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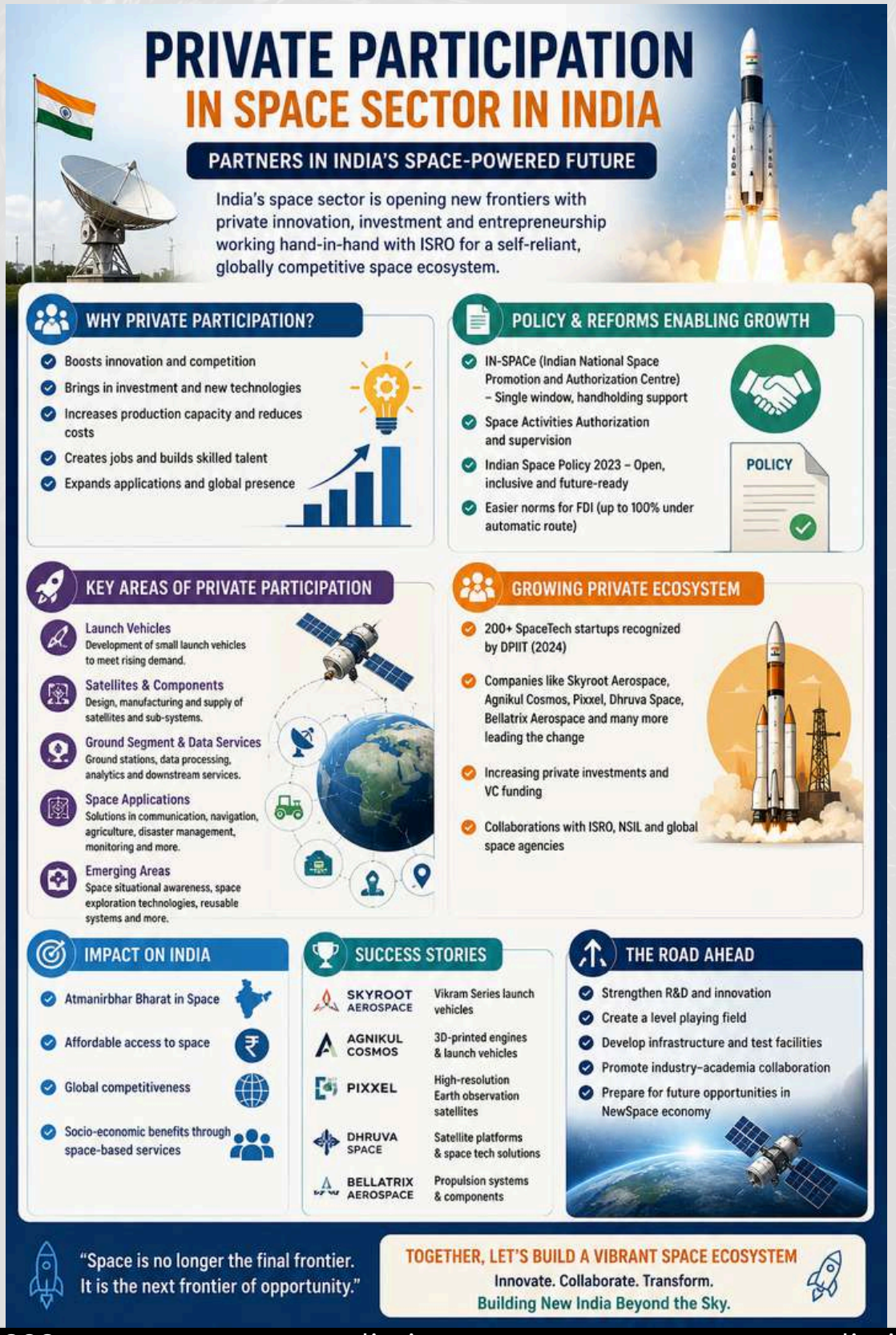
1 Private Participation in the Space Sector and Mission Aagaman

(Source: **The Hindu)**



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Mission Aagaman

- *Mission Aagaman was a historic orbital spaceflight executed by Hyderabad-based startup Skyroot Aerospace.*
- It featured ***Vikram-1, India's first privately developed orbital-class rocket***, successfully lifting off from the Satish Dhawan Space Centre in Sriharikota.

2 Falkland Islands (Source: The Indian Express)

A solar storm is a disturbance in space weather caused by the Sun releasing large amounts of energy, radiation, and charged particles

Components of Solar Storms

- **Solar Flare**: A sudden burst of electromagnetic radiation from the Sun. Travels at the speed of light.
- **Coronal Mass Ejection (CME)**: Massive eruption of plasma and magnetic fields from the Sun. Takes 1–3 days to reach Earth. The main cause of severe geomagnetic storms.

Impact of Solar Storms

- **Satellites & Space Infrastructure**: Energetic particles damage sensitive electronic components. Furthermore, the radiation heats and expands Earth's upper atmosphere, increasing atmospheric drag. This causes Low Earth Orbit (LEO) satellites to lose altitude prematurely.
- **Navigation and Communication**: Disruptions to the ionosphere interfere with GPS signals, satellite TV, and mobile networks. It specifically halts high-frequency (HF) shortwave radio communication used by aircraft flying over polar regions.
- **Terrestrial Power Grids**: The changing magnetic field induces Geomagnetic Induced Currents (GICs) in the ground. These low-frequency currents flow into high-voltage transmission lines, causing power grid overloads, voltage instability, and catastrophic damage to transformers (e.g., the 1989 Hydro-Québec blackout).
- **Astronaut Safety**: Space weather exposes astronauts (e.g., on the ISS) and passengers on high-altitude polar flights to elevated levels of radiation.
- **Spectacular Auroras**: Charged particles colliding with atmospheric gases create intense Aurora Borealis and Australis, pushing them down to much lower latitudes than normal.

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3 Hydrogen Fuel Cell (Source: The Hindu)