



Delhi Policy Group

Advancing India's Rise as a Leading Power

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Cover Photographs:

Agni Prime IRBM being launched from Dr APJ Abdul Kalam Island on June 28, 2021. Source: PIB

INS Vagir, India's Fifth Scorpene Class Submarine, at Mumbai before launch on November 12, 2020.

Source: Indian Navy

An IAF Su-30 MKI launches a BrahMos supersonic missile for a successful flight test in the Indian Ocean on October 29, 2020. Source: ANI

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by
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Even as a motivated debate about the utility of aircraft carriers continues in India, reports based on satellite imagery¹ showed that China was moving full speed ahead with construction of its third ship of the type. Having commissioned Liaoning (Type 001) in September 2012 and followed with Shandong (Type 002) in December 2019, China is now building the much larger Type 003, an entirely new design². Reports also indicate that construction of a second ship of this class expected to start later this year³, to be followed by the nuclear propelled Type 004⁴.

Aircraft carriers replaced battleships as the backbone of great power fleets during World War II. After that, they have been used during the Korean War (1950-1953), the Suez Crisis (1956), the Vietnam War in the 1960s and early 1970s, the liberation of Bangladesh (1971), the Falklands Conflict (1982) and the two Gulf Wars. Even now, the USS Ronald Reagan Carrier Battle Group (CBG) is providing cover to the US withdrawal from Afghanistan. The big advantage a carrier offers is being able to strike the adversary while remaining outside the reach of his power. Since World War II they have not, however, been employed in large-scale conflict between two great powers: there has in fact been no such conflict due to concerns regarding escalation to all out nuclear war. Moreover, China's development of long range anti-ship ballistic missiles, which theoretically enable the CBG to be targeted before its aircraft can become effective, has prompted debate about the continued utility of aircraft carriers in the modern age.

Notwithstanding this debate, China is not the only great power investing in aircraft carriers. President Macron of France gave the green light for construction of the Porte-Avions Nouvelle Generation (PANG) aircraft carrier

¹ Mathew P Funaiole and Joseph S Bermudez Jr, "Progress Report on China's Type 003 Carrier", July 14, 2021, <https://www.csis.org/analysis/progress-report-chinas-type-003-carrier>

² HI Sutton, "China's New Aircraft Carrier is in the Same League as the US Navy's Ford Class", April 15, 2021, <https://www.navalnews.com/naval-news/2021/04/chinas-new-aircraft-carrier-is-in-same-league-as-us-navys-ford-class/>

³ Minnie Chan, "China Steps up Shipbuilding With Two More Aircraft Carriers Under Construction Towards 2035 Navy Goal", July 18, 2020, <https://www.scmp.com/news/china/military/article/3093656/china-steps-shipbuilding-two-more-aircraft-carriers-under>

⁴ Steven Stashwick, "Third Chinese Aircraft Carrier Nears Completion Amid Shipyard Expansion", January 06, 2021, <https://thediplomat.com/2021/01/third-chinese-aircraft-carrier-nears-completion-amid-shipyard-expansion/>

in December 2020⁵. This will eventually replace FNS Charles de Gaulle. The UK commissioned HMS Queen Elizabeth in December 2017 (the Queen Elizabeth Carrier Strike Group entered the Indian Ocean on July 08, 2021)⁶ and HMS Prince of Wales in December 2019⁷. USS Gerald Ford, the new aircraft carrier design built for the US Navy, entered service in 2017 and will be followed by USS John F Kennedy and USS Enterprise: construction of both is underway. A fourth ship of the class, Doris Miller, has been ordered. Japan has commissioned two Izumo-class "helicopter carriers" in 2015 and 2017; approval has been accorded for their conversion to enable operation of F-35B Lightning aircraft. Italy's Cavour entered service in 2009, to add to Giuseppe Gabrialdi, in service since 1985. The Republic of Korea Navy announced plans to acquire a full-fledged aircraft carrier in August 2020, and conceptual designs have recently been presented⁸. India currently operates INS Vikramaditya, with INS Vikrant slated to be commissioned early next year. Construction of a follow-on to Vikrant has, however, not been approved by the Government till date.



Satellite Image of China's Type 003 under construction at Jiangnan Shipyard, Shanghai, on May 30, 2021. Source: CSIS

A comparison of modern aircraft carriers planned / operated by different maritime powers is at the table below. A number of countries are evidently not

⁵ Xavier Vavasseur, "France's New Aircraft Carrier Will be Nuclear Powered", December 08, 2020, <https://www.navalnews.com/naval-news/2020/12/frances-new-aircraft-carrier-will-be-nuclear-powered/>

⁶ HMS Queen Elizabeth passes through Suez Canal as the UK Carrier Strike Group heads east", July 7, 2021, <https://www.royalnavy.mod.uk/news-and-latest-activity/news/2021/july/07/210707-carrier-and-suez-canal>

⁷ Commissioning Day for HMS Prince of Wales, <https://www.royalnavy.mod.uk/news-and-latest-activity/news/2019/december/10/191210-hms-prince-of-wales-commissioning>

⁸ Brian Kim, "South Korean Shipbuilders Unveil Competing Carrier Designs:", June 11, 2021, <https://www.defensenews.com/industry/techwatch/2021/06/11/south-korean-shipbuilders-unveil-competing-carrier-designs/>

as convinced as India's armchair critics that anti-ship ballistic missiles mean that the day of the aircraft carrier has passed.

Table 1: Aircraft Carriers Planned / Commissioned After 2010

	Class	Flt Deck (m)	Beam (m)	Full load displacement (tons)	Aircraft (fighters)	Propulsion
China	Type 001	304.5	75	67,000	40 (26)	Steam
	Type 002	315	75	70,000	44 (32)	Steam
	Type 003	318	78	80-85,000	50+ (40)	Electric
	Type 004	?	?	110,000	100	Nuclear
India	Vikrant	262	62	45,000	40 (26)	Gas Turbine
	Vikramaditya	284	61	45,400	36 (26)	Steam
France	PANG	300	?	75,000	?	Nuclear
	Charles de Gaulle	261.5	64.4	42,500	40 (30)	Nuclear
UK	Queen Elizabeth	280	73	65,000	50 (36)	Electric
US	Ford	333	77	100,000	75+	Nuclear
	Nimitz	332.8	76.8	100,000 +	85-90	Nuclear
Japan	Izumo	248	38	27,000	28 (12)	Gas Turbine
Italy	Cavour	244	39	30,000	20-30 (12)	Gas Turbine

Information about the Type 003 is hard to come by and is largely speculative. What is known is that it will be the largest aircraft carrier ever built outside the US, will be launched later this year and commissioned 2-3 years hence. Billed as China's most technologically advanced, it will be the first to use a CATOBAR (Catapult Assisted Take-off But Arrested Recovery) system in lieu of the ski-jump used till now. It is expected to be fitted with three Electro-Magnetic catapults enabling launch and recovery of heavier aircraft and at higher rates than permitted by current carriers. Reports have also emerged of a proposal by the China State Shipbuilding Corporation to build an even heavier successor⁹, displacing up to 110,000 tons, powered by a nuclear reactor and embarking a wing of 70-100 aircraft.

Where could China utilise its aircraft carriers and for what purpose? In combat roles, they enable strengthening of anti-access / area denial capability in the Western Pacific, particularly in a Taiwan Straits contingency. The carriers could

⁹ Minnie Chan, "China is looking for 'a significant breakthrough' by making its next aircraft carrier nuclear powered", March 14, 2021, <https://www.businessinsider.com/china-next-aircraft-carrier-likely-nuclear-powered-sources-say-2021-3?IR=T>

be employed to intercept intervening US forces further out, forming a second line of defence behind anti-ship ballistic missiles and before shore-based aircraft come into the picture and thus adding to the conventional deterrent. This would, however, entail willingness to accept the risk of escalation of conflict to a much higher level than China appears ready to do at the moment.



Agni Prime IRBM being launched from Dr APJ Abdul Kalam Island on June 28, 2021.
Source: PIB

China could also deploy them for coercive purposes in the South China Sea. Regional nations can offer no viable opposition, apart from conventional submarines operated by Vietnam, Malaysia, Singapore and Indonesia. The relatively limited size of the sea enables blanketing the area with land based submarine hunting aircraft such as its China's Y-8 ASW variants, complicating submarine operations. On the other hand, submarine evasion also becomes

more difficult. Risking a high value CBG in a confined space would not be sound strategy for China, more so as the same task can easily be performed by shore-based aircraft, including those operating from the militarised Paracel and Spratly Islands.

Finally, China could use these aircraft carriers more effectively to project power and protect its many interests in the Indian Ocean, including exercising influence in the region and combating the threat of its vital SLOCs being interdicted. Such usage comports best with China's stated philosophy of active defence, described as the essence of the CPC's military strategic thought¹⁰. The probability of their being used in the Indian Ocean on a sustained basis must therefore be considered high.

What can an integrated Chinese Carrier Battle Group (CBG) do in the Indian Ocean? Foremost is the symbolic/prestige impact. The sustained presence of a Chinese CBG in the Indian Ocean would do more to convince hesitant Indian Ocean states that China has arrived as a military power than occasional port visits by frigates or destroyers. It would also enable China to apply increased military pressure, without the risk of being countered. Operationally, the CBG could shield Chinese SLOCs: one CBG each in the Western and Eastern Indian Ocean would suffice to provide protection to all sea lanes running through the Ocean even in times of conflict. It could also act as a sword arm: in times of tension, the presence of an adversarial CBG would both constrain surveillance by India's P-8I aircraft and permit strikes from extended ranges on maritime targets. It would also provide substantially enhanced air defence capability for Chinese warships against shore-based aircraft, while enhancing anti-submarine warfare capability by making available both fixed wing aircraft and dedicated ASW helicopters in large numbers.

What are India's possible counters to a Chinese CBG in the Indian Ocean in times of conflict? The first could be land-based anti-ship missiles. Three indigenous options are under development. First is the Brahmos supersonic cruise missile, currently in service with a range of 290 Km. An extended range version, with a range of 400 Km, reportedly failed a test on July 12, 2021¹¹. Reports also indicate that a 1,500 Km range version is under development¹². The second is the Nirbhay subsonic cruise missile, with a range of 1000 – 1500 Km. This reportedly went through its most recent developmental test

¹⁰ As highlighted in China's Military Strategy White Paper, May 26, 2015, http://english.www.gov.cn/archive/white_paper/2015/05/27/content_281475115610833.htm

¹¹ Defence Update 1355, July 12, 2021, https://www.youtube.com/watch?v=pGfi26QJ_Bk

¹² Sneha Alex Philip, "India now working on 1,500 km range BrahMos supersonic cruise missile", November 24, 2020, <https://theprint.in/defence/india-now-working-on-1500-km-range-brahmos-supersonic-cruise-missile/550924/>

successfully on June 24, 2021¹³. Third is the Agni Prime ballistic missile, which went through its first flight test on June 28, 2021¹⁴. With a range of 2000 Km and reportedly fitted with a manoeuvrable re-entry vehicle, it could become an Indian equivalent to China's "carrier-killer" missiles. These options provide range sufficient to reach the Chagos Archipelago, but not the Horn of Africa region or Indian Ocean islands such as Seychelles and Mauritius. However, all three are still at different stages of development. Whether they can complete developmental tests, move through the acquisition process and be fielded before the Chinese CBG deploys into the Indian Ocean is debatable.



INS Vagir, India's Fifth Scorpene Class Submarine, at Mumbai before launch on November 12, 2020. Source: Indian Navy

The second option is the usage of land-based strike aircraft, such as the Su-30 MKI. This necessitates continuous surveillance of the region and vectoring of strike aircraft to their target. Given the need of keeping adversary submarines under observation, India will need larger numbers of LRMP aircraft just to

¹³ Nirbhay Cruise Missile Test-Fired Off Odisha Coast, Sambad, June 24, 2021, <https://sambadenglish.com/nirbhay-cruise-missile-test-fired-off-odisha-coast/>

¹⁴ Vishnu Som, "India Successfully Test Fires Agni Prime – New Missile in Agni Series", June 28, 2021.

provide the requisite surveillance. Moreover, the presence of interceptors makes the task of LRMP aircraft far more complex. The airfields from which strike aircraft operate are themselves vulnerable to long range land attack missiles such as the CJ-10 (range 1500 Km+) carried by the China's Type 055 destroyers.

A third option depends on submarines to interdict China's CBG. India, however, does not possess nuclear attack submarines, which possess the speed to find and keep up with adversary surface ships. Conventional submarines can be evaded – in fact, the standard tactic for the CBG would be to sidestep known submarine locations while detaching a "search and attack" unit, preferably with helicopters, to deal with the threat. On balance, relying on conventional submarines to take on an adversary CBG does not seem an effective course of action.

Historical experience proves that the force most capable of dealing with a CBG is another CBG. This option also utilises India's rich experience of CBG operations. The key to successful counter, or even deterrence, will lie in the varieties of aircraft available and their numbers. The range and accuracy of anti-ship missiles currently available means that numerous strike aircraft are no longer needed – a few who can succeed in delivering armament can disable the target.

The critical issue is availability. It may be recalled that when war broke out in 1965, INS Vikrant was undergoing refit, while in 1971, she was available only with substantially reduced speed. Possession of one or even two aircraft carriers is not sufficient to ensure that at least one will be operationally available in times of need. Advanced navies typically maintain at least three to ensure that one is operationally available at all times. India, with its dependence on external sources for spares, would probably need more:

While enunciating India's SAGAR doctrine, Prime Minister Modi had committed to a strategy of doing everything necessary to safeguard our mainland and islands and defend our maritime interests, as well as to working to ensure a safe, secure and stable Indian Ocean Region¹⁵. Both face challenge as China moves towards deploying one or more CBGs in the Indian Ocean.

¹⁵ Text of PM's Remarks on the commissioning of Coast Ship Barracuda, 12 March 2015, <http://www.pib.gov.in/newsite/erelcontent.aspx?relid=116881>



An IAF Su-30 MKI launches a BrahMos supersonic missile for a successful flight test in the Indian Ocean on October 29, 2020. Source: ANI

China's aggressive actions in Ladakh should have dispelled notions of its accepting India's rise as a leading power in Asia, far less an equal. China's carrier building spree and sustained Indian Ocean presence indicates movement towards the capability to challenge India's dominant position in the IOR. India would do well to plan an effective counter through available options that strengthen its deterrent power and extend the asymmetrical advantage provided by its geography astride the Indian Ocean.



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