



China's new High-Tech Aircraft Carrier Fujian

For Prelims: Fujian, EMALS, Catapults, South China Sea

For Mains: China's Aircraft Carrier Fujian and India's Concern, Indigenization of Technology

Why in News?

Recently, China unveiled its **first indigenous aircraft carrier**, the **new-generation Fujian (Type 003)**.

- China now has the **most number of aircraft carriers after the U.S.**

What is Fujian?

▪ About:

- The Fujian has been named after **China's eastern coastal province which lies across from Taiwan.**
- The Fujian joins two other carriers currently operated by China — **Shandong (Type 001)**, commissioned in 2019, and the **Liaoning (Type 002)**, bought second-hand from [Ukraine](#) in 1998.
 - The Type 003 carrier **more technologically advanced** than its predecessors Shandong and Liaoning.

▪ Features:

- The Fujian's displacement is 80,000 tonnes, much more than the existing Chinese carriers, and comparable to U.S. Navy aircraft carriers.
- The Fujian has been fitted with the latest launch technology — **the Electromagnetic Aircraft Launch System (EMALS)**, first developed by the U.S. Navy.
- It also has a **straight flat-top flight deck for take-offs** and landings,
 - The two existing vessels use a ski jump-style ramp. A ski-jump is an **upward-curved ramp that allows aircraft to take off from a runway that is shorter** than the aircraft's required takeoff roll.

How is this Aircraft Significant for China?

- China has **staked claim over almost all of the [South China Sea](#)** and has deployed naval assets as a show of power in the strait that separates Taiwan from the Chinese mainland.
- With the Fujian, China is **likely to get more room to operate in the South China Sea and Taiwan Straits.**
- The Indian Navy has a sizeable presence in the [Indian Ocean](#) but the capabilities of the Fujian provide China with a leeway to head to India's backyard, where it is increasing its presence.
- China has already acquired the [Hambantota port in Sri Lanka](#) as a debt swap, is modernising [Pakistan's Gwadar port](#) on the **Arabian Sea** and has expanded its naval base in the strategically important [Horn of Africa nation](#) of Djibouti.
- However, even as China expands its military strength, the U.S. remains far ahead. At present,

the **United States is the world's leader in aircraft carriers**, with 11 nuclear-powered vessels, followed by China, Britain and Italy.

What is EMALS?

▪ About:

- It is a catapult system which helps to provide the extra push to aircrafts. Once the catapult is released, **the aircraft attached to the catapult moves forward with great speed in a short time, which helps it to gain the speed required to take off** before it reaches the end of the runway.
 - Catapult Assisted Take-off But Arrested Recovery or (CATOBAR) is one such system. In this, an aircraft takes off from a completely flat deck with the help of catapults.
- There are **two types of catapult systems** — steam-powered, and electromagnetic ones called EMALS.
 - While the former uses steam pressure to fire catapults, EMALS uses linear induction motors. The **electromagnetic force generated is used to launch the aircraft**.
 - Compared to steam catapults, EMALS is **more reliable, requires less maintenance, recharges faster, doesn't take up much space on a carrier and is energy-efficient**.

▪ India's Status:

- In 2017, the U.S. provided India with its EMALS technology, developed by the U.S. defence company General Atomics Aeronautical Systems Inc.
- India explored the possibility of installing the system, but the **Navy dropped the plan due to budget constraints**.
- However, the state-owned Bharat Electronics Limited in Bengaluru is **reportedly working on an EMALS model that could be tested for CATOBAR operations on Indian warships** in the near future.

What is the Status of Aircraft Carrier in India?

▪ [INS Vikramaditya](#):

- It is the **Indian Navy's largest aircraft carrier** and warship converted from the Russian Navy's decommissioned Admiral Gorshkov/Baku.
- INS Vikramaditya is a **modified Kiev-class aircraft carrier** that was commissioned into service in November 2013.
- It works on a Short Take-Off But Arrested Recovery, or **STOBAR mechanism** with an angular ski-jump.
 - STOBAR is a system used for the launch and recovery of aircraft from the deck of an aircraft carrier, combining elements of "**short take-off and vertical landing**" with "**catapult-assisted take-off but arrested recovery**".

▪ [INS Vikrant](#):

- India's second aircraft carrier named INS Vikrant, set to be commissioned later this year, will use the **CATOBAR system** to launch aircraft.
- Its construction propelled India into a select group of countries having capabilities to build state-of-the-art aircraft carriers.
- Operational Modalities: According to the Indian Navy, the warship will operate **MiG-29K fighter jets, Kamov-31 helicopters, MH-60R multi-role helicopters and the indigenously manufactured Advanced Light Helicopters (ALH)**.

UPSC Civil Services Exam, Previous Year Questions (PYQ)

Q. Which one of the following is the best description of 'INS Astradharini', that was in the news recently? (2016)

(a) Amphibious warfare ship

- (b) Nuclear-powered submarine
- (c) Torpedo launch and recovery vessel
- (d) Nuclear-powered aircraft carrier

Ans: (c)

Exp:

- INS Astradharini is an indigenously built Torpedo Launch and Recovery Vessel. It was commissioned on 6th October 2015.
- The design of the Astradharini was a collaborative effort of Naval Science and Technological Laboratory (NSTL), Shoft Shipyard and IIT Kharagpur.
- It is an advanced replacement for Astravahini which was decommissioned on 17th July 2015.
- It has a unique design of a catamaran hull form that significantly reduces its power requirement and is built with indigenous steel.
- It can operate at high sea states and has a large deck area with **Torpedo Launchers for deploying and recovering various kinds of Torpedos during the trials.**
- The ship also has modern power generation and distribution, navigation and communication systems.
- 95% of the systems of the ship are of indigenous design, thus demonstrating the Navy's continued adherence to the 'Make in India' philosophy.
- INS Astradharini will be used to carry out the technical trials of underwater weapons and systems developed by NSTL, a naval systems laboratory of DRDO. Therefore, option (c) is the correct answer.

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