



## 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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