



UNDERWATER DOMAIN AWARENESS IN THE INDO-PACIFIC



ARNAB DAS argues why the “Indo” in the Indo-Pacific region has a significant meaning for India to formulate its strategic vision in the rapidly changing geopolitical scenario

India in the 21st century has displayed significant maritime intent and initiative to build infrastructure and capabilities. The Indian Navy hosted the first ever International Fleet Review in 2001 at Mumbai to show case its naval might and promote maritime diplomacy. The theme for the event was “Bridges of Friendship”

and IFR 2001 projected “India’s new relevance in the post-Cold War period”. It was followed by the Indian Navy declaring the ‘Indian Maritime Military Strategy’ (2007) titled ‘Freedom to Use the Seas’. The intent of the document was to smoothen the Navy’s interaction with the bureaucracy and ensure political support for building adequate force

levels to manage the perceived maritime threats. Subsequently, the Indian Ocean Naval Symposium (IONS) was launched by India in February 2008.

The Ministry of Shipping came up with its National Maritime Agenda 2010-2020, declared in Jan 2011, outlining the ministry’s decadal projections. Multiple government agencies and

Warships from the Indian Navy, Japan Maritime Self-Defense Force (JMSDF) and the U.S. Navy sail in formation in the Bay of Bengal during exercise Malabar 2017



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NDA government led by Prime Minister Atal Bihari Vajpayee way back in 2003 was given massive boost as the flagship project of the Ministry of Shipping to promote port-led development in the country by exploiting India's 7,500 km long coastline, 14,500 km of potentially navigable waterways and its strategic location on key international maritime trade routes. It entailed investing US\$120 billion (110 billion) in 2018 to set up new mega ports, modernising India's existing ports, developing of 14 Coastal Employment Zones (CEZs) and Coastal Employment Units, enhancing port connectivity via road, rail, multi-modal logistics parks, pipelines & waterways and promoting coastal community development, with the aim of boosting merchandise exports by US\$110 billion and generating around 10,000,000 direct and indirect jobs". The Sagarmala is a mega programme to realise port led

is emerging as the key global player, economically and politically, under the Modi leadership. However, the Chinese influence among the Indian Ocean littorals is also on the rise that could be detrimental to India's interests. The Modi doctrine is an attempt to balance India's aspirations of becoming a global power and to counter the growing Chinese dominance in the IOR.

Earlier in Mar 2015, the Indian Prime Minister gave a strategic vision stating "We seek a future for the Indian Ocean that lives up to the name of "SAGAR-Security and Growth for All in the Region". The SAGAR, Sagarmala, Ensuring Secure Seas: Indian Maritime Security Strategy and more are a series of strategic intent, strongly backed by policy support and tightly managed with significant maritime capacity and capability building initiatives – all this can be described as the highlights of the



Indian Navy's Scorpène class diesel-electric submarine 'INS Karanj' being launched in 2018

INDIAN NAVY

private industries continued to build their maritime infrastructure, but it had multiple limitations for a sustainable growth. Numerous commentators pointed out the lack of strategic vision at the national level ensuring that most of these efforts would never add up to contribute substantially to meet the emergent challenges.

The new government, post-May 2014, gave a massive thrust in the maritime capability and capacity building on multiple fronts. The Sagarmala programme that was mooted by the

growth for India.

The Indian Navy, on October 26, 2015, released its latest maritime strategy, titled "Ensuring Secure Seas: Indian Maritime Security Strategy." This edition is a revised and updated version of the previous outlined strategy "Freedom to Use the Seas: India's Maritime Military Strategy," published in 2007". The recent maritime strategy document presents the changing dynamics of the Indo-Pacific and India's role in the new strategic geo-political formulation. It is being increasingly recognised that India

Modi governments term in office.

In his keynote address at the Shangri-La Dialogue 2018, at Singapore, the Indian Prime Minister articulated India's vision for the Indo-Pacific and he did not disappoint the strategic experts present and others following global affair. As articulated by a commentator and I quote, "to my ears, his speech amplified the central and ongoing themes of India's role on the world stage: (1) India's focus on its own long civilisational history of international engagement—and raising global awareness of that history;



Mormugao Port in Goa is a part of the ongoing Sagarmala project



(2) India's sense of itself as playing a linking role for the larger Indo-Pacific space; and (3) India's commitment to principles, rule of law, and a theory of equality for nations as part of its general commitment to the liberal international order". Narendra Modi spoke of India reviving multiple regional forums including the IONS, IORA, BIMSTEC and others to energise regional cooperation and counter meddling by the extra-regional powers and non-state actors.

Indo-Pacific: Construct & challenges

The Indo-Pacific on the face of it is a strategic construct to manage the global commons, through a rule based common agenda of peace and prosperity for all. The developments in the maritime domain for India in the last five years have been close to remarkable, compared to the couple of decades before that. However, it needs to be understood that what got us here may not be the best going forward in the changing world order defined by rising China and multipolar construct of smaller regional players backed by extra-regional powers. The more nationalistic inclinations across political parties on a global scale is giving rise to anti-globalisation mindset that encourages nations to

The Ministry of Shipping came up with its National Maritime Agenda 2010-2020, declared in Jan 2011, outlining the ministry's decadal projections. Multiple government agencies and private industries continued to build their maritime infrastructure

adopt policies that could be against the rule-based world order. The increasing involvement of non-state actors to counter adversaries, particularly in the global commons is making the counter measures more complex and difficult to manage. The asymmetry enjoyed by the non-state actors and the disruptive means available to them make them a very potent adversary to deal with.

The Indo-Pacific in the strategic construct is being aggressively pushed by the American establishment to counter

China and its rapid rise that is challenging the US Hegemony. The Indo-Pacific has a significant meaning for India to formulate its strategic vision in the rapidly changing geopolitical scenario. The IOR (Indian Ocean Region) has attained strategic relevance for multiple reasons in the 21st century and thus going through unique challenges never seen before by the strategists. India will do well to develop capabilities and capacities that are IOR centric and then probably look at other regions of the Indo-Pacific. Let us first understand the threat levels while dealing with the global commons so that we can better manage the alliances and collaborations and seek specific inputs and support. The challenges from the maritime global commons can be categorised into three levels from the perspective of capacity and capability building:

Level One: Natural disasters

The natural disasters may not have any human involvement in its cause and probably there can be no mechanism to prevent them as well. However, we do need mechanisms that can provide early warning to minimise the damage. These are fit cases to seek international support, even from global powers that



Subi Reef in the South China sea, which was built by China and transformed into an artificial island

are outside the region and may not be directly affected by any such events. Humanity is a good enough reason to drive maritime capacity and capability building initiatives. The IOR has started seeing disasters originating from the seas and causing large scale destruction of life and property. Given the socioeconomic status of the region, disaster management could be a good trigger to bring them together. The IOR needs science and technology driven infrastructure and sustained initiative that can enhance our domain knowledge that can be used across varied applications.

Level Two: Sustainable growth

The global commons being accessed by diverse human populations for numerous activities, across multiple nations with varied regulatory frameworks impact the sustainable growth, in its unique way. Environmental degradation, unsustainable natural resource extraction, non-scientific and immature tools for extraction of undersea resources, fragmented approach, non-integrated frameworks and more are the recipes for unsustainable growth. Lack of domain awareness and absence of a mechanism to continuously generate situational awareness across the entire region could be a major impediment for sustainable growth. This is another area where international cooperation and regional frameworks will be critical. The nations within the region have to come

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together under a regional formation to prevent meddling by the extra-regional powers and then the regional formation should seek international support and guidance on specific aspects. This will involve cooperation in multi-disciplinary research that is directed on local issues. These are going to be long term projects with no immediate results to show, but nations in the region have to remain invested, politically and strategically to derive dividends.

Level Three: Threats

The IOR because of its geopolitical and socioeconomic status has to deal with multiple security challenges, more driven by the non-state actors. The spending on military hardware by nations in the IOR is maximum, in-

spite of majority nations still struggling with socioeconomic issues to deal with. Furthermore, most of these nations acquire capabilities for external threats and actually deal with internal threats posed by non-state actors. The marine forces that are equipped for security threats are more often than not the first responders for disaster management and pollution control with minimal preparedness for such activities. There is a need to take a holistic view of the threat and the response mechanism both in the short term and the long term. Typically, it is event driven and so the political establishment responds to public mood rather than long term national strategic vision.

The Maritime Domain Awareness or MDA has been the major maritime capacity and capability building initiative in India in the last decade, driven by the security forces and supported by the government post the 26/11 incident. However, the disruptive technologies that can be deployed for similar attacks in the future have changed and probably are likely to emerge from the underwater domain. The underwater component of MDA that may be referred as Underwater Domain Awareness (UDA) will be far more complex to implement on ground and particularly for the tropical littoral waters of the IOR. The sub-optimal performance of sonars in the tropical littorals of the IOR is a major concern and the conventional import of hardware



without investment on field experiments to mitigate local medium distortion has been a cause of concern.

The challenges as listed above would require participation of far too many stakeholders and policy makers, beyond the brief of the security apparatus, whether it is the Indian Navy or the naval labs under the Defence Research and Development Organisation (DRDO). Thus, UDA cannot be limited to being an underwater extension of the traditional MDA construct. The R&D effort and the associated resources required for ensuring effective UDA in the tropical littorals of the IOR cannot be managed within the defence budget and would require widening of the scope and mandate across the stakeholders. A more comprehensive UDA framework that is able to encourage pooling of resources and synergising of efforts across the

generate undersea domain awareness.

The earth's undersea geophysical activities have a lot of relevance to the wellbeing of the humankind and monitoring of such activities could provide vital clues to minimise the impact of devastating natural calamities. The commercial activities in the undersea realm need precise inputs on the availability of resources to be able to effectively and efficiently explore and exploit them for economic gains. The regulators on the other hand need to know the pattern of exploitation to manage a sustainable plan.

With so much of activities, commercial and military, there is a significant impact on the environment. Any conservation initiative needs to precisely estimate the habitat degradation and species vulnerability caused by these activities and assess

infrastructure, capability and capacity specific to the stakeholders or otherwise. The stakeholders represented by the four faces of the cube will have their specific requirements; however the core will remain the acoustic capacity and capability. The vertical construct is the hierarchy of establishing a comprehensive UDA. The first level or the ground level would be the sensing of the undersea domain for threats, resources and activities. The second level would be making sense of the data generated to plan security strategies, conservation plans and resource utilisation plans. The next level would be to formulate and monitor regulatory framework at the local, national and global level.

The figure gives a comprehensive way forward for the stakeholders to engage and interact (*for reference, see figure on Page-13; Comprehensive Perspective of Undersea Domain Awareness*). The individual cubes represent specific aspects that need to be addressed. The user-academia-industry partnership can be seamlessly formulated based on the user requirement, academic inputs and the industry interface represented by the specific cube. It will enable more focused approach and well defined interactive framework. Given the appropriate impetus, the UDA framework can address multiple challenges being faced by the nation today. Meaningful engagement of young India for nation building, probably is the most critical aspect that deserves attention. Multi-disciplinary and multi-functional entities can interact and contribute to seamlessly synergise their efforts towards a larger goal.



Prime Minister Narendra Modi delivering his keynote address at Shangri-La dialogue on June 1, 2018

stakeholders needs to be evolved for the IOR.

Underwater domain awareness

The concept of Underwater Domain Awareness (UDA) in a more specific sense will translate to our eagerness to know what is happening in the undersea realm of our maritime areas. This keenness for undersea awareness from the security perspective, means defending our Sea Lines of Communication (SLOC), coastal waters and varied maritime assets against the proliferation of submarines and mine capabilities intended to limit the access to the seas and littoral waters. However, just the military requirement may not be the only motivation to

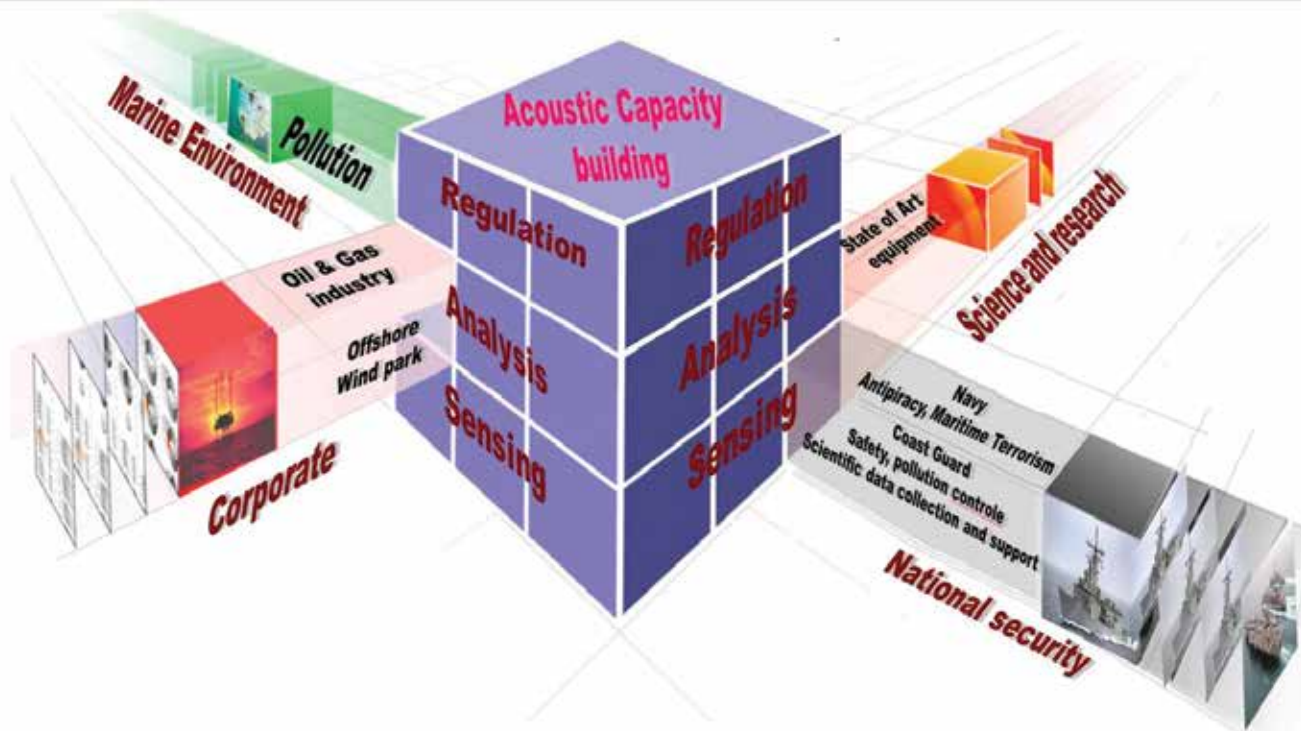
the ecosystem status. The scientific and the research community need to engage and continuously update our knowledge and access of the multiple aspects of the undersea domain. Figure (*on the next page*) presents a comprehensive perspective of the UDA. The underlying requirement for all the stakeholders is to know the developments in the undersea domain, make sense out of these developments and then respond effectively and efficiently to them before they take shape of an event.

The UDA on a comprehensive scale needs to be understood in its horizontal and vertical constructs. The horizontal construct would be the resource availability in terms of technology,

Lesson

India in the 21st century is being seen very differently by the global community and we in India have no choice but to accept the big mantle of being a global leader. The islands of excellence across multiple sectors and stakeholders need to be brought together in a strategic manner to add up to cohesive national growth. The fragmented approach across stakeholders, government bodies, public & private sector and others need to change. The long coastline and massive network of rivers have remained ignored since independence, giving rise to concerns of security and environmental degradation. Also it has been a story of missed opportunity both economically and meaningful engagement for the young aspirational Indian. As we plan our way forward we need to have a nuanced approach that takes into account the

Figure: Comprehensive Perspective of Undersea Domain Awareness



changing world order and domestic challenges & opportunities.

The IOR has attained significant strategic relevance for multiple reasons in the recent past. India's geostrategic location in the IOR compels us to remain relevant in the strategic construct whether for the Indo-Pacific or any other local forum. The only way is to present ourselves in a leadership role with strategic approach both in intent and action. The Indian PM at the last Shangri-La Dialogue in 2018 has impressed all with regards to India's perspective on the Indo-Pacific and through policies and actions in the recent past, India has been able to convince the global community that we are on course to be able to walk the talk. The UDA framework as discussed in the work can substantially complement the ongoing efforts in maritime capacity and capability building initiatives. It certainly adds another dimension to the maritime initiative that will truly facilitate realisation of the SAGAR vision domestically and the larger role in the Indo-Pacific internationally.

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has remained an exclusive club of few, who developed these capabilities during the Cold War period. Massive field work was undertaken during that era, when budgets for national security initiative was never questioned. However, these developments were in the temperate and polar region where underwater acoustic behaviour is far different from the shallow water acoustics required in the IOR.

In the Post-Cold War era, two significant developments have taken place – one is that the entire theatre of underwater activities has shifted to the tropical littoral waters, whether

in the IOR and the South China Sea (SCS); so, the acoustic capacity and capability building has to be seen, in a new perspective. It will be a highly resource intensive venture involving extensive field validations. The second is the changing political priorities, where the national security does not enjoy unquestioned budget allocation and has to compete with other socioeconomic demands, particularly in the developing world. Thus, the way forward has to manoeuvre through these realities of the contemporary geopolitics.

The UDA framework presents a comprehensive way forward to address the requirements of the Indo-Pacific Strategic formulation. The pooling of resources and synergising of efforts, as proposed in the UDA framework for achieving technological superiority and ensuring self-reliance on multiple fronts, will have long term strategic advantages. The binaries of security vs development, development vs environment and others cannot be stressed too far so as to facilitate cohesion across stakeholders at national, regional and global levels.

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