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THE INDIAN OCEAN AND INDIA'S DRONE WARFARE

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Introduction

The Indian Ocean has a coverage area of 70.56 million km sq. which is approximately 19.8% of the earth's surface. It transcends the ties of geography and encompass the role of a critical conduit of trade, energy and commerce. The geo-economic and geostrategic centre of gravity is migrating from the Atlantic Ocean to the Indian Ocean because of increasing globalisation and the modern great power struggle. New Delhi is recalibrating its strategic calculus in response to the Chinese navy's growing military footprint and non-state actors' actions in the Indian Ocean Region (IOR). The Indian ocean, which is the centrepiece of the wider Indian Ocean region (IOR) takes the spotlight upon the implications of strategies which concise the economic rise and fall, the perfect and priority seeking mean in the case of Natural resources- especially revolving around the “Blue Economy” –where around 80 per cent of the world's seaborne oil trade passes through the crux points of this ocean and therefore it connects the East to the West, as a topic for the cultivation and the culmination of the military and the diplomatic spaces, demographics along with the inclined geopolitical directions, the energy –especially the nuclear-equipped actors that tend to contribute towards the global order and the balance of power centred upon this area of the earth are some of the features which elevate itself upon the thought of the Indian Ocean. Moreover, this is what it represents now, at the present where the world and it's geopolitical uncertainty is what defines the future of the course of humankind. At this milestone, we have the Indian Ocean.

The Indian Ocean and Its Significance

Inspecting the strategic factors and significance of the Indian Ocean Region, we come across the Indian Ocean, which finds itself at the crossroads of Africa, Asia, and Australia, and is home to many littorals that are vital to the region's survival. The IOR is an important sea route with choke points such as the Hormuz Strait, the Malacca Strait, and the Bab-el Mandeb. As vast volumes of trade travel through these choke spots, they are crucial. Piracy, geopolitical disputes, political unrest, and accidents threaten these choke points. Regional and external powers stretch their muscles to ward off such threats and gain/maintain a solid foothold in this resource-rich region. Also, the implications of the Economic advances, disagreements, conflicts, and competition for regional dominance by regional and extra-regional countries have all taken place in the Indian

Ocean Region (IOR). All major powers, including the US, Australia, Japan, the UK, India, and China, have sought stakes in the IOR's security. The Soviet Union desired direct access to the IOR during the Cold War, and China wants the same thing now. The Indian Ocean, as the world's busiest trading waterway, remains pivotal. And under factual interpretations, approximately 80% of global maritime oil transport travels through the IOR. While considering and coming to the situational analysis at this point where the power polarity is being shifted by the events and its after-effects upon the decisions and interests of the actors, we see that China's expansion in the maritime region has forced countries (including India and also the West) to rethink their marine strategies. The presence of China in the Indian Ocean continues to be a source of concern throughout the area. Through the Belt and Road Initiative (BRI), Beijing seeks to establish strong footholds in the IOR, Africa, and other island nations. The presence of China's People's Liberation Army Navy (PLAN) and other Chinese commercial vessels in the Indian Ocean, and China's interpretation of the UN Convention on the Law of the Sea, pose problems to those who believe in a free and open Indo-Pacific. The "String of Pearls" geopolitical idea explains China's potential and aspirations for economic and infrastructure initiatives in India's vicinity, including the of the Horn of Africa to ASEAN and Pacific Island states. China has invested in many initiatives. Through all this, China's concern as a rising push for a decisive reminder, along with the aspects that need the consideration of national interests and attention circling the significance of the Indian Ocean Region, the security and the national interests of India need to be re-established and updated with the impulses that may become a national threat.

The Advent of the Modern Marvel-Drones

Here is where the outstandingly effective modern warfare creation – The militarized drone comes in. These drones have revolutionized warfare. They rove the land, streak across the skies, and dive beneath the waves. Drones have progressed steadily since their inception more than fifty years ago, becoming one of the most important artificial intelligence (AI) weapons used by armed forces worldwide. Drones are found in various fields, but aerial drones (Unmanned Aerial Vehicles – UAVs) are the media darlings. However, a complete ecosystem of ground-based drones, also known as Unmanned Ground Vehicles (UGVs), is rapidly growing. The UGV's origin story can be traced back to the creation of "teletanks" like the Russian TT-26 and the German Goliath during

WWII. Both might be guided to their intended targets and detonated remotely. We can see that remote control technology has advanced rapidly when we incorporate UAVs. For modern armies, these systems have proven indispensable. The update and the integrated inclusions of these drones into every aspect of security and welfare insinuations should be considered where the drones are used in tasks including mapping, surveying, equipment inspection, analysing difficult-to-monitor areas, project monitoring, and also precision calculations agriculture. Using drones in such activities lowers crew expenses by reducing the time spent on the ground.

The usage of these drones can vary from the perceptions of the user. The type of drone, its motive- which can include defence and security traits such as an anti-terror tool for detection of threats and the identification of prone areas from a remote location, border security aspects for reconnaissance and tracking illegal activities, counter insurgencies, crime control with situational assessment and crime scene analysis, crowd monitoring, disaster management, track illegal and counter activities in the wildlife and the environment boosting the conservative aspects, and traffic monitoring. The commercial usage could also be cited here, as the ultimate result all points toward the national development and domestic incorporations, which includes precision agriculture (Growth patterns and detection of crop diseases), constructions and real estate, industrial asset inspections, aerial photogrammetry for mining and reviewing the blast optimisations more effectively and safely, the oil and gas industry to minimise the dangerous working conditions of the workers, and the inspection and the maintenance of the energy-based fields of vast areas- Which all promises and incorporates the advantages and the need for nations all around the world to get their hands on this magnificent technology.

India's Drone Warfare

As we have seen, drones are becoming 'the' standard equipment in most of the blue and green water navies, with the inclusion of Unmanned Aerial and Undersea Vehicles (UAVs & UUVs) among them. Drone stealth, manoeuvrability, and lethality will improve in the coming years as emerging technology such as artificial intelligence (AI), hyperspectral imaging (HIS), advanced robotics, and others are integrated along with the top-notch updates.

The drones and their technology are adopted based on the acknowledgement that they remove one critical factor from airstrike risk calculations: the possibility of a pilot being killed or captured, as was the case with an Indian fighter pilot in February last year. Also emphasizing this point is that this scenario does not give in to the dreaded "sitting duck" situation. Second, they minimize the chance of collateral damage to assets and manpower. Third, they move quickly, diverge quickly, and attack quickly. Fourth, their assembly line requires less capital, making them less expensive as production scales up. Fifth, they can be used in anti-access/area denial (A2/AD) and area dominance strategies. Because broad swaths of the high seas can be monitored and protected at very modest acquisition and operating expenses, these features greatly boost the returns on investment (ROI). And due to these basic yet compelling reasons, many nations including India plans and builds initiative in laying down the foundation for drone utilization in the setting of "The Modern Warfare".

India is beefing up its drone capabilities for advantageous use on the battlefield as nations compete to develop the future of contemporary warfare. Drones will also be used to secure borders, combat terrorists, combat drug dealers, and assist farmers (And also disperse them). India is the third-largest importer of military-grade drones, according to the Stockholm International Peace Research Institute's (SIPRI) Arms Transfers Database, accounting for 6.8% of total UAV transfers or deliveries reported globally in 2020. Most of these drones have been dedicated to Intelligence, Surveillance and Reconnaissance (ISR) Although these are all facts, India's drone programme has been a stumbling block for years, lagging significantly behind rivals such as China and Pakistan. However, India has recently made progress in designing and manufacturing drones at home with government money and through public-private partnerships. Drones and drone technology have also been brought from Israel and the United States.

The major shift of interest and the significance of drones was assumed inevitable after 2021 at a conference of top navy commanders where buying these new-age platforms was hotly debated. Following that, a roadmap for purchasing Unmanned Aerial and underwater platforms, which would drive the development and growth of maritime surveillance capabilities, was finalized. The strategic chokepoints in the Indian Ocean region have concerned the Indian navy. Increased long-range anti-submarine warfare (ASW) and close air support capabilities have been prioritized while

ensuring optimal resource use. The new defence procurement standards, which took effect in October 2020, permitted the military to lease military hardware to reduce the initial capital cost. The navy was the first service to make use of this feature. In November 2020, it leased two MQ-9B Sea Guardian drones from General Atomics in the United States for ISR. They were rented for a year with the option to renew for another year. With a range of more than 5000 nautical miles and a 30-hour endurance, these flying assets have improved the navy's overall situational awareness and allowed it to keep an eye on 'vehicles of interest' in IOR.

For the last two years, the Indian navy has been pressuring the government to obtain at least ten advanced surveillance drones. The other two agencies also designed more weaponized drones. The decision was made to buy 30 MQ-9 Reaper/Predator B drones, 10 for each of the three services. The next 2+2 bilateral discussions are expected to sign this \$3 billion accord, which is a tri-services contract worth \$3 billion for 30 MQ-9Bs in the works. Once inducted, these combat drones are expected to bolster the offensive and surveillance capabilities of the Indian armed forces. According to recent sources, the US has sweetened the deal by offering a discount and establishing a maintenance, repair, and overhaul (MRO) centre in India that will service all American systems in the region, which is also good news for India.

Including drones that the navy could equip is another great leap in strengthening and assuring the protection and periodic surveillance of the areas of strategic importance. For example, the model -MQ-9 Reaper is a cutting-edge hunter-killer Unmanned aerial vehicle (UAV) developed for high-altitude long-endurance (HALE) missions. It can perform both remotely controlled and autonomous operations. It is a powerful weapon system for hitting, coordinating, and ISR against high-value, fast-moving, and time-sensitive targets because of its "large loiter time, wide-range sensors, multi-mode communications suite, and precise missiles." And this can also go beyond the aspects where in the region, the navy has previously deployed Israeli-made Heron and Searcher MKII drones. The Herons will be equipped with sophisticated sensors, satellite communications modules, and, most crucially, the capacity to carry and deliver air-to-ground precision missiles as part of Project Cheetah. It will not only build defence-based business relations, but also strategic collaborations between these international actors.

The Indian Navy is also trying to acquire remotely operated underwater vehicles (ROUVs) and autonomous underwater vehicles to improve its underwater domain awareness (UDA) (AUVs). To develop these platforms, its design wing is actively cooperating with diverse private sector entities such as L&T. There is pressure because China had already deployed a fleet of UUVs in the region called the Sea Wing (Haiyi) glider for naval intelligence operations. They have been sighted frequently in the region and Indonesia has confiscated some of them from its territorial seas.

The usage of drones is not only limited to the offensive, but also the defensive wing of the security prioritization. The navy signed a deal with Bharat Electronics Limited (BEL) in August 2021 to produce an indigenously designed Naval Anti-Drone System to counter the adversary's drone warfare capabilities (NADS). Naval Anti-Drone System can identify drones in real-time and destroy them with laser technology. Radar, electro-optical/infrared (EO/IR) sensors and radio frequency (RF) detectors are used by the Defence Ministry to identify and jam micro drones. It gives the military both 'soft kill' and 'hard kill' options for dealing with rapidly evolving aerial threats.

Yet, there is always an Achilles heel or a loop. With this, it is implications such as the risk of strikes upon non-value targets that can increase the possibility for the rise of future terrorism. If not manoeuvred perfectly, this can prove as a lethal threat to the civilians under the strike premises. On global ethical scale, drone strikes are illegal extrajudicial killings that violate human rights. They infringe on other countries' sovereignty and are immensely unpopular in the countries involved. Drone strikes provide an emotional separation from the horrors of war, putting drone operators under stress and stating that these drones are not always hack-proof or non-re-programmable.

Conclusion

The aspect that needs to be explored to a degree now would be India's big decision regarding drone warfare and its promotion in and for the future while considering that India's aerospace sector is still in its infancy. It just has a few. Furthermore, the services and procurement departments have

been hesitant to pursue drones. Also, by assuming the circumstances, the Indian navy is in a unique situation where the nature and complexity of new hazards in the Indian Ocean are changing dramatically. IOR is quickly becoming a crucial arena for great power struggles and war as part of the Indo-Pacific framework. The navy, on the other hand, will receive the smallest share of the defence budget to prepare for these new strategic realities. After the Galwan clash between China and India in 2020, New Delhi's attention has switched back to its land boundaries, at least for the time being. Building drone warfare capabilities is one method to alleviate the dilemma in this scenario, though only to a limited extent. India still has a long way to go, considering the rise of the security risks and threats that can come from the internal domestic factors and the “suspicious neighbours” along with the rest of the world, especially on the premises of the Indian Ocean Region. The hurdles and inevitable confrontations can render India, both marvellous and austere ways but the nation has to move forward no matter what, especially adapting and updating itself to not get left behind. And with new ages comes new forms of tools to accumulate and render power. Civilization has come a long way from sticks and stones to the drones we observe these days. It will only get more advanced. The only advice here is to be prepared and well equipped, always.

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