Tejas Jets and Prachand Helicopters

For Prelims: Tejas Jets and Prachand Helicopters, Defence Acquisition Council (DAC), Tejas Light Combat Aircraft (Mark 1A), Prachand Light Combat Helicopters (LCH).

For Mains: Tejas Jets and Prachand Helicopters, Various Security forces and agencies and their mandate.

Source: TH

Why in News?

Recently, the **Defence Acquisition Council (DAC)** has sanctioned Rs 2.23 lakh crore for the procurement of **97** Tejas Light Combat Aircraft (Mark 1A) and 156 **Prachand Light Combat Helicopters (LCH)**, underscoring India's commitment to bolster its armed forces' combat capabilities.

- The procurement plan aims to source **98% of its total needs from domestic industries**, providing a significant boost to the Indian defense industry in its pursuit of **'Aatmanirbharta' (self-reliance).**
- The DAC also approved a proposal of the Indian Air Force to upgrade its **Su-30 fighter fleet by state-run aerospace** major Hindustan Aeronautics Ltd (HAL).

What is Light Combat Aircraft (LCA)?

- **About:**
  - The LCA programme was started by the Government of India in 1984 when they established the Aeronautical Development Agency (ADA) to manage the LCA programme.
- **Features:**
  - Designed to carry a range of air-to-air, air-to-surface, precision-guided, weapons.
  - Air to air refueling capability.
- **Variants of Tejas:**
  - **Tejas Trainer**: 2-seater operational conversion trainer for training air force pilots.
  - **LCA Navy:** Twin- and single-seat carrier-capable for the Indian Navy.
  - **LCA Tejas Navy MK2:** This is phase 2 of the LCA Navy variant.
  - **LCA Tejas Mk-1A:** This is an improvement over the LCA Tejas Mk1 with a higher thrust engine.

What is a Light Combat Helicopter?

- **About:**
  - The LCH is the **only attack helicopter in the world** which can land and take off at an **altitude of 5,000 meters** with a considerable load of weapons and fuel.
  - The helicopter uses radar-absorbing material to lower radar signature and has a **significantly crash-proof structure and landing gear.**
    - A pressurised cabin offers protection from Nuclear, Biological and Chemical (NBC) contingencies.

- The helicopter is equipped with a **countermeasure dispensing system** that protects it from enemy radars or infrared seekers of enemy missiles.
- LCH is powered by **two French-origin Shakti engines** manufactured by the HAL.

- **Genesis:**
  - It was during the **1999 Kargil war that the need was first felt for a homegrown lightweight assault helicopter** that could hold precision strikes in all Indian battlefield scenarios.
    - This meant a craft that could operate in very hot deserts and also in very cold high altitudes, in counter-insurgency scenarios to full-scale battle conditions.
  - India has been operating sub 3 ton category French-origin legacy helicopters, **Chetak and Cheetah**, made in India by the Hindustan Aeronautics Limited (HAL).
    - These single engine machines were, primarily, utility helicopters. Indian forces also operate the Lancer, an armed version of Cheetah.
  - In addition, the Indian Air Force currently operates the **Russian origin Mi-17** and its variants Mi-17 IV and Mi-17 V5, with maximum take-off weight of 13 tonnes, which are to be phased out starting 2028.
  - The government sanctioned the LCH project in October 2006 and HAL was tasked to develop it.
- **Significance:**
  - The LCH has the capabilities of combat roles such as destruction of enemy air defence, counter insurgency warfare, combat search and rescue, anti-tank, and counter surface force operations.

What Different Types of Aircrafts India Has?

- **Multi-Role Fighter Aircraft (MRFA):**
  - Designed to perform various missions such as **air-to-air combat, air-to-ground attack, and electronic warfare.**
  - IAF pursuing the procurement of 114 MRFA to replace the aging fleet of Soviet-era MiG-21.
  - Procurement will be carried out under the **Make in India initiative.**
  - Selected vendor will have to set up a production line in India and transfer technology to local partners.
- **MiG-21:**
  - Supersonic jet fighter and interceptor aircraft designed by the erstwhile USSR in the 1950s.
    - Widely used combat aircraft in history, with more than 11,000 units built and over 60 countries operating it.
  - IAF acquired its first MiG-21 in 1963 and has since inducted 874 variants of the aircraft
  - Involved in several wars and conflicts involving India. Involved in many accidents and crashes, earning it the nickname **“flying coffin”.**
  - **IAF plans to phase out the MiG-21 by 2024** and replace it with more modern fighters.
- **Advanced Medium Combat Aircraft (AMCA):**
  - An Indian program to develop a 5^{th} generation stealth, multirole combat aircraft for the IAF and the Indian Navy.
  - Designed and developed by the ADA of the **DRDO**, in collaboration with Hindustan Aeronautics Limited (HAL) and other public and private partners.
  - Expected to have features such as a **stealth airframe, internal weapons bay, advanced sensors, data fusion, supercruise capability and swing-role performance.**
  - Started in 2008 as a successor to the Sukhoi Su-30MKI
    - First flight planned for 2025 and production is expected to start after 2030.
- **Sukhoi Su-30MKI:**
  - **Twin-engine, two-seat,** multirole fighter aircraft developed by Russia’s Sukhoi and built under license by India’s HAL for the IAF.
  - Designed to perform air superiority, ground attack, electronic warfare, and maritime strike missions
  - Entered service with the IAF in 2002 and has been deployed in several conflicts and exercises
- **Twin-Engine Deck-Based Fighter (TEDBF):**
  - Manufactured for the Navy to replace the Navy's MiG-29K.

- First twin-engine aircraft project in India for dedicated carrier-based operations.
- Equipped predominantly with domestic weapons.
- Maximum mach number of 1.6, service ceiling of 60,000 feet, maximum takeoff weight of 26 tons, unfolded wing.

- **Rafale:**
  - **French twin-engine** and multirole fighter aircraft.
  - India procured 36 Rafale jets for Rs 59,000 crore in 2016.
  - Equipped to perform **air supremacy, interdiction, aerial reconnaissance, ground support, in-depth strike, anti-ship strike, and nuclear deterrence missions.**
  - The weapons package of Rafale jets includes **Meteor missile, Scalp cruise missile, and MICA missile system.**
    - Meteor missile is the next generation of Beyond Visual Range air-to-air missile designed to revolutionize air-to-air combat, capable of targeting **enemy aircraft from 150 km away.**
    - SCALP Cruise Missiles **can hit targets 300 km away,** while MICA missile system is a versatile air-to-air missile capable of **hitting targets up to 100 km away.**
  - Flight hour capacity of 30,000 hours in operations.