

# Business Standard

## Needed: An underwater PM Gati Shakti

*India's blue economy strategy hinges on developing robust underwater domain awareness, a critical yet overlooked aspect*

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Representative Image

The oceans harbour vast untapped economic potential worth trillions of dollars, yet much of it remains undiscovered. Not only does 94 per cent life exist underwater, oceans play a critical role in managing greenhouse gases. Earth's longest chain of mountains, the mid-ocean ridge, which spans 65,000 kms, is underwater, as are 3 million shipwrecks, each holding a treasure trove of stories. Surprisingly, oceans remain less explored than the surfaces of the Moon or Mars.

India's maritime domain, covering nearly the same area as its land territory, holds 80 per cent of her resources but contributes only 4 per cent to gross domestic product. As India marches to become the world's third-largest economy, the blue economy provides a shimmering opportunity. India can generate millions of jobs and trillions in revenue from fisheries, aquaculture, tourism, shipping, offshore energy, and minerals. Moreover, the high seas and deep seas have tremendous strategic implications as well. China has the world's biggest fleet engaged in high-seas fishing, and India needs to

catch up. Deep-sea minerals, including polymetallic nodules and rare earths, hold boundless value, with advancing technology making their sustainable extraction feasible in the near future. The nation quickest to harness the opportunities in open maritime territories may control the resources and territory in the long run.

The initiation of a blue economy strategy hinges on developing good underwater domain awareness (UDA), a subject largely overlooked. UDA first gained importance during the Cold War, with systems like SOSUS, a seabed hydrophone network set up in the Atlantic by the US Navy to track Russian submarines. However, with technological advancement, UDA is of great economic significance as well. Underwater information is now captured using underwater and space-based sensors. Space-based sensors are used to guide fishing-vessels to fish-rich areas and identify specific high-value fish.

India must prioritise indigenous development of underwater sensor technology because these technologies are closely guarded, and, if shared, are prohibitively expensive, rendering their economic use unviable. Additionally, the equipment developed during the Cold-war era works well in the cold temperate conditions of the Pacific or the Atlantic, but its performance degrades rapidly in the tropical waters of the Indian Ocean, with data inaccuracies of up to 60 per cent. India made a promising beginning with the unveiling of 75 iDEX challenges under the Navy's SPRINT programme in August 2022, resulting in the country's first indigenous underwater technology prototypes. To strengthen UDA, domestic chip development capabilities are essential. A design-led incentive scheme could prioritise UDA sensors for funding, fostering chip-level expertise in this domain. The Ministry of Electronics and IT could consider iDEX-type challenges with assured procurement by the government.

The UDA involves collection and analysis of vast datasets involving thousands of attributes. These datasets cover a wide range of information, including geographic features like sea-mounds, ridges, trenches, as well as underwater events, observations entities such as vessels, objects and their behaviours. Additionally, data on activities like navigation, communications, environmental factors like temperature, salinity, density, water-quality and chemical composition, ocean-currents and acoustic-signals, seismic activity and the Earth's magnetic field are included. Central Ministries, organisations, coastal states collect separate data, resulting in isolated datasets.

An open-API framework akin to India-stack applications such as in UPI and Aadhaar, could facilitate sharing of data. This could foster development of applications by startups and organisations and promote the use of artificial intelligence in this domain. Furthermore, a PM Gati Shakti for economic UDA, akin to the PM Gati Shakti for terrestrial economic development could be established. The initiative would provide a

comprehensive picture of available data , identify strengths and gaps, and guide future data collection efforts. Furthermore, it could serve as a centralised coordination platform for multiple agencies, reducing duplication and wasteful expenditure.

The PM Gati Shakti for economic UDA would be characterised by a GIS-based platform. This will have four-dimensional data points — latitude, longitude, depth and time. Since the changes in UDA attributes like temperature, salinity, density, and acoustics are ever-changing, the time dimension of this GIS-based platform would be very important.

Diverse underwater domains in the Sunderbans and Sir Creek demand context-specific maritime planning. The PM Gati Shakti for economic UDA could enable India to spearhead the development of “Smart Maritime Zones”, similar to “Smart Cities”, which would facilitate technology-driven maritime spatial planning based on location-specific characteristics, ensuring optimal and sustainable exploitation of marine resources and addressing challenges like safe navigation, search and recovery operations, protection of economic assets and prevention of underwater pollution. This would take the vision of Sagar — security and growth for all in the region — to a higher level and would enable India to be a leader in this domain in the Indian Ocean region.

A Gati Shakti plan for economic UDA would guide human resources planning. There is a need to enhance awareness amongst policymakers, military and the police. The Marine Research Centre (MRC) has emerged as a resource centre in this domain. Expanding the MRC’s role, a national programme could be envisioned with the MRC evolving into a regional capacity-building centre for foreign littoral nations. The MRC could also work towards developing into an innovation-hub, nurturing UDA focused startups.

While UDA has been viewed as a security issue, it holds potential as a key economic catalyst. Similar to past initiatives like the electronic, space and atomic energy commissions, a Gati Shakti plan for economic UDA could position India as a frontrunner in leveraging this domain. UDA has the capacity to revive India’s maritime legacy, offering significant opportunities for economic growth and global leadership.

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First Published: May 02 2024 | 9:39 PM IST

