2. Kaveri Jet Engine: India's Opportunity

Prelims Level: Defence Technology

Mains Level: GS-III Science and Technology - Developments and Their Applications and Effects in Everyday life Achievements of Indians in Science & Technology; Indigenization of Technology and developing New Technology.

Kaveri Jet Engine:

- Kaveri engine is an indigenous gas turbine engine designed and developed by DRDO's Gas Turbine Research Establishment.
- The engine development was first started in 1989.
- Despite accruing a cost of $55 million, the Engine's success is still a Question.

Where does India stand in Aircraft Engine Manufacturing?

- Only five countries in the world produce aircraft engines.
- India is striving hard to enter the race.

History of Kaveri Jet Engine

- In 1986, the DRDO's Gas Turbine Research Establishment (GTRE) was tasked with developing an indigenous power plant for the Light Combat Aircraft (LCA).
- Having developed two experimental engines, the GTRE took up a turbofan design, designated the GTX-35VS "Kaveri", for the LCA.
- Full-scale development was authorised in 1989 at a cost of $55 million.
- The first complete prototype Kaveri began tests in 1996, and by 2004 it met failure in the Russian flying test-bed.
- GTRE has been struggling with serious design and performance issues which it has been unable to resolve.
- As the Kaveri missed successive deadlines, the U.S. engines were imported for the LCA.
- In 2016, an agreement between the DRDO and the French engine company, SAFRAN was signed to revive the engine.
- However, the company suggested replacing the core of the engine with its technology.
- This would again make India dependent on a foreign company to complete the project, which it took to create an indigenous jet engine.
- In 2014, this project was arbitrarily shut down by the DRDO only to be revived subsequently for Reasons Unknown.

Reasons Attributed to the failure:

- The priorities of political leadership
- Absence of a vision for the aeronautical industry.
- Over-Estimation by the DRDO of its capabilities compounded by a reluctance to seek advice;
- Inadequate Project Management and decision-making skills of its scientists;
- Exclusion of users — the military — from all aspects of the projects.

Way Forward:

- The government shall declare the project as 'national mission' and initiate urgent remedial actions.
- Optimum level of funding for research projects should be provided by the governments.
- Domestic industry and start-ups shall be used to provide necessary support.
- End users- the military and the air force should be considered as stakeholders while designing Military Grade Technologies.
- Research conducive institutions shall be developed by bringing back the overseas Indians, which shall stop brain drain from the Country.
  - ✓ The success of the Kaveri programme will transform the aerospace scene and put India in the front ranks of aeronautical nations, perhaps even ahead of China. If we miss this opportunity, we will remain abjectly import-dependent forever in this Vital Area.