Fujian-new high tech aircraft carrier of China

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In news-China has recently unveiled **its first indigenous aircraft carrier,** the new-generation **Fujian.**

About Fujian-

- The Fujian has been **named after China's eastern coastal province** which lies across from Taiwan.
- It is touted to be the **most-advanced aircraft carrier so far.**
- **With the launch of the Fujian, China now has the most number of aircraft carriers after the U.S**.
- 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.
- Fujian was **completely designed and built domestically**.
- **It was built by the China State Shipbuilding Corporation Limited.**
- It's **displacement is 80,000 tonnes**, much more than the existing Chinese carriers, and comparable to U.S. Navy aircraft carriers.
- The **Type 003 carrier(Fujian) is also significantly more technologically advanced than its predecessors Shandong and Liaoning**.
- **It is 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.
- The Fujian is a part of the military modernisation plan

of President Xi Jinping .

- The Chinese President has vowed to build a modern force that can rival the U.S. military by 2027 and become a **“blue water” Navy**, one that operates globally .

What is EMALS?

- An aircraft onboard a carrier needs extra help to get airborne since the length of the runway on deck is insufficient to achieve the speed needed for takeoff.
- One of the ways to provide this extra push is by the use of catapults.
- **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.
- 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.
- **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.
- **The electromagnetic system can launch a wide variety of aircraft weights** and can be used on different platforms due to its flexible architecture.
- It also reduces the stress on the aircraft during take-off. **The system, however, is expensive**.

- **As of now, USS Gerald R. Ford carriers of the U.S. Navy use the advanced catapult system.**

- The Type 003 carrier will be able to launch fixed-wing aircraft with heavier payloads and more fuel with the use of EMALS.

EMALS's usage in India-

- **In 2017, the U.S. provided India with its EMALS technology,** developed by the U.S. defence company General Atomics Aeronautical Systems Inc.
- **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.
- Presently, **India's sole aircraft carrier INS Vikramaditya works on a Short Take-Off But Arrested Recovery, or STOBAR mechanism** with an angular ski-jump.
- India's second aircraft carrier named **INS Vikrant, set to be commissioned later this year, will use the CATOBAR system to launch aircraft.**