

India Strategy

Money, Military & Markets -VI

- Naval warfare has moved away from the Second World War theory of X tonnes needed to destroy Y tonnes. Hence, there's no need to match China's armada.
- Data exchange, network-centric warfare, secure communication, high-quality sensors & ability to fuse data to assemble fleet strength at right place is key.
- Technologically, India is behind China, however it is moving in the right direction. Order books of defence shipbuilders appear to have peaked.

China no longer faces the Malacca dilemma in relation to India

India has been focusing on its maritime capabilities for the last few years, and as its economy grows, trade will inevitably increase. This requires India to maintain its presence from the Bay of Bengal to the Gulf of Aden. To achieve this, India needs true blue-water navy capabilities. China is India's biggest adversary, and in the future, a clash may seem inevitable unless India has a credible deterrence at sea. India's edge in the Malacca Strait has been counterbalanced by China's presence in Djibouti, Gwadar, and Cambodia.

Russia-Ukraine war shows only technology matters

India does not have the resources to match China ship-for-ship, and technologically, China is currently ahead of both India and even the US. According to the Australian Strategic Policy Institute (ASPI), China leads in 47 out of 64 critical technologies, many of which have military significance. While it's commendable that India ranks on the ASPI's technology table, however it remains a distant third. The good news is that India is moving in the right direction. The future strength of naval power will not come from sheer tonnage, as demonstrated by Ukraine, which successfully kept the Russian Black Sea fleet at bay despite lacking a significant navy. Instead, naval strength will come from data-linking, reconnaissance, drone technology, secure communication, sensing technologies, and the use of artificial intelligence or AI to integrate these assets and present a comprehensive picture to commanders in real time. The ability to assimilate assets at the right time and at the right place is far more important than having large numbers.

Indian naval planners appear to be moving in right direction

Indian Navy officials say that by 2035F, they will have 170-175 naval ships as there are 60-65 ships under construction. The Defence Research and Development Organisation or DRDO, other government companies as well as multiple private sector companies are developing technologies for underwater drones, swarm drones and multiple communication technologies. SSBN and SSN submarines are needed for strategic deterrence and that's probably the only big investment for acquiring big assets.

Indian shipbuilders' order book close to its peak

Indian shipbuilding companies' order book appears to be near its peak. Cochin Shipyard (UNRATED) may get one big order for aircraft carriers and barring that, orders will only trickle. Companies that make drones (underwater, reconnaissance & swarm), communication systems, work on data fusion & AI will get a lion's share in future capex. Future naval battles will be won by people sitting in AC offices rather than welders of shipyards. II world war theory of X tonne is needed to destroy Y tonne of ship is passe.

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Figure 1: China has counter-balanced India's advantage in the Malacca Strait with its presence in Djibouti & Gwadar.



SOURCE: INCRED RESEARCH, COMPANY REPORTS

Indian Navy: Much more muscle needs to be added

Indian Navy – Technological edge is the way, building tonnage is of no use

India has been focusing on its maritime capabilities for the last few years, and as the country's economy grows, trade will inevitably increase. This requires India to maintain its presence from the Bay of Bengal to the Gulf of Aden. To achieve this, India needs true blue-water navy capabilities. China is India's biggest adversary, and in the future, a clash may seem inevitable unless India establishes a credible deterrent at sea. India's strategic position in the Malacca Strait has been counter-balanced by China's presence in key locations such as Djibouti, Gwadar & Cambodia. India does not have the resources to match China ship-for-ship, and technologically, China is currently ahead of both India and even the US. According to the Australian Strategic Policy Institute (ASPI), China leads in 47 out of 64 critical technologies, many of which have military significance. While it is commendable that India ranks on the ASPI's technology table, however it remains a distant third. The good news is that India is moving in the right direction. The future strength of naval power will not come from sheer tonnage, as demonstrated by Ukraine, which successfully kept the Russian Black Sea fleet at bay despite lacking a significant navy. Instead, naval strength will come from data-linking, reconnaissance, drone technology, secure communication, sensing technologies, and the use of AI to integrate these assets and present a comprehensive picture to commanders in real time. In this context, the ability to assimilate assets at the right time and at the right place is far more critical than simply having large numbers.

The battle for control over the Indian Ocean has just started ►

The battle for control over the Indian Ocean is indeed becoming more pronounced, as it is a strategically important region for global trade, military presence, and energy transport. Several key players, including India, China, the US, and regional powers like Japan and Australia, are increasingly focusing on the Indian Ocean's significance.

1. **China's growing presence:** China has been expanding its influence in the Indian Ocean through its Belt and Road Initiative (BRI) and military infrastructure development. Its strategic investments in ports such as in Sri Lanka (Hambantota) and the Maldives, as well as the development of a naval presence, are a part of its broader aim to secure trade routes and expand its maritime influence.
2. **India's strategic positioning:** India, with its extensive coastline and naval capabilities, views the Indian Ocean as a critical region for its national security and economic interests. The country is strengthening its naval forces, enhancing maritime security cooperation with countries like the US, Australia, and Japan through the Quadrilateral Security Dialogue (Quad), and focusing on securing key chokepoints like the Malacca Strait.
3. **The US and the Indo-Pacific strategy:** The US since long had a strong presence in the Indian Ocean, with military bases in Diego Garcia and other strategic locations. It is also reinforcing partnerships with India and other Indo-Pacific nations, aiming to counter China's growing influence. The US sees the Indian Ocean as crucial for global trade and maintaining open sea lanes.
4. **Regional powers and emerging alliances:** Australia, Japan, and Southeast Asian nations are increasingly involved in the security and economic dynamics of the Indian Ocean. With the rise in military and economic partnerships, the Indian Ocean is becoming a focal point for both regional stability and competition.

In summary, the strategic competition in the Indian Ocean is intensifying as global powers and regional players vie for control of the vital trade routes and resources. The developments in this region will have significant implications for global security, trade, and geopolitics.

Control or significant power projection capability is essential for China ➤

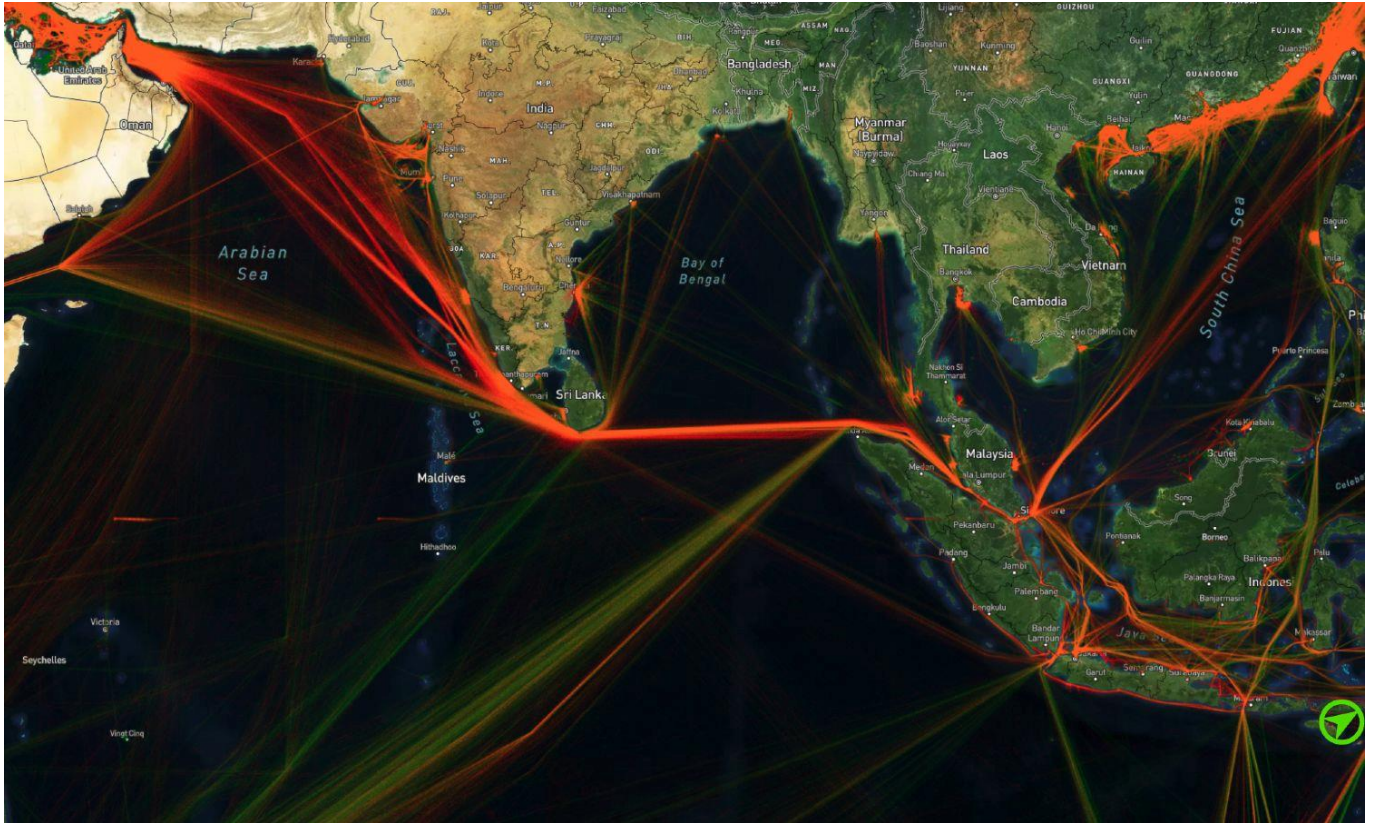
The Indian Ocean plays a crucial role in China's trade, as it serves as a key maritime route for the country's imports and exports. Several important trade flows pass through the Indian Ocean, particularly to and from the Middle East, Africa, and Europe.

1. **China's maritime trade routes:** The Indian Ocean connects China to some of its most important trading partners in Africa, the Middle East, and Europe. Key chokepoints such as the Malacca Strait (linking the Indian Ocean to the Pacific) and the Bab el-Mandeb Strait (between Yemen and the Horn of Africa) are critical for China's trade routes. A large proportion of China's oil imports come through the Indian Ocean from the Middle East and Africa.
2. **Trade volume:** China's total trade with countries in the Indian Ocean region is substantial. The Indian Ocean serves as a vital conduit for Chinese exports to Africa, India, the Middle East, and further beyond. According to estimates, nearly 60% of China's oil imports pass through the Indian Ocean region. This is especially critical, given China's growing energy demands. The Indian Ocean is the main maritime route for crude oil from the Middle East and Africa, which constitutes a large part of China's energy imports.
3. **Infrastructure and investment:** China has significantly invested in ports and infrastructure in the Indian Ocean region, like Gwadar (Pakistan), Hambantota (Sri Lanka), and Duqm (Oman). These investments are a part of its Belt and Road Initiative (BRI), which aims to establish greater control over trade routes through infrastructure development. China's exports to Africa, as well as goods transported from Southeast Asia, also travel through the Indian Ocean, making it a vital link in global supply chains.
4. **Strategic importance:** The Indian Ocean is also crucial for China's strategic interests, not only for trade but for maintaining naval access to protect these trade routes. The region's security is a priority for China as it seeks to safeguard its energy supply and shipping lanes.

In conclusion, the Indian Ocean is an indispensable route for Chinese trade, particularly for energy imports and exports to Africa, the Middle East, and Europe. It handles a significant portion of China's total trade and energy needs, making its security and control an essential component of China's broader geopolitical strategy.

The Malacca dilemma is real for China ▶

Figure 2: The Malacca Strait is one of the biggest chokepoints for China; more than 60% of inbound crude oil to China passes through this region



SOURCE: [HTTPS://THEMARITIMEPOST.COM/2021/06/WHY-IS-THE-STRAIT-OF-MALACCA-SO-IMPORTANT-TO-THE-WORLDS-ECONOMY/MILITARY/](https://themaritimepost.com/2021/06/why-is-the-strait-of-malacca-so-important-to-the-worlds-economy/military/)

China is trying to lessen its dependence on the seas through CPEC ▶

Figure 3: China is trying its best to minimize its dependence on the seas by constructing CPEC



SOURCE: [HTTPS://WWW.DRISHTIAS.COM/DAILY-UPDATES/DAILY-NEWS-ANALYSIS/CHINA-PAKISTAN-ECONOMIC-CORRIDOR-CPEC/PRINT_MANUALLY](https://www.drishthias.com/daily-updates/daily-news-analysis/china-pakistan-economic-corridor-cpec/print_manually)

Remember, India claims sovereign rights over PoK and hence, any construction through PoK is illegal, as per India ➤

India's claim over Pakistan-occupied Kashmir (PoK) is rooted in historical and political arguments dating back to the partition of British India in 1947. After the partition, Jammu and Kashmir, a princely state, had the option to accede to either India or Pakistan. The then-Maharaja of Jammu and Kashmir chose to accede to India, which was followed by an invasion by tribal forces backed by Pakistan. The resulting conflict led to the region being divided, with India administering Jammu and Kashmir (now Jammu, Kashmir, and Ladakh) and Pakistan administering PoK and Gilgit-Baltistan.

India's position is that PoK is an integral part of its territory, which was temporarily under Pakistan's control, and that its sovereignty over the region is non-negotiable. As a result, any infrastructure or construction projects undertaken by Pakistan or any third party in PoK are considered illegal by India.

This claim has led to numerous diplomatic disputes between India and Pakistan and has been a key issue in their bilateral relations, with both countries maintaining competing territorial claims over the entire region. Internationally, while most countries do not take a clear stance, the United Nations (UN) has historically recognized the dispute but does not offer a solution.

India has also strongly opposed the China-Pakistan Economic Corridor (CPEC), which passes through PoK, viewing it as a violation of its sovereignty. The construction of infrastructure, including roads, railways, and energy projects, through PoK is considered a further extension of Pakistan's occupation of the region and has been a point of contention in India's foreign policy.

Revoking the special status of Kashmir fundamentally altered the status quo in the Himalayan region and caused concern in China, leading to the Galwan incident and a significant realignment in India's posture on the LAC ➤

The revocation of Jammu and Kashmir's special status in Aug 2019 was a significant shift in the geopolitical status quo in the Himalayan region, and it raised concerns not only for Pakistan but also for China. Here's why:

1. China's concerns

- **Strategic significance of Ladakh:** Ladakh, which now stands as a separate Union Territory, shares a long border with China. The region is of strategic importance, particularly in relation to the China-India border dispute in the region of Aksai Chin.
- **Aksai Chin dispute:** Aksai Chin, a disputed area between India and China, is a part of the broader Kashmir conflict. China controls this region, which it considers part of its Xinjiang and Tibet regions. India, however, claims it as a part of its Ladakh territory. The abrogation of Article 370 of the Constitution and the creation of Ladakh as a separate Union Territory without special status raised alarm in Beijing, as it could shift the balance of power and have implications for the Aksai Chin dispute.
- **China's reaction:** While China did not directly intervene in the Kashmir issue, it expressed concerns over the changes in Ladakh's political status. The increasing militarization of the region, particularly in the context of India's growing infrastructure and defence capabilities, worried Beijing. This was evident in the increased tensions between China and India, culminating in border clashes, most notably in 2020 in the Galwan Valley.

2. Strategic Implications for the region

- **China's Belt and Road Initiative (BRI):** China has long been developing its Belt and Road Initiative (BRI), which includes the China-Pakistan Economic Corridor (CPEC) passing through Pakistan-administered Kashmir (PoK), a region that India claims. The revocation of Jammu and Kashmir's special status could affect India's position on these infrastructure projects, particularly as it pertains to the sovereignty of the region.

- **India's strategic response:** In response to both China and Pakistan's concerns, India has reinforced its stance on Kashmir and Ladakh, emphasizing that the changes are an internal matter and within its sovereign rights. Additionally, India has ramped up its military presence along its borders with China and Pakistan, signalling a more assertive stance in the region.

3. Indian's response to increased China provocation

India has been investing heavily in infrastructure in Ladakh and other border regions, which Beijing views with suspicion. The development of roads, airstrips, and military installations near the disputed areas has been perceived as a challenge to China's control over Aksai Chin and its broader strategic interests in the region.

Can CPEC become an alternative route for oil supply to China? - No, it's impossible ➤

The China-Pakistan Economic Corridor (CPEC) can never replace the sea as the primary means of transporting oil to the Dragon. One tanker of oil is equivalent to 20,000 trains' worth of oil-carrying capacity. Therefore, replacing sea dependence through CPEC is just impossible for oil security.

CPEC is more of a project to circle India from all sides and project China as the boss in Asia ➤

The China-Pakistan Economic Corridor (CPEC) can be seen as more than just a development project—it is part of a broader geopolitical strategy for China. Here's how it aligns with China's larger regional ambitions:

1. Encircling India:

- **Geographical reach:** CPEC is designed to connect China's western Xinjiang region to Pakistan's Gwadar port, creating a direct trade route from China to the Arabian Sea. This bypasses the traditional route through the Malacca Strait, which is often considered vulnerable to disruptions. By establishing this corridor, China strengthens its presence in Pakistan and extends its influence in South Asia, which could potentially "encircle" India by facilitating closer strategic and economic ties with India's neighbours.
- **Strategic alliances:** The CPEC infrastructure, which passes through Pakistan-administered Kashmir (PoK), a region that India claims as its own, is particularly provocative to India. India views it as a violation of its sovereignty, further deepening the tension in its relationship with both China and Pakistan. In the long term, this project provides China with the leverage to exert influence on the region's politics and security dynamics, creating a potential strategic advantage by fostering closer ties with countries like Pakistan, Afghanistan, and even Iran.

2. Strengthening China's regional dominance:

- **'String of Pearls' strategy:** The CPEC is a part of China's broader 'String of Pearls' strategy, where it seeks to build a network of ports and bases along key maritime routes, especially in the Indian Ocean and the surrounding areas. Gwadar is a critical element of this strategy. By controlling or influencing key infrastructure points, China aims to increase its regional influence, ensuring economic and military access to vital sea lanes and positioning itself as the dominant power in Asia.
- **Geopolitical influence:** The CPEC project not only enhances economic ties between China and Pakistan but also strategically positions China as a key player in South Asia. This gives China an upper hand in regional geopolitics by creating dependencies in infrastructure, trade, and investment. Through such means, China can project itself as the central power, particularly counteracting India's influence in the region.

3. Economic and military strategy:

- **Access to the Arabian Sea:** The Gwadar port provides China with strategic access to the Arabian Sea, which is a vital energy and trade route. The port offers China a more secure route to the Middle East and Africa, where it has significant investments in oil and gas resources. This reduces China's dependency on the Malacca Strait and increases its global trade reach.
- **Economic leverage over South Asia:** With CPEC, China has injected a significant amount of capital into Pakistan, including infrastructure, energy projects, and other investments. This creates economic leverage over Pakistan, and by extension, it solidifies China's influence in South Asia. As Pakistan continues to depend on Chinese investments and aid, it deepens its strategic alignment with China, potentially isolating India diplomatically and economically.
- **Potential military presence:** There are concerns that the strategic infrastructure under CPEC could eventually lead to a Chinese military presence in the region, especially around Gwadar. While CPEC is framed primarily as an economic project, the potential dual-use nature of such investments (both civilian and military) raises alarm bells, particularly for India, which sees any Chinese military presence in Pakistan or near its borders as a direct threat.

4. China as the 'boss' in Asia:

- **Economic power projection:** With CPEC, China is able to showcase its growing economic and geopolitical influence not only in Asia but also globally. The corridor strengthens China's Belt and Road Initiative (BRI), a massive infrastructure and trade network aimed at enhancing China's economic power across multiple continents. By establishing this network of connectivity, China aims to increase its soft power and project itself as the central hub of economic and political activity in Asia.
- **Competition with India's influence:** India has traditionally been the dominant power in South Asia, but China's strategic investments, including CPEC, challenge this. By positioning itself as a major economic partner and regional power through projects like CPEC, China aims to reduce India's regional influence, particularly in countries like Nepal, Sri Lanka, and Bangladesh, which are important to India's sphere of influence.

CPEC is also a project to keep India tied up on northern borders and keep less focus on the seas ➤

CPEC, in addition to being a **trade and infrastructure project**, serves a dual purpose of limiting India's strategic focus on the Indian Ocean and forcing it to remain heavily engaged on its northern borders with China and Pakistan. China's growing influence through CPEC, especially with its infrastructure and military implications, has the effect of "pinning down" India, thus giving China more freedom to project its power across South Asia and the Indian Ocean. For India, managing this two-front challenge—securing its northern borders while protecting its maritime interests—becomes an increasingly difficult balancing act.

However, Indian planners realize very well about Chinese vulnerabilities in the seas ➤

1. **Strong naval presence in the IOR:** The Indian Navy maintains a dominant position in the Indian Ocean Region or IOR, with a focus on surveillance, operational readiness, and partnerships with like-minded nations such as the US, Japan, and Australia under frameworks like the Quad.
2. **Developing strategic partnerships:** India's collaboration with countries like France (Reunion Island), Oman (Duqm port access), and Seychelles (Assumption Island agreement) enhances its strategic reach in the IOR.
3. **Modernizing maritime capabilities:** India is modernizing its navy with advanced warships, submarines, and surveillance systems to enhance its maritime domain awareness and power projection.

4. **Leveraging geopolitical alliances:** Through partnerships like the Quad and bilateral agreements with the US, Japan, and Australia, India is bolstering its ability to counter China's influence in the IOR.
5. **Chokepoint dominance:** India's geographical positioning enables it to monitor and, if necessary, disrupt Chinese shipping through chokepoints like the Malacca Strait.

Matching China ship-by-ship is just not possible for India ►

China's navy is undergoing significant expansion and modernization, reflecting its strategic goals to enhance its maritime influence and global power projection capabilities. The key components of China's naval expansion plan include:

Fleet size growth: The People's Liberation Army Navy (PLAN) is expected to grow to 395 ships by 2025F, surpassing the US Navy in numbers, though the US Navy retains superior power projection capabilities. The expansion is a part of China's efforts to transition from a coastal defence force to a blue-water navy capable of global operations.

Aircraft carriers: China aims to build a fleet of five aircraft carriers by 2030F, with three already in operation or under development:

1. *Liaoning*: China's first carrier, refitted from a Soviet design.
2. *Shandong*: The first domestically-built carrier, operational since 2018.
3. *Fujian*: Expected to undergo sea trials in 2024, featuring advanced electromagnetic catapult launch systems, comparable to US Gerald R. Ford-class carriers.
4. **Submarines and surface vessels:** The PLAN is expanding its submarine fleet, including the development of nuclear-powered ballistic missile submarines (SSBNs). It is also building advanced surface ships such as Type 055 destroyers and Type 054A frigates

Budget and self-reliance: China has allocated a defence budget expected to total US\$1.4tr from 2024 to 2028, with significant investment in indigenous defence manufacturing to reduce its reliance on foreign technology. This includes leveraging civil-military integration to develop advanced naval systems.

These developments highlight China's strategic emphasis on increasing its naval capabilities to assert dominance in contested regions like the South China Sea and to counter perceived threats, including US naval power in the Indo-Pacific region.

Against this kind of Budget and India's current naval fleet of ~130 ships and ~50 under construction, we can, at best, achieve 250+ ships by 2035F and by that time, may be the Chinese navy fleet would have become larger.

China is outpacing even the US at 40% of the latter's defence budget ►

In the next three-to-four year time frame, China's naval fleet will surpass that of the US. Please note that China's defence budget is only 40% of the US budget. Where the US is lacking is in spending rightly. It is spending but may not be in right technologies and in right amount. The bureaucracy is a huge menace even in the US. China is succeeding in expanding its naval fleet

- At lower costs;
- In a very fast manner;
- And at the cutting edge of technology.

China is outpacing even the US in new-age technologies, be it usage of AI in its military or drone technology ►

China's investment in technology, which started in 2002-03, is bearing fruit. China is indeed making remarkable advancements in new-age technologies, including the use of artificial intelligence (AI) and drone technology for military applications. These advancements are a part of its broader strategy to achieve technological superiority and reshape the global balance of power.

1. AI in military applications:

- **Autonomous weapons:** China is reportedly investing heavily in AI-driven autonomous weapon systems, including drones, robotic vehicles, and missile guidance systems. These systems are designed to operate with minimal human intervention, enhancing operational efficiency and decision-making speed.
- **AI-powered command systems:** China's military is integrating AI into its command and control systems to improve situational awareness, analyze battlefield scenarios, and optimize resource allocation in real time.
- **Cyber and information warfare:** AI is being deployed for cyber operations, such as identifying vulnerabilities in adversary networks and conducting disinformation campaigns.

2. Drone technology:

- **Advanced UAVs (Unmanned Aerial Vehicles):** China has developed a range of drones, from tactical reconnaissance drones to high-altitude, long-endurance systems like the Wing Loong and CH-series. These are not only used domestically but are also exported widely, challenging Western dominance in the global drone market.
- **Swarm technology:** The People's Liberation Army (PLA) has showcased drone swarm capabilities, where multiple UAVs collaborate to overwhelm enemy defences or carry out coordinated attacks.
- **Combat drones:** Systems like the GJ-11, a stealth combat drone, demonstrate China's focus on developing sophisticated aerial platforms capable of high precision and stealth operations.

The foundation of this development is sown in fundamental research where China is leading in 47 out of 64 critical technologies ➤

The Australian Strategic Policy Institute publishes data on its two-decade Critical Technology Tracker. The stark difference across the technology leadership is visible in 2023, compared to 2003-07. Across the technologies, India is making an impact. We have identified these technologies for their usefulness in the battlefield as well as the information warfare.

Figure 4: IC circuit design - China is leading but India is at the third position

1. Advanced integrated circuit design and fabrication ●



SOURCE: INCRED RESEARCH, AUSTRALIAN STRATEGIC POLICY INSTITUTE

Figure 5: The US is still leading in natural language processing but India is placed third, replacing UK

2. Natural language processing ●



SOURCE: INCRED RESEARCH, AUSTRALIAN STRATEGIC POLICY INSTITUTE

Figure 6: Quantum computing is the most advanced technology where leadership hasn't changed in the last two decades

3. Quantum computing ●



SOURCE: INCRED RESEARCH, AUSTRALIAN STRATEGIC POLICY INSTITUTE

Figure 7: India has made big strides in aircraft engine design technology

5. Advanced aircraft engines ●



*equal 5th position with Cranfield University, Johns Hopkins University and Northwestern Polytechnical University

SOURCE: INCRED RESEARCH, AUSTRALIAN STRATEGIC POLICY INSTITUTE

Figure 8: China has replaced US leadership in drone technology and India is at a distant fifth spot

Figure 9: India has made big strides in photovoltaic technology

6. Drones, swarming and collaborative robots ●

8. Photovoltaics ●

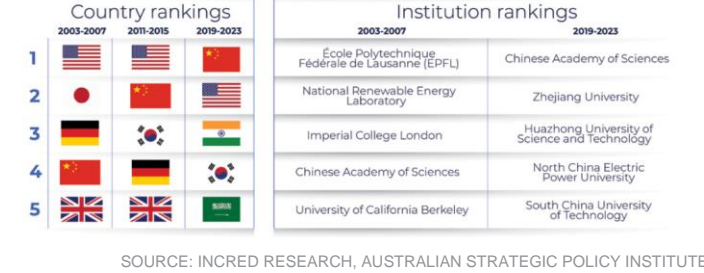
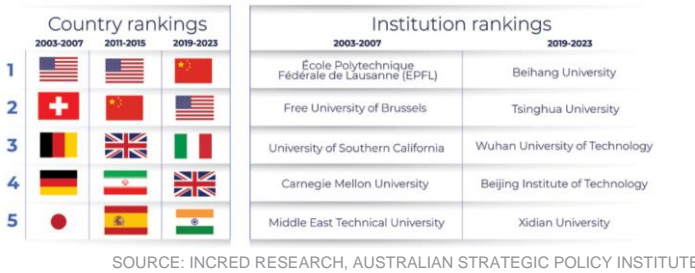


Figure 10: Advanced radio frequency communications - India has improved a lot

Figure 11: Electric batteries - the strategic technology where India is far behind

10. Advanced radiofrequency communication ●

7. Electric batteries ●

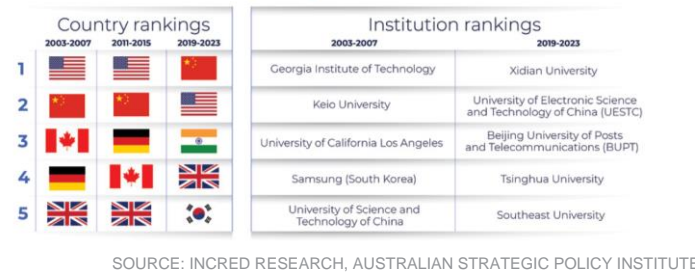


Figure 12: In AI, India is positioned third, but China is way ahead against all

Figure 13: Hypersonic detection technology is critical for self defence, and India is nowhere to be seen in this area

Artificial intelligence, computing and communications

Defence, space, robotics and transportation

| Technology | Tech monopoly risk | Top 5 countries |
|--|--------------------|--|
| Advanced data analytics | 9/10 2.3 | China (33.2%), USA (14.4%), India (5.4%), UK (4.0%), Italy (3.6%) |
| AI algorithms and hardware accelerators | 6/10 2.2 | China (30.9%), USA (14.0%), India (5.9%), South Korea (5.0%), Taiwan (4.5%) |
| Machine learning | 9/10 2.4 | China (36.5%), USA (15.4%), India (5.4%), UK (3.6%), South Korea (3.2%) |
| Advanced integrated circuit design and fabrication | 4/10 1.1 | China (24.4%), USA (22.5%), India (5.6%), Germany (4.3%), South Korea (4.2%) |
| Adversarial AI | 7/10 1.6 | China (31.1%), USA (19.5%), India (5.5%), Australia (5.1%), South Korea (3.5%) |
| Natural language processing | 6/10 1.0 | China (24.8%), USA (24.1%), India (4.2%), UK (4.2%), South Korea (3.7%) |

| Technology | Tech monopoly risk | Top 5 countries |
|---|--------------------|---|
| Advanced aircraft engines | 10/10 9.0 | China (63.1%), USA (7.0%), India (3.6%), China (3.0%), UK (3.0%) |
| Drones, swarming and collaborative robots | 8/10 3.7 | China (38.4%), USA (10.3%), India (5.3%), UK (4.8%), Germany (4.4%) |
| Hypersonic detection and tracking | 10/10 5.5 | China (72.9%), USA (13.2%), UK (3.3%), Germany (1.5%), Italy (1.3%) |
| Advanced robotics | 9/10 1.8 | China (34.5%), USA (19.7%), UK (4.7%), Germany (4.2%), South Korea (4.0%) |
| Autonomous systems operation technology | 7/10 1.9 | China (34.3%), USA (18.4%), UK (4.8%), Germany (4.5%), South Korea (3.7%) |
| Small satellites | 4/10 1.3 | USA (23.0%), China (17.9%), Germany (9.2%), Italy (4.0%), Canada (3.8%) |
| Space launch systems | 5/10 1.2 | China (22.8%), USA (19.0%), Germany (7.2%), Italy (6.5%), Canada (6.4%) |

SOURCE: INCRED RESEARCH, AUSTRALIAN STRATEGIC POLICY INSTITUTE

SOURCE: INCRED RESEARCH, AUSTRALIAN STRATEGIC POLICY INSTITUTE

The Second World War theory of needing X tonnes of ships to destroy Y tonnes of adversary ships is no longer valid ➤

The 'tonnage theory' of naval warfare from the Second World War era, which suggested that a navy required a certain tonnage of ships to destroy an equivalent or larger tonnage of enemy vessels, is no longer valid in the modern era. This shift has occurred due to significant advancements in technology, strategy, and the nature of naval warfare. Here are some key reasons why:

- Precision weaponry** - Modern naval engagements rely on precision-guided missiles and advanced targeting systems, making it possible to destroy much larger ships or fleets with relatively smaller and lighter platforms. Submarines, aircraft, and even small missile boats can pose a serious threat to large capital ships like aircraft carriers.
- Asymmetric warfare** - Smaller nations or non-state actors can deploy asymmetrical tactics, such as swarms of fast attack craft, unmanned drones, or sea mines, to challenge larger navies without requiring equivalent tonnage. For example, the proliferation of anti-ship missiles, like China's DF-21D, has created significant risks for large naval assets.

3. **Force multipliers** - Technologies like network-centric warfare, advanced sensors, and data sharing allow modern fleets to act as force multipliers. A single ship can direct strikes from aircraft, drones, and submarines, effectively leveraging the firepower of an entire fleet without requiring equivalent tonnage.
4. **Shift in naval strategy** - The focus has moved from total naval dominance to specific objectives such as area denial, power projection, or safeguarding sea lines of communication (SLOCs). Strategies like Anti-Access/Area Denial (A2/AD) challenge the notion of needing a large tonnage to control a region.
5. **Unmanned and autonomous systems** - The rise of unmanned naval systems, including underwater drones and autonomous surface vehicles, provides capabilities that far exceed their physical size and tonnage. These systems can conduct reconnaissance, deliver payloads, and even attack adversary ships at a fraction of the cost and size of traditional vessels.
6. **Economic and cyber warfare** - Modern conflicts often extend into economic and cyber domains, where disrupting supply chains or targeting critical infrastructure can have strategic effects equivalent to naval blockades, without relying on physical ship tonnage.

The best example is Ukraine, which, despite having no navy to speak of, held the Russian armada at bay ➤

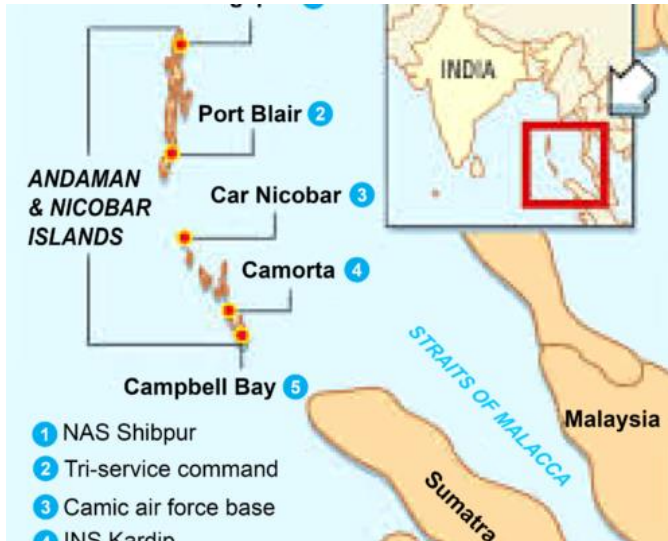
Ukraine's resistance against the Russian navy in the ongoing conflict provides a compelling modern example of how traditional naval tonnage superiority can be countered with innovative tactics, asymmetric warfare, and modern technology. Here's how Ukraine managed to hold the Russian armada at bay:

1. **Anti-ship missiles:** Ukraine effectively employed land-based Harpoon and Neptune anti-ship missiles, which played a critical role in neutralizing high-value targets like the Russian Black Sea Fleet's flagship, *Moskva*. This strike demonstrated that a relatively small and resource-constrained nation could threaten and destroy large, heavily armed warships.
2. **Unmanned aerial and naval systems:** Ukraine deployed naval drones and unmanned surface vehicles (USVs) to attack Russian ships and infrastructure. These low-cost, hard-to-detect platforms forced Russia to divert significant resources to counter these threats. Drones provided real-time intelligence and precision-strike capabilities that negated the need for a conventional navy.
3. **Mine warfare:** Ukraine employed sea mines strategically to restrict Russian naval movements, effectively turning parts of the Black Sea into contested zones. Mines have historically been a force equalizer, and Ukraine's use of them further constrained the operational scope of Russia's larger fleet.
4. **Use of strategic geography:** Ukraine leveraged the geography of the Black Sea, especially around contested areas like Snake Island, to limit Russian naval freedom of movement. Control or denial of critical maritime chokepoints significantly reduced the effectiveness of Russia's naval superiority.
5. **Targeting logistics and infrastructure:** Ukraine attacked Russian supply chains and port infrastructure, including airbases and logistics hubs supporting the fleet. This indirectly weakened the Russian navy's ability to sustain operations.
6. **Information and psychological warfare:** The successful sinking of *Moskva* and other high-profile naval setbacks dealt a psychological blow to Russian forces and showcased the vulnerability of traditional naval power in the face of asymmetric tactics. This had a deterrent effect on further Russian naval operations near Ukrainian-controlled areas.
7. **International support and adaptability:** Western countries supplied Ukraine with advanced anti-ship systems and intelligence, which enhanced its ability to counter Russia's naval dominance. Ukraine's rapid adoption of these systems and innovative tactics exemplifies how smaller nations can level the playing field.

So, Chinese competition may not need huge investment in matching ship-for-ship, however it lies in smart usage of easily available resources ➤

1. Like Ukraine did to Russia, India has a unique geographical advantage to block Chinese trade through the Malacca Strait. Remember the Indian Union territory of Andaman and Nicobar islands is just near the Malacca Strait and multi-role fighters like Rafale-M or Sukhoi-30 MKI fitted with Brahmos can easily wreak havoc on Chinese merchant vessels passing through the Malacca Strait.

Figure 14: India is already using its geography to grab China's chicken neck



SOURCE: INCRED RESEARCH, <https://maritimeindia.org/strategic-salience-of-andaman-and-nicobar-islands-economic-and-military-dimensions/>

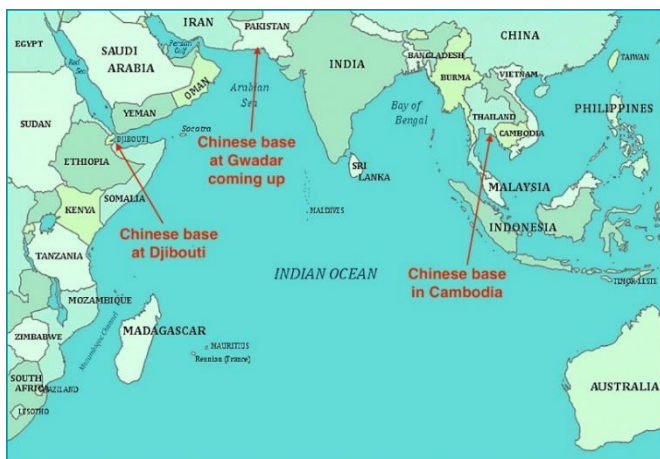
Figure 15: India's strategic command at Car Nicobar has a squadron of Sukhoi-30 MKI, which, fitted with Brahmos, can wreak havoc in the Malacca Strait



SOURCE: INCRED RESEARCH, <https://vajiramandravi.com/upsc-daily-current-affairs/mains-articles/the-strategic-importance-of-andaman-and-nicobar-islands/>

2. India's Malacca advantage has been counter-balanced by China to some extent by having naval bases in Djibouti and Gwadar. This ensures mutual destruction of oil vessels.

Figure 16: China is present in Djibouti and Gwadar and so they can target India-bound oil cargo from either Bab Almaden or Hormuz Strait



SOURCE: INCRED RESEARCH, https://x.com/INDOPAC_INFO/STATUS/1153073395040309250/PHOTO/1

Figure 17: Remember India imports approximately 50% of its crude oil requirement from Bab Almaden and Hormuz Strait



SOURCE: INCRED RESEARCH, COMPANY REPORTS

3. Remember Chinese vessels will have to maintain a very long supply line to attack India. All Chinese bases, either in Cambodia or Djibouti, are very near to heavily fortified attacking bases of India.
4. Chinese submarine vessel size is just too large compared to Indian submarine vessels (76 for China against 15 for India). India also lacks SSN (nuclear attack submarine), which can come into the Indian arsenal only in 2035F-36F.

- The Indian Navy already operates in a network-centric environment, leveraging advanced communication, surveillance, and data-sharing technologies to enhance its operational capabilities. Network-Centric Warfare (NCW) is a key enabler for modern naval operations, allowing the Indian Navy to coordinate and execute missions with high efficiency, improved situational awareness, and seamless interoperability.

The tables below highlight the technological advantages India possesses compared to other nations. However, it is important to note that China leads in all these technologies, with India being a distant third. India's current position is comparable to where China was in 2007–08.

Figure 18: Indian features in top 5 in multiple sensing, radar and navigation technologies

Sensing, timing and navigation

| Technology | Tech monopoly risk | Top 5 countries | | | | |
|---|--------------------|-----------------|-------|------|------|------|
| Inertial navigation systems | 9/10 4.5 | | | | | |
| Multispectral and hyperspectral imaging sensors | 9/10 5.5 | 48.5% | 10.9% | 3.9% | 3.7% | 3.6% |
| Photonic sensors | 10/10 4.0 | | | | | |
| Radar | 10/10 3.4 | 53.7% | 9.8% | 3.7% | 3.5% | 2.7% |
| Satellite positioning and navigation | 8/10 3.4 | 45.8% | 11.4% | 5.4% | 3.8% | 3.0% |
| Sonar and acoustic sensors | 10/10 3.5 | 42.7% | 12.7% | 5.1% | 3.6% | 3.2% |
| Magnetic field sensors | 6/10 2.1 | 40.9% | 12.2% | 4.5% | 4.2% | 3.5% |
| Atomic clocks | 8/10 1.5 | 49.5% | 14.3% | 4.3% | 4.1% | 3.2% |
| Gravitational-force sensors | 9/10 1.0 | 35.2% | 16.6% | 7.7% | 7.0% | 4.6% |
| | | 29.5% | 19.4% | 9.5% | 7.3% | 5.2% |
| | | 20.9% | 20.8% | 7.3% | 6.4% | 5.7% |

SOURCE: INCRED RESEARCH, AUSTRALIAN STRATEGIC POLICY INSTITUTE

Figure 19: Interestingly, China is leading in all AUSKUS technology and India is at number No.3; neither Australia nor UK feature in the top 3

Unique AUKUS-relevant technologies

| Technology | Tech monopoly risk | Top 5 countries | | | | |
|--------------------------------|--------------------|-----------------|-------|------|------|------|
| Autonomous underwater vehicles | 10/10 10.3 | | | | | |
| Electronic warfare | 10/10 4.2 | 66.8% | 6.5% | 3.3% | 2.2% | 2.1% |
| Air-independent propulsion | 7/10 5.1 | 51.5% | 12.3% | 4.1% | 2.9% | 2.8% |
| | | 44.0% | 8.6% | 7.1% | 4.3% | 3.8% |

SOURCE: INCRED RESEARCH, AUSTRALIAN STRATEGIC POLICY INSTITUTE
*AUSKUS= AUSTRALIA UK AND USA COLLABORATION FOR CRITICAL TECHNOLOGIES

- At the same time, please remember that India operates a 18 P-8I Poseidon aircraft which are known submarine hunters and 24 MH-60R helicopters which are also top-class submarine hunters. Indian Navy is also integrating 11 Sea guardian drones which can have several hour endurance in reconnaissance. All these assets operate in a network-centric environment where they share data link with each other.
- We need huge numbers of drones - be it underwater, swarm or reconnaissance drone. Underwater surveillance vehicles, often referred to as Unmanned Underwater Vehicles (UUVs) or Autonomous Underwater Vehicles (AUVs), are specialized submersibles designed for a range of underwater operations, including surveillance, reconnaissance, and data collection. These vehicles play a critical role in modern naval operations, research, and commercial activities.
- Types of Underwater Surveillance Vehicles:**
 - Remotely Operated Vehicles (ROVs):** Controlled by operators on the surface via tethered cables. Used for inspection, surveillance, and maintenance tasks in underwater environments.
 - Autonomous Underwater Vehicles (AUVs):** Operate independently based on pre-programmed missions. Ideal for long-range missions such as mapping, surveillance, and scientific research.
 - Gliders:** A type of AUV that uses changes in buoyancy for propulsion. Efficient for long-duration data collection missions, especially in oceanographic research.
 - Hybrid Vehicles:** Combine features of ROVs and AUVs. Can switch between autonomous and operator-controlled modes for flexibility.

- e. **Applications in Naval Operations: Surveillance and Reconnaissance:** Detecting enemy submarines, ships, and underwater activities.
 - f. **Mine Detection and Clearance:** Identifying and neutralizing underwater mines.
 - g. **Maritime Domain Awareness:** Monitoring underwater movements in territorial waters.
 - h. **Communication and Network Hubs:** Acting as relays for network-centric operations.
 - i. **Technological Advancements:** India is investing in underwater surveillance technologies to enhance its maritime domain awareness. However, countries like the US and China lead in this domain, leveraging advanced UUVs equipped with artificial intelligence, enhanced battery life, and stealth technologies.
9. While China and the US lead in the UUV technology, however Indians are not far behind and the technological gap is not too high. Multiple Indian government agencies are working on the same as initial results are pretty encouraging.
- a. **Defence Research and Development Organisation (DRDO):** DRDO has been at the forefront of developing indigenous UUV technologies. It is working on advanced **Autonomous Underwater Vehicles (AUVs)** for mine detection, surveillance, and reconnaissance. Example projects include the **Autonomous Underwater Vehicle (AUV-150)** and related underwater systems.
 - b. **Indian Navy (in collaboration with private companies):** The Indian Navy actively collaborates with domestic firms and research institutes to enhance UUV capabilities. These collaborations focus on developing platforms for maritime domain awareness and anti-submarine warfare.
 - c. **National Institute of Ocean Technology (NIOT):** NIOT develops underwater systems for civilian and defence applications. The organisation focuses on oceanographic research and has expertise in AUV development.
 - d. **L&T Defence:** Larsen & Toubro is a major player in India's defence sector, including naval systems. It is actively involved in underwater surveillance and UUV development for military applications.
 - e. **Bharat Electronics (BEL):** While traditionally focused on electronics and radar systems, BEL is also exploring underwater systems for defence applications, including UUVs.
 - f. **TASL (Tata Advanced Systems):** TASL collaborates with defence organizations to develop cutting-edge naval technologies, including underwater systems.
 - g. **Planys Technologies:** A Chennai-based start-up specializing in underwater robotics. It focuses on underwater inspection and surveillance and has developed compact ROVs for industrial and maritime purposes.
 - h. **EyeROV:** A Kerala-based start-up developing Remotely Operated Vehicles (ROVs) for underwater inspection and exploration. Their systems are used for applications ranging from defence to underwater infrastructure maintenance.
10. Ukraine's innovative use of drones, including naval drones, effectively constrained the operations of Russia's Black Sea Fleet despite Ukraine not having a traditional navy.

However, India will still need some destroyer and frigates with highly capable missiles like Brahmos and SMART torpedoes ►

Both destroyers and frigates can be used as an effective weapon system against submarines. As of now, the Indian Navy operates 13 frigates and 11 destroyers, with additional vessels under construction to enhance its capabilities. The current fleet of Indian Navy is given below.

1. **Frigates:** The Indian Navy has 13 operational frigates, including three classes:
 - A. **Shivalik Class (Project 17):** These are stealth multi-role frigates built domestically, equipped with advanced weaponry.
 - B. **Talwar Class (Project 1135.6):** Six guided-missile frigates originally built in Russia but tailored for Indian requirements.
 - C. **Brahmaputra Class (Project 16A):** Three indigenously built frigates, successors to the Godavari class
2. **Destroyers:** The Navy operates 11 destroyers spread across three main classes:
 - A. **Kolkata Class (Project 15A):** Three advanced destroyers equipped with Barak-8 missiles and Brahmos.
 - B. **Visakhapatnam Class (Project 15B):** Modern stealth destroyers, with the first of the class, INS Visakhapatnam, commissioned in 2021. Three more ships are in service or nearing completion.
 - C. **Delhi Class (Project 15):** Three older but upgraded destroyers.

Planned and Under Construction

1. **Frigates: Nigiri Class (Project 17A):** Seven advanced frigates under construction; three are launched and undergoing sea trials, with commissioning expected by 2025F-2026F.
2. **Destroyers:** Two additional **Visakhapatnam-class destroyers** are under various stages of construction, with all expected to join the fleet by 2026F.

India also needs one more aircraft carrier as well as 5-6 nuclear attack submarines ►

India has two aircraft carriers but may need a third one to have effective launching sites for submarine-hunting helicopters and a carrier vessel for missiles.

1. INS Vikramaditya: A modified Kiev-class carrier.
2. INS Vikrant: The first indigenous aircraft carrier, commissioned in 2022.
3. A third carrier is debated but may be critical for power projection in the Indian Ocean.

India has two operational SSBNs and three more are in the pipeline for effective deterrence against the first use of a nuclear bomb.

1. INS Arihant: Commissioned in 2016, India's first indigenously built SSBN, capable of carrying K-15 and K-4 SLBMs.
2. INS Aright: Commissioned in represents an advanced variant of the Arihant class.
3. Pipeline SSBNs: India is constructing three additional SSBNs under the Arihant-class and S5-class projects, with improved capabilities, including carrying longer-range missiles.

Nuclear Attack Submarines (SSNs) are need of the hour for the Indian Navy as they are least noisy and can remain under water for months. India has leased one Akula-class SSN from Russia (INS Chakra II) and plans to build six indigenous SSNs, which are at varying stages of design.

However, going ahead major investments are needed in:

1. **Reconnaissance systems:** Investment in underwater drones (UUVs) to expand surveillance and detect enemy submarines stealthily. Enhanced satellite-based tracking for maritime domain awareness.

2. **Quantum communication:** India is progressing in quantum technology; deploying quantum-secure communication can fortify naval command systems, especially in contested waters.
3. **Advanced radar and sensors:** High-quality long-range radars and sensors for ships and submarines to ensure superior situational awareness and early threat detection. Enhanced sonar systems, such as ACTAS (Active Towed Array Sonar), for anti-submarine warfare.

Please note that India doesn't need to match China ship-for-ship unlike China, which has disputes with multiple nations in the South China Sea. India's naval strategy emphasizes:

1. **Deterrence over parity:** Countering the combined naval forces of Pakistan and China, not matching China ship-for-ship.
2. **Flexible power projection:** Establishing a critical mass of weapons and ensuring rapid response capabilities.
3. **Blue water navy aspirations:** Ensuring freedom of operation across the Indian Ocean while protecting trade routes and economic interests.

So, unlike the Second World War when shipyards fought the war, this new cold war will be fought from AC offices ►

The Second World War saw physical shipyards churning out warships, tanks, and airplanes at unprecedented rates to support industrialized warfare. In contrast, today's geopolitical and military contests are heavily influenced by technology, intelligence, and strategy developed in offices, laboratories, and digital spaces.

1. **Cyber and technological warfare:** Modern conflicts prioritize dominance in cyberspace, artificial intelligence, and quantum computing. Nations are developing cyber capabilities to attack and defend critical infrastructure, a shift from the physical combat of WW-II.
2. **Surveillance and intelligence:** Satellites, drones, and advanced radar systems play a pivotal role in reconnaissance, reducing reliance on physical troop or ship movements for information.
3. **Economic and technological blockades:** The "new cold war" often involves trade restrictions, technology embargoes, and economic sanctions (e.g. US restrictions on semiconductor exports to China).
4. **Command centres:** Modern naval and military strategies are orchestrated from network-centric operations rooms and secure command centres equipped with real-time data from reconnaissance systems.
5. **Automation and unmanned systems:** Automated drones, autonomous submarines, and unmanned combat vehicles have reduced the emphasis on large-scale industrial production of manned platforms.
6. **Information warfare:** The use of media, social platforms, and advanced data analytics to shape public opinion and manipulate narratives has become a key battleground.

While physical assets like aircraft carriers and submarines remain crucial, much of the strategic advantage lies in:

- **Research and development:** Innovations in hypersonic weapons, stealth technology, and advanced propulsion.
- **Data and AI mastery:** Using machine learning and AI for predictive analysis in combat scenarios.
- **Human expertise:** Developing strategies and operations in secure offices by skilled analysts and military planners.

So, what does it mean for Indian listed shipyards? Order book has peaked and earnings expectations bereft of reality >

The equity market is still stuck in a Second World War-era British mindset—calculating how many of *our ships* need to be sacrificed to destroy *their fleet*. However, future wars will not be fought this way. The Russia-Ukraine war has shown that even tech entrepreneurs like Elon Musk can sustain the war effort by providing critical data links, such as Starlink.

In modern warfare, data is king. The ability to exchange information securely and maintain a 360° view of the battlefield is crucial. In naval warfare, the number of ships will matter less than how quickly one can assemble a fleet at the right place to deliver a decisive blow to the adversary.

China currently leads in this field compared to India. However, as a study by the Australian Institute shows, India is not far behind. India is on the right track by establishing more Indian Institutes of Technology or IITs, Indian Institute of Science or IISc, and other advanced institutes of learning.

It's important to note that practical applications of ground-breaking discoveries often take decades to materialize. For example, the quantum theory was developed over a century ago, yet today, we are just beginning to explore its use in quantum communication and quantum entanglement as a means of secure data exchange.

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|--|--|
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| Hold | The stock's total return is expected to be between 0% and positive 10% over the next 12 months. |
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