (Dr.) Somen Banerjee



The mere absorption of advanced underwater technologies would be inadequate for optimal defence for critical underwater national assets, constituting an effective deterrence, or conducting an offensive/covert action against an adversary. There will be a need to synthesise the existing Organisations, Innovations, and Logistics, or the OIL of CMF for enhancing Underwater Domain Awareness.

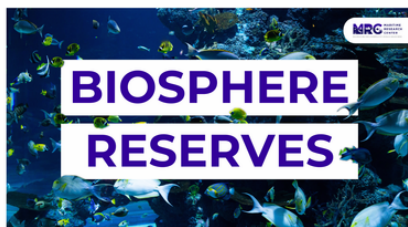
## 06

### UDA INTERNSHIPS / FELLOWSHIPS



## 05

### UDA RESEARCH ARCHIVES



## 07

### UDA VIDEOS

The Maritime Research Center (MRC), Pune is a not-for-profit, Section 8 company registered with the Registrar of Companies (RoC), as Foundation for Underwater Domain Awareness.

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Academia Membership, Internship, Fellowship and Research

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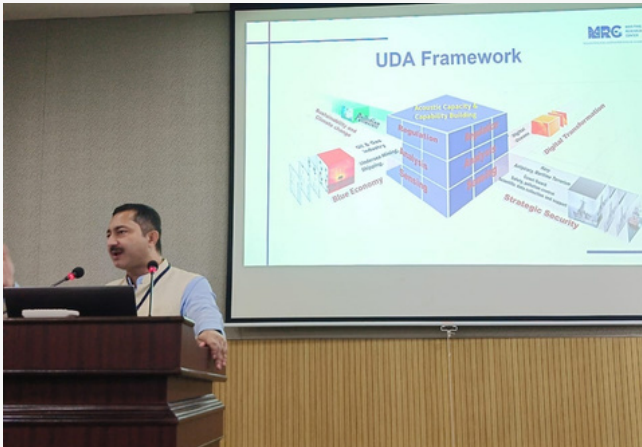
#### UDA\*

The conventional approach of each of the stakeholders pursuing their own "UDA" efforts has serious limitations given the highly resource intensive field experimental research initiative required for a long period. Click here for more

## 08

### GET IN TOUCH WITH US

# MRC UPDATES / IMPORTANT INTERACTIONS



**November 2023** - MRC was the technical partner at the UNESCO Ridge 2 Reef SACAM in Chennai from Nov 1-3, 2023. Our founder, Dr. Arnab Das, presented & chaired a session on the topic of Blue Carbon, contributing to crucial dialogue on preserving our planet's delicate ecological harmony.

**November 2023** - Dr. Chaitanya Patil, University of Strathclyde, visited MRC Centre & delivered a presentation highlighting the maritime industry's contributions to the world economy. We are also thrilled to announce that the University of Strathclyde (Glasgow, UK) has signed an MoU with the Maritime Research Center (Pune, India).



**November 2023** - MRC welcomes Dr. Suzanne Thoma, Chairperson of Sulzer, to the Maritime Research Center in Pune.

Dr. (Cdr) Arnab Das, provided her with an insightful introduction to the Underwater Domain Awareness framework, which was well received.



**December 2023 -**

Dr. Mehul N. Sangekar, JAMSTEC & University Of Tokyo, Vice Admiral DSP Varma (Former Chief of Materiel, Indian Navy) and Mr. Praful Talera (MRC Advisor on Blue Economy) visited MRC's Centre for an event on 01 Dec 2023.



**Fun Fact**

**The ocean plays a pivotal role in shaping and maintaining the Earth's climate.**

Ocean currents, like our circulatory system, distribute essential heat and moisture globally. Influential processes such as El Niño–Southern Oscillation (ENSO) and the Gulf Stream impact the entire climate.

**Fun Fact**

**The quantity of salt in the ocean is sufficient to blanket the entire Earth's surface.**

If the ocean's salt were evenly spread over Earth's land, it would form a layer over 500 feet (166 meters) thick, equivalent to a 40-story building.









## UNDERWATER DOMAIN AWARENESS (UDA) FRAMEWORK AND THE SAGAR VISION

**07 NOV 2023**

**MRC** MARITIME RESEARCH CENTER | **SFS** Society For Policy Studies | **SOUTH ASIA MONITOR** A PERSPECTIVE ON PAK AND OF INTEREST TO THE REGION | **NIR DHWANI**

**UNDERWATER DOMAIN AWARENESS (UDA) FRAMEWORK AND THE SAGAR VISION**

**TUESDAY 07 NOV 2023 | 1530 HRS**

 <p><b>LEAD SPEAKER</b> <b>SHRI AJAY KUMAR</b> Former Defence Secretary</p>	 <p><b>DISCUSSANT</b> <b>VICE ADMIRAL A R KARVE</b> PVSM, AVSM (Retd)</p>
 <p><b>MODERATOR</b> <b>CMDE UDAY BHASKAR (RETD)</b> General Secretary SPS, New Delhi</p>	 <p><b>HOST</b> <b>DR (CDR) ARNAB DAS</b> Founder &amp; Director Maritime Research Center, Pune</p>

[CLICK HERE TO WATCH THE WEBINAR](#)

[CLICK HERE TO READ THE WEBINAR REPORT](#)

**INTERACTION AND PRESENTATION BY DR. CHAITANYA PATIL AT THE MARITIME RESEARCH CENTRE, PUNE**

**Wednesday 22 Nov 2023 | 1430 hrs**

**MRC** MARITIME RESEARCH CENTER | **NIR DHWANI**

 Online/Offline  
 MRC COE, Pune

**ESTEEMED GUESTS**

 <p><b>DR CHAITANYA PATIL</b> Department of Naval Architecture, Ocean &amp; Marine Engineering (NAOME), University of Strathclyde</p>	 <p><b>CAPTAIN SUDHIR SUBEDAR</b> Former President and CEO of the Indian Coastal Conference Shipping Association (ICCSA)</p>	 <p><b>DR (CDR) ARNAB DAS</b> Founder &amp; Director Maritime Research Center, Pune</p>
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## INTERACTION AND PRESENTATION BY DR. CHAITANYA PATIL AT THE MARITIME RESEARCH CENTRE, PUNE

**22 NOV 2023**

[CLICK HERE TO WATCH THE WEBINAR](#)

[CLICK HERE TO READ THE WEBINAR REPORT](#)

**INTERACTION AND PRESENTATION BY DR. MEHUL NARESH SANGEKAR, JAMSTEC & UNIVERSITY OF TOKYO**

**01 DEC 2023**

**INTERACTION AND PRESENTATION BY DR. MEHUL NARESH SANGEKAR, JAMSTEC & TOKYO UNIVERSITY**

Online & Offline

Friday 01 Dec 2023 | 1430 hrs

**ESTEEMED GUESTS**

LEAD SPEAKER	CHIEF GUEST	HOST	HOST
 <b>DR. MEHUL SANGEKAR</b> Japan Agency for Marine Earth Science and Technology (JAMSTEC) & Tokyo University	 <b>VICE ADM DSP VARMA</b> PNSM, A/VM, VSM (Retd), Former DC of the Strategic Submarine Project and Chief of Material, Indian Navy	 <b>DR (CDR) ARNAB DAS</b> Founder & Director, Maritime Research Center, Pune	 <b>SHRI PRAFUL TALERA</b> MRC Advisor on Blue Economy

[CLICK HERE TO WATCH THE WEBINAR](#)

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**Fun Fact**

**You can drink sea ice!**

Drinking sea ice is possible as it consists of freshwater. This natural source is vital for some Arctic communities and offers a unique way to obtain drinkable water.

**Fun Fact**

**The number of species that live in the ocean is unknown.**

The ocean's species count is unknown due to its complexity. Ongoing research reveals new species, emphasizing the need to understand and protect its rich biodiversity.





### "Disseminating to Mitigate Oil Spillages: A UDA Perspective"



Disseminating to Mitigate Oil Spillages: A UDA Perspective

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### "India's Samudrayan Seabed Mission Holds Promise for Clean Energy and Blue Economy"



"India's Samudrayan Seabed Mission Holds Promise for Clean Energy and Blue Economy"

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### "Charting a New Course: India's Aquaculture Renaissance in Sync with G20's Human-Focused Paradigm"



For more insightful articles, visit [www.digest.foundationforuda.in](http://www.digest.foundationforuda.in)

Charting a New Course: India's Aquaculture Renaissance in Sync with G20's Human-Focused Paradigm

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### Blue Carbon, Oceans and Underwater Issues – A New Perspective based on the Underwater Domain Awareness (UDA) Framework



Blue Carbon, Oceans and Underwater Issues – A New Perspective based on the Underwater Domain Awareness (UDA) Framework

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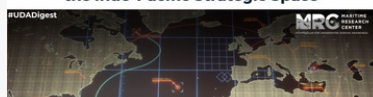
### Indo Pacific: The New Theatre



Indo Pacific: The New Theatre

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### "Strategic Security @100 – A New Perspective Based on the Underwater Domain Awareness (UDA) Framework for the Tropical Waters of the Indo-Pacific Strategic Space"



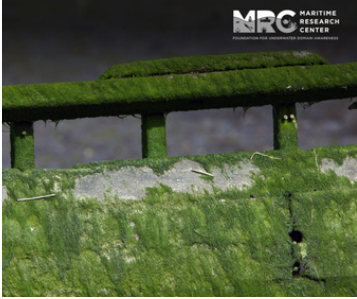
#### Key Highlights

- The specific and specialized technology required for deep sea mining and the added sustainability concerns can only be addressed with enhanced Underwater Domain Awareness (UDA).
- The acoustic survey being the only means for UDA, requires specialized acoustic capacity and capability building.
- The primary threat and the resources are underwater and if we do not build significant acoustic capacity & capability to achieve effective UDA, we will never be able to attain strategic autonomy for ourselves.
- The digital transformation driven by the UDA framework will be the way forward for effective governance of the tropical waters of the Indo-Pacific strategic space.
- Strategic Security@100 has to make sure we have been able to put in place a safe, secure, sustainable growth model for all in the tropical waters of the Indo-Pacific strategic space.

Strategic Security @100 – A New Perspective Based on the UDA Framework for the Tropical Waters of the Indo-Pacific Strategic Space

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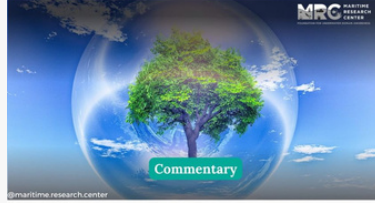
**Biofouling in the Indo-Pacific:  
A Menace to Shipping**



**Biofouling in the Indo-Pacific:  
A Menace to Shipping**

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**THE BRIDGE BETWEEN SCIENCE AND TRADITION:  
INCLUSIVE POLICY MATTERS IN BIOSPHERE RESERVES**  
UDA Digest Commentary



"Policies that promote inclusivity in biosphere reserves ought to proactively work to close the knowledge gap between traditional and scientific domains. It is possible to create scientifically grounded strategies that honor the land's cultural and historical significance."

Read the full commentary on [www.digest.foundationforuda.in](http://www.digest.foundationforuda.in)

**The Bridge Between Science and Tradition: Inclusive Policy Matters in Biosphere Reserves**

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**Extreme weather conditions around the world are a result of climate change; How India and others are gearing up?**



**Extreme weather conditions around the world are a result of climate change; How India and others are gearing up?**

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**NAVIGATING THE TYRANNY OF SMALL DECISIONS: A COMPREHENSIVE EXAMINATION OF POLICY CHALLENGES**



"Climate change serves as a prominent example of the tyranny of small decisions, where incremental choices have led to profound and interconnected consequences, particularly in the context of the oceans. Immediate action is imperative, utilizing a comprehensive approach encompassing mitigation, protection, restoration, and adaptation."

Read the full article on [www.digest.foundationforuda.in](http://www.digest.foundationforuda.in)

**Navigating the Tyranny of Small Decisions: A Comprehensive Examination of Policy Challenges**

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**Safeguarding the Indian Ocean: Navigating Multilateral Partnerships for Underwater Security and Environmental Resilience**



**Safeguarding the Indian Ocean: Navigating Multilateral Partnerships for Underwater Security and Environmental Resilience.**

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**Financing Blue Economy - Outcomes of COP28**



**Financing Blue Economy - Outcomes of COP28**

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**Blue Economy  
Ocean Energy**



**Blue Economy - Ocean Energy**

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in the News"A NEW PERSPECTIVE ON INDO-PACIFIC SECURITY"  
BY DR. ARNAB DAS

South Asia Monitor | 1 Oct 2023

"The UDA framework has to address the safety concerns, given the growing concerns of extreme weather events originating from the Oceans and the other water bodies. The security issue is real with the political volatility in the region. The sustainability and climate change risks are real and the global community needs to bring a nuanced way forward."

## THE SOUTH ASIA MONITOR

In a thought-provoking article with the South Asia Monitor, our Founder, Dr. (Cdr) Arnab Das proposes the need for a comprehensive Underwater Domain Awareness (UDA) framework to ensure a safe, secure, sustainable growth model is established on ground.

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## THE SUNDAY GUARDIAN

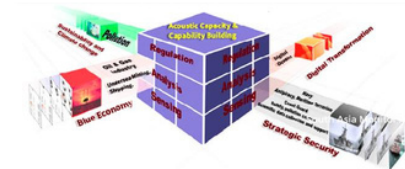
In this Editor's Choice The Sunday Guardian article, Dr. (Cdr) Arnab Das highlights the strategic relevance of the Indo-Pacific region and the need for effective Underwater Domain Awareness (UDA) to address the climate crisis whilst ensuring equitable distribution of resources.

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MRC  
in the News

TheSundayGuardian

**UDA framework can be a catalyst for Indo-Pacific growth post G20**

Editor's Choice • UDA framework can be a catalyst for Indo-Pacific growth post G20



By Arnab Das

October 8, 2023

The UDA framework aligns with the objectives of the IORA charter, which has undergone multiple revisions over the years to foster cooperation and capacity building among member states.



### Fun Fact

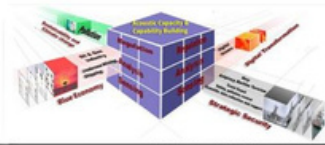
**The ocean contains 37 out of 50 critical minerals.**

The ocean holds a significant reservoir of resources, housing 37 of the 50 critical minerals essential for various industrial applications

The multi-polar global order is trying to balance the political and ideological confrontation between the United States and China. The West versus Russia, in the backdrop of the Russia-Ukraine conflict, is further complicating the new global order with massive economic and geopolitical impact. The energy demands and the food security concerns, post-pandemic, have caused massive geo-strategic complexities. Developed powers are hoarding, whereas developing nations are finding it hard to manage the basic necessities. The human race has exhausted the terrestrial resources and increasingly prioritizing the marine as well as freshwater resources. The unregulated and unorganized rush toward the underwater domain is causing serious sustainability concerns and climate change risks. With so many economic and political stakes, strategic security becomes an obvious stakeholder.

**Importance of Marine Spatial Planning**

The Underwater Domain Awareness (UDA) framework encourages the pooling of resources and synergizing of efforts across all four stakeholders, namely strategic security, blue economy, sustainability and climate change risk management and digital transformation. Digital transformation in the underwater space is the optimum way forward to map the entire tropical region manifested as Marine Spatial Planning (MSP). MSP has become the de facto governance tool declared by the United Nations. This will require serious UDA effort across marine as well as freshwater systems to ensure nuanced policy and technology interventions, along with acoustic capacity and capability building. It will seamlessly demolish the contemporary fragmented approach across the stakeholders and among the nations within the region.



Schematic Diagram for the UDA Framework

## THE SOUTH ASIA MONITOR

In this South Asia Monitor article, Dr. (Cdr) Arnab Das highlights the role of BIMSTEC in harnessing both traditional knowledge and modern technologies to manage the region's vast marine resources effectively.

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## INDIAN DEFENCE REVIEW

In this article with the Indian Defence Review, Dr. (Cdr) Arnab Das discusses some ways in which digitising Blue Economy efforts by investing more in maritime technology and leveraging India's startup ecosystem can help create positive growth

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**"SINKING OR SOARING: THE DIGITAL DILEMMA OF INDIA'S MARITIME FUTURE"**  
BY DR. ARNAB DAS



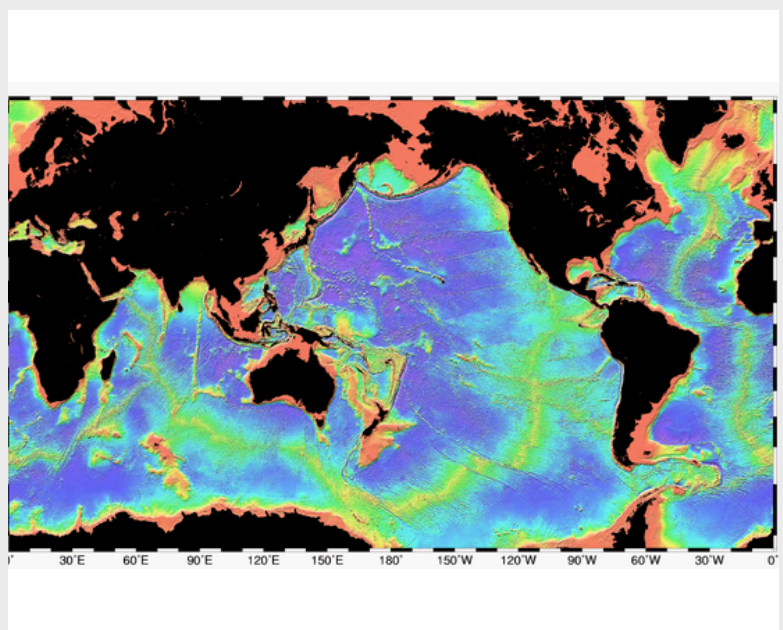
Indian Defence Review | 19 Sep 2023

"India's maritime success depends on knowing what's under its rivers and oceans. This means mapping resources using modern tech and AI, which can speed things up. Synergetic databases and indigenous capacity building further align with India's strategic autonomy goals."

**Fun Fact**

### The ocean floor is moving!

The ocean floor is dynamic, constantly moving due to tectonic forces. Tectonic plate interactions, such as seafloor spreading and subduction, shape the ocean floor's geography. This dynamic process plays a key role in Earth's geological evolution and impacts marine ecosystems.





**"INDIA'S LOOMING WATER CRISIS IS A THREAT TO CORPORATE SUSTAINABILITY"**  
BY DR. ARNAB DAS



"For the Indian industry to survive in the future, especially given the push on building out small and medium enterprises by the government, it is crucial for all stakeholders - industrialists, environmental regulators, innovators and maritime security - to coordinate and find solutions that are beneficial for everyone involved."

**CXO TODAY**

In this compelling CXO today article, Dr. (Cdr) Arnab Das, addresses the absence of water goals in current Environmental, Social, and Governance (ESG) standards and explores the potential of the UDA framework in mitigating and managing the risk of our country's growing water scarcity.

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**INDO - PACIFIC DEFENSE FORUM**

In this feature article published in the Indo-Pacific Defense Forum, Dr. (Cdr) Arnab Das, sheds light on shifting global powers towards the Indo-Pacific region. He emphasises the region as a focal point of geopolitical interactions, and underscores the emerging roles of India, China, Russia, and the USA.

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Indo-Pacific Defense Forum

**THE INDO-PACIFIC STRATEGIC SPACE AND THE GLOBAL ORDER**  
A New Perspective on Underwater Domain Awareness



The Indo-Pacific region has become a focal point of global powers, with the United States and China vying for influence. This article discusses the strategic importance of the region and the role of underwater domain awareness in maintaining global order.

The Indo-Pacific region is a vast area of the world's oceans, stretching from the Indian Ocean to the Pacific Ocean. It is a region of strategic importance, and its control is a key goal for both the United States and China.

"The challenges and opportunities presented by the Indo-Pacific's tropical littoral waters can be comprehensively addressed with implementation of the UDA framework."  
- Dr. Arnab Das



**Fun Fact**

**Sea level and the amount of water in the ocean change over time.**

Sea levels and ocean water quantities change due to climate, ice melting, and ocean currents. These fluctuations affect coastal areas and ecosystems, requiring ongoing monitoring to address the impacts of climate change on coasts.

**NEW FRONTIERS OF INDIA'S UNDERWATER SECURITY:  
THE NEED FOR CMF IN UDA THROUGH ICET**

by Commodore (Dr.) Somen Banerjee

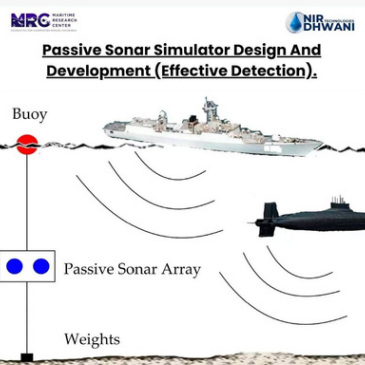


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Read the full paper on [www.mrc.foundationforuda.in](http://www.mrc.foundationforuda.in)

## New Frontiers of India's Underwater Security Need for CMF in UDA through iCET

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**Khwahish Vig**

MRC Intern

Discerning the importance of Biosphere Reserves: A case study of Sindhudurg

**Romit Kaware**

MRC Fellow

Technological and Policy Interventions for Sediment Classification Applications in the Indian Ocean

**Divya Rai**

MRC Fellow

Geopolitics and International Relations

**Shlok Nemani**

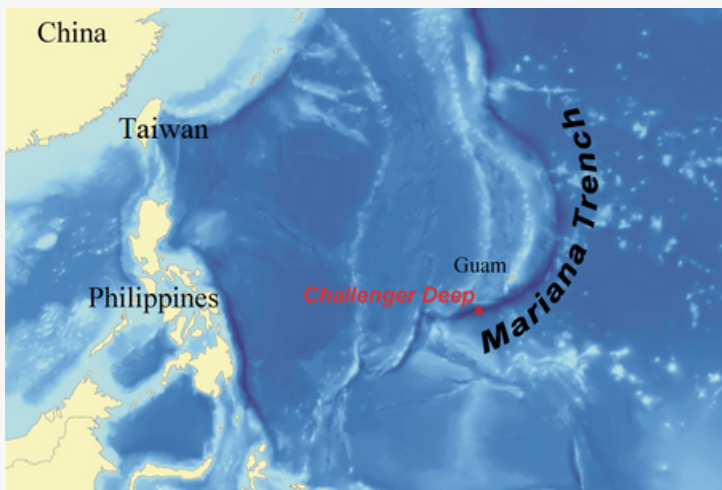
MRC Fellow

APY analysis of Shrimp and Seaweed farming

**Aradhya Kapoor**

MRC Fellow

ESG and Climate Change initiatives at MRC



### Fun Fact

**The Earth's deepest point is the Mariana Trench.**

The Mariana Trench, Earth's deepest point at over 36,000 feet in the Pacific Ocean, is a focus of scientific exploration for its unique ecosystems and geological processes at unparalleled depths and pressures.

**BIOSPHERE RESERVES &  
UNDERWATER DOMAIN  
AWARENESS**

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**EXPLORING INDIA'S  
BLUE ECONOMY: A  
JOURNEY TO  
SUSTAINABILITY**

---

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**BLUE CARBON: A REAL  
SOLUTION FOR A  
SUSTAINABLE FUTURE**

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### UDA\*

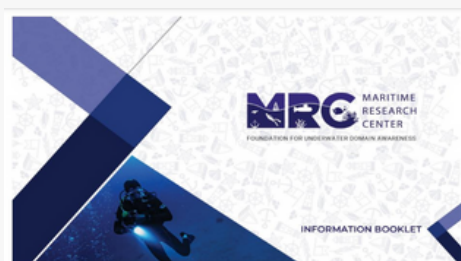
The conventional approach of each of the stakeholders pursuing their own UDA\* efforts has serious limitations given the highly resource intensive field experimental research initiative required for a long period. [Click here for more](#)

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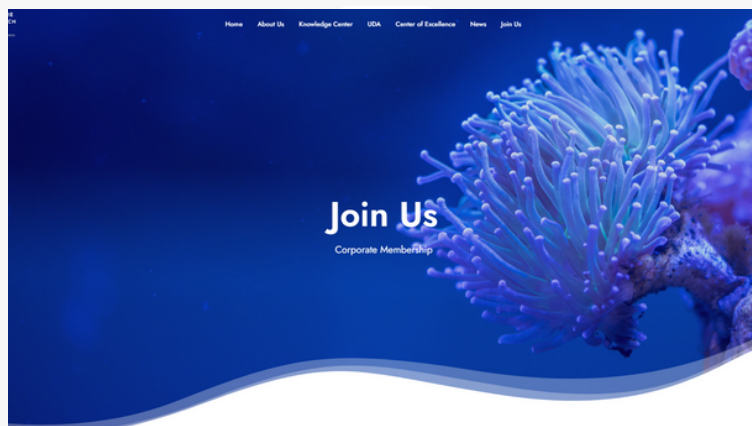
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**Digital Brochure**

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