## WHAT IS ALGORITHMIC TRADING?

- Algorithmic trading (also called **automated trading, black-box trading**, or **algo-trading**) **uses a computer program** that **follows a defined set of instructions** (an algorithm) **to place a trade.**
- It combines computer programming and financial markets to **execute trades at precise moments.**
- The trade, in theory, **can generate profits at a speed and frequency** that is impossible for a human trader.
- The defined sets of **instructions are based on timing, price, quantity,** or any **mathematical model.**
- Algo trading is already **prevalent in India** among both institutional and retail investors.
- Apart from profit opportunities for the trader, algo-trading **renders markets more liquid** and **trading more systematic** by **ruling out the impact of human emotions** on trading activities.
- **Black Swan Events:**
  - Algorithmic trading **relies on historical data** and **mathematical models to predict** future **market movements.**
  - However, **unforeseen market disruptions,** known as **black swan events,** can occur, which **can result in losses for algorithmic traders.**

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## CIVIL REGISTRATION SYSTEM


- It is popularly known as the **birth and death registration**
- It is the recording of vital events i.e. birth, death & still Birth under the statutory provisions on continuous and permanent basis.

- **Legal Provisions**
  - The registration of birth and death is done under the provisions of a central Act namely **Registration of Births and Deaths (RBD) Act, 1969** (amended in 2023).
  - This Act was enacted in the year 1969 and was enforced in most of the States/UTs from 1st April, 1970 to promote **uniformity and comparability** in the registration of Births and Deaths across the country.
- CRS falls under the **Concurrent list** of the Constitution of **India at Sl. No. 30.**
- The **Office of the Registrar General, India,** (ORGI) obtains data on causes of death from the Chief Registrar of Births and Deaths of different States and Union Territories.
- **Significance:** Vital statistics generated from civil registration significantly contribute to the formulation of effective and efficient evidence-based policy across multiple sectors.

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## INDIA TO ADD 75 GW GREEN POWER BY FY27 – CRISIL

- India is expected to add 75 GW of renewable energy capacity in FY26 and FY27, a 53% increase from 49 GW added in FY24–25, according to Crisil Ratings.
- This will raise the country's total renewable capacity to 233 GW by March 2027.
- **Investment to Surge by 52%**
  - Investments in the renewables sector are projected to grow from ₹2.5 lakh crore in FY24–25 to ₹3.8 lakh crore in FY26–27—a 52% jump.
  - This surge is driven by the increasing share of capital-intensive hybrid and storage-linked projects.
- **Rise of Hybrid and Storage-Linked Projects**
  - Around 37% of the upcoming 75 GW capacity will come from hybrid and storage-linked projects—up from 17% in FY24–25.
  - Hybrid projects combine solar and wind to ensure more consistent power generation, while storage-linked projects use batteries or pumped hydro to store excess energy.

- As renewable power is intermittent—solar during the day and wind being seasonal—increasing its share can disrupt grid stability.
- Hybrid and storage solutions help maintain round-the-clock power supply and grid balance.

- **Transmission Infrastructure a Key Bottleneck**
  - Transmission remains a major challenge.
  - Though capex in this sector rose to ₹36,000 crore in FY25 (up from ₹15,000 crore in FY24), the Crisil report warns of delays due to equipment supply constraints and execution bottlenecks.
    - FY26–27 transmission capex is projected to reach ₹0.9–1 lakh crore.

**Slow Progress in Power Purchase Agreements (PPA)**

- Only 50% of PPAs for projects awarded in the last 1–2 years have been finalized, due to limited interest from state discoms.
- However, this is expected to improve as power demand and renewable purchase obligations grow.

**Capacity Addition Planned in FY26**

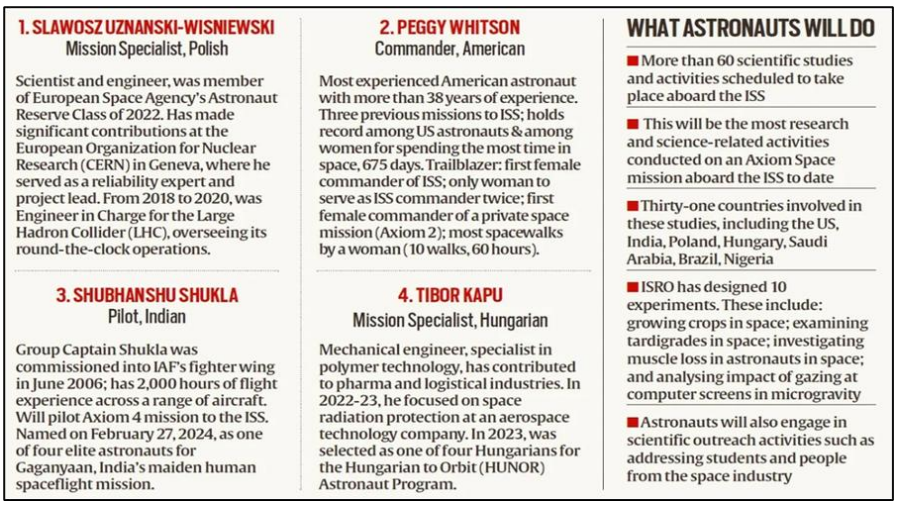
- As per a recent Grid-India resource adequacy report, the country will add 45 GW in the ongoing FY26, led by:
  - Solar: 26.5 GW
  - Wind: 6.3 GW
  - Coal: 4.4 GW
  - Battery Storage: 3.3 GW
  - Hydro: 1.6 GW
  - Pumped Storage: 1.5 GW
  - Nuclear: 1.4 GW

## SIGNIFICANCE OF AXIOM-4

Indian astronaut Shubhanshu Shukla's trip to the International Space Station (ISS) on the Axiom-4 mission will be a big step forward for India's space journey.

In recent years, ISRO has done many important missions, like the Chandrayaan-3 Moon landing, which made India one of the few countries with advanced space technology.

Shukla's spaceflight is not India's own human space mission yet, but it is closely linked to our plans. It will give useful information for the upcoming Gaganyaan mission and future space projects. This shows that India is getting ready for bigger achievements in space.



**1. SLAWOSZ UZNANSKI-WISNIEWSKI**
Mission Specialist, Polish

Scientist and engineer, was member of European Space Agency's Astronaut Reserve Class of 2022. Has made significant contributions at the European Organization for Nuclear Research (CERN) in Geneva, where he served as a reliability expert and project lead. From 2018 to 2020, was Engineer in Charge for the Large Hadron Collider (LHC), overseeing its round-the-clock operations.

**2. PEGGY WHITSON**
Commander, American

Most experienced American astronaut with more than 38 years of experience. Three previous missions to ISS; holds record among US astronauts & among women for spending the most time in space, 675 days. Trailblazer: first female commander of ISS; only woman to serve as ISS commander twice; first female commander of a private space mission (Axiom 2); most spacewalks by a woman (10 walks, 60 hours).

**3. SHUBHANSHU SHUKLA**
Pilot, Indian

Group Captain Shukla was commissioned into IAF's fighter wing in June 2006; has 2,000 hours of flight experience across a range of aircraft. Will pilot Axiom 4 mission to the ISS. Named on February 27, 2024, as one of four elite astronauts for Gaganyaan, India's maiden human spaceflight mission.

**4. TIBOR KAPU**
Mission Specialist, Hungarian

Mechanical engineer, specialist in polymer technology, has contributed to pharma and logistical industries. In 2022-23, he focused on space radiation protection at an aerospace technology company. In 2023, was selected as one of four Hungarians for the Hungarian to Orbit (HUNOR) Astronaut Program.

**WHAT ASTRONAUTS WILL DO**

- More than 60 scientific studies and activities scheduled to take place aboard the ISS
- This will be the most research and science-related activities conducted on an Axiom Space mission aboard the ISS to date
- Thirty-one countries involved in these studies, including the US, India, Poland, Hungary, Saudi Arabia, Brazil, Nigeria
- ISRO has designed 10 experiments. These include: growing crops in space; examining tardigrades in space; investigating muscle loss in astronauts in space; and analysing impact of gazing at computer screens in microgravity
- Astronauts will also engage in scientific outreach activities such as addressing students and people from the space industry

**From Rakesh Sharma to Shubhanshu Shukla: A Journey of Progress**

- Rakesh Sharma's journey to space in 1984 was a proud moment for India and sparked public imagination.
- However, at that time, India's space program was still very young, with limited infrastructure and no clear long-term human spaceflight plans.
- As a result, his achievement remained more symbolic than practical.
- **Shubhanshu Shukla's Mission: A Step Towards the Future**
    - Shukla's flight on the Axiom-4 mission is different. It comes at a time when ISRO is a globally respected space agency, capable of handling complex missions.
    - His mission is not just inspirational, but will also provide valuable experience and data for future projects, especially the **Gaganyaan mission**.

- India's first human space mission, Gaganyaan, was initially planned for 2022. Though delayed, the Axiom-4 mission helps bridge the gap.

**Gaganyaan: A Complex and Critical Mission**

- India's first human spaceflight mission, Gaganyaan, is far more complex than uncrewed missions due to the safety protocols and human factors involved.
- This adds layers of difficulty for ISRO as it prepares to send astronauts into space for the first time.
- **Why Shubhanshu Shukla's Experience Matters**
  - Shubhanshu Shukla, as the pilot of the Axiom-4 mission, will gain real-time experience that is invaluable for Gaganyaan.
  - His hands-on learning in decision-making, orbital navigation, and spacecraft operations will bring real-world insights that cannot be replicated in simulations.
  - Currently, only Rakesh Sharma has such experience, but that was with older technologies. Shukla's updated exposure will help guide future Indian astronauts.
- **India's First Astronaut on the ISS**
  - Shukla will also become the first Indian to visit the International Space Station (ISS).
  - His time aboard the ISS will provide him with key observations about how space stations function, which will be crucial for ISRO's long-term plan to build its own space station.
- **Building Institutional Knowledge for the Future**
  - Countries with successful space programs benefit when astronauts transfer their learning to future missions.
  - Shukla's two-week space mission will lay the groundwork for developing India's future space capabilities, both for Gaganyaan and the proposed Indian space station.

## INDIA'S DECADE OF TRANSFORMATION - A BLUEPRINT FOR INDIA@2047

- India, currently the fifth-largest economy with a **$4.2 trillion GDP,** is **poised to surpass Japan and Germany** to become the **third-largest economy** in the coming years.
- Under the current govt, the last 11 years (**2014–2025**) have seen **significant transformations** in infrastructure, governance, digital infrastructure, and social development.

**Economic Resilience and Macroeconomic Stability:**

- **Consistent growth:**
  - Average GDP growth since 2014: **6.4%**
  - Latest quarterly growth (2025): **7.4%**
- **Inflation management:** Inflation declined from 9.4% (2013-14) to **4.6% (2025),** resulting in **macroeconomic stability** for both businesses and households.

**Infrastructure Expansion - Laying the Foundation of Growth:**

- **Highways and rural roads:**
  - **National highways** increased from 91,287 km (2014) to 1,46,204 km (2024).
  - **Construction speed** rose from 12 km/day to 34 km/day.
  - **4 lakh km of rural roads** built under PM Gram Sadak Yojana (PMGSY), connecting **99%** of rural India.
- **Railways - Backbone of mass and freight transport:**
  - **25,871 route kilometres** (RKM) of new tracks laid, which is significantly higher than 14,985 RKM in the previous decade.
- **Airports and aviation:**
  - Airports increased from 74 (2014) to **160** (2025).
  - **UDAN** scheme brought connectivity to remote towns.
  - **Vision:** 300 operational airports by 2047.
- **Clean Energy Leadership:**
  - **Total clean energy capacity:**228. 28 GW.

- Solar energy capacity grew from **2.82 GW (2014) to 105.65 GW.**
- **India ranks:** 3rd in solar and 4th in wind energy production globally.

**Digital Public Infrastructure - A Model for the World:**

- **Platforms driving growth:**
  - **UPI, Aadhaar, Jan Dhan Yojana** central to governance reforms.
  - This public-first approach has enabled **real-time payments and direct benefit transfers (DBTs)**.

**Social Development and Poverty Alleviation:**

- **Poverty reduction:**
  - **17.1 crore** people lifted out of poverty (2014–2023).
  - Poverty rate declined from 29.17% (2013-14) to **11.28%** (2022-23).

**The Road Ahead - India @2047 Vision:**

- **Strategic priorities:**
  - Deepen global supply chain integration.
  - Strengthen manufacturing and skilling.
  - **Improve ease of doing business.**
  - Reduce compliance burdens and legal redundancies.
- **Governance and reform continuity:**
  - Continued focus on agile policymaking.
  - **Emphasis on sustainability, inclusivity, and competitiveness.**
  - Building on reforms like GST and regulatory simplification.

**Conclusion - India's Developmental Trajectory:**

- India's journey over the past decade reflects a **composite transformation** - from infrastructure to digital innovation and poverty alleviation.
- With bold governance reforms and a global development agenda, India is positioning itself not just as a fast-growing economy, but as a **resilient and inclusive global power by 2047**.

## SREE PADMANABHASWAMY TEMPLE

- It is a **Hindu temple** dedicated to Lord Vishnu located in Thiruvananthapuram (**Trivandrum), Kerala.**
- The name of the city of Thiruvananthapuram in Malayalam translates to "The City of Lord Ananta", referring to the deity of Padmanabhaswamy Temple.
- The **earliest recorded mention** of the temple is from the **8th or 9th century CE,** although the **temple is likely older.**

**Architecture**:

- It is a blend of **Kerala and Dravidian styles** of architecture.
- The **idol** of Vishnu is in the **Anantha shayanam posture,** the eternal y**ogic rest posture on his serpent Adisheshan.**
- It has a **seven-tier-high gopuram,** which is decorated with delicate designs and carvings.
- Along with exquisite and intricate works on stone and bronze, the interior of the temple is adorned by **exquisite paintings and murals,** most of which are life-sized depictions of Lord Vishnu in the reclining posture, Lord Ganapati, Gaja Lakshmi, and Narasimha Swamy (half-lion, half-man incarnation of Lord Vishnu).
- The **flag post** of the temple (dhwaja stamba) is **covered with gold-plated copper sheets** and is about 80 ft high.
- The temple has around **3 million palm leaf manuscripts** dating back to the 1**4th century CE. Known as Mathilakam records,** they contain the **administrative and financial details of** the temple town and **Travancore kingdom** spread over six centuries.

- **In 2011** the temple was the subject of international news when an **exploration of its vaults revealed** a wealth of jewels, precious metals, and other **treasures**.
- It is also widely believed to be the **world's richest temple.**

## KEN-BETWA LINK PROJECT (KBLP)


- It is a **river interlinking project** designed to **transfer surplus water from the Ken River** (**Madhya Pradesh) to** the water-scarce **Betwa basin (Uttar Pradesh)**, **both tributaries of** the **Yamuna**.
- It is expected to **bring prosperity** to the drought-prone **Bundelkhand region.**

**Phase I** of the project involves the construction of the **Daudhan Dam in Madhya Pradesh,** a 77-meter-high structure, and a **221 km long canal,** including a 2 km tunnel, to move water efficiently.

- The project will also generate **103 MW of hydropower** and **27 MW of solar power.**
- The project will utilize 4,543.52 MCM of water, benefiting Madhya Pradesh (2,350 MCM) and Uttar Pradesh (1,700 MCM) for **irrigation, drinking water, and industrial use.**

**Phase II** of the project includes the **Lower Orr Dam, Kotha Barrage,** and **Bina Complex** Projects to enhance water availability.

A significant concern is the **impact on Panna Tiger Reserve**, as nearly 6,000 hectares of its core area will be submerged due to the dam construction, affecting wildlife habitats.