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JUNE 2025

The

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1st June 2025

[The university under attack, universities undermined: TH Editorial]

Polity

EASY EXPLANATION

Universities around the world are facing a serious crisis. In India, this has been building for decades, while in the U.S., it intensified after Donald Trump returned to power in January 2025. Governments are increasingly interfering in how universities are run, especially on issues like admissions, campus protests, recruitment, and programs that promote diversity and inclusion.

In the U.S., the government is taking strong steps against Harvard University — freezing $3.2 billion in funding and threatening to cancel its tax-free status. Harvard's president warned that such political pressure could become a threat to the very existence of educational institutions. The idea is clear: if universities don't follow the government's expectations, their funding may be cut.

In India, universities are also losing their independence. Instead of being led by academic experts, many are now being controlled by government bureaucracies like the Ministry of Education and the University Grants Commission (UGC). Academics often get no support when they are targeted, as seen recently in a private university incident.

Universities play two roles:

1. They **challenge society** by creating new ideas and solutions to future problems.
2. But they are also **expected to support the existing social order**, which can create conflict.

To function well, universities need **autonomy** — the freedom to research, question ideas, and think critically. Without this freedom, they can't prepare society for future changes, such as those coming from artificial intelligence or social media.

Historically, it was this academic freedom that produced brilliant minds like Mahalanobis. But when universities are led by bureaucrats or tightly controlled by governments, they discourage innovation. New ideas that challenge existing beliefs are seen as threats instead of strengths.

Academics must be allowed to question not only society but also their own institutions. This slows decision-making but leads to more thoughtful outcomes. However, many governments prefer obedient institutions that simply push their agenda. They limit autonomy, suppress dissent, and appoint people who won't question authority.

With this, universities begin to lose their value. Instead of producing free thinkers, they produce people who stick to the status quo. Technology and market pressures make things worse by promoting shallow ideas and short-term thinking.

Countries like the U.S. and China have achieved global leadership by supporting long-term research through independent universities. But even the U.S. model is now under attack. Still, some institutions like Harvard are standing firm and fighting back in court, with support from over 150 other universities.

A big question arises: Why do rich private universities rely on government funding? The answer is that research — whether in science, social sciences, or culture — is expensive. Private companies often fund only profit-making projects. That's why public funding, free from political strings, is essential for real academic freedom.

In India, the government spends very little on higher education research, and private investment is almost absent. Since 1991, government funding per student has been falling, which has allowed the state to exert more control by placing loyal individuals in leadership roles.

Ultimately, the main role of universities is to create useful, socially relevant knowledge. To do that, they must have the freedom to challenge the system — even if that makes them unpopular with those in power. But today, this freedom is shrinking, and universities are being hollowed out from the inside. What's left is only the outer appearance — and no one to protect their core values.

KEY TAKEAWAYS

Rising Political Pressure on Universities

- In the U.S., the government froze $3.2 billion in Harvard's funds and may revoke its tax-exempt status.
- This is an attempt to force changes in policies related to admissions, protests, faculty hiring, and diversity programs.
- Similar interference is growing in India, where universities are increasingly controlled by bureaucrats, not academics.

The Need for Academic Autonomy

- Universities must have freedom to explore new ideas and challenge outdated beliefs.
- Autonomy allows institutions to anticipate future problems — like those created by AI, social media, and global change.
- Without autonomy, research becomes narrow, reactive, and politically driven.

Universities' Dual Role and the Inherent Tension

- Universities are expected to both:
  - Create new, socially useful knowledge.
  - Preserve and reproduce existing societal structures.
- This creates a constant tension between creativity and control.

Challenges in India's Higher Education

- Public universities are underfunded, and decision-making power is concentrated in ministries and the UGC.
- Faculty members are often left vulnerable without institutional support.
- Private investment in research remains very low, increasing dependence on state funding.

Dangers of Shrinking Autonomy

- Governments often suppress dissent by reducing funding and appointing loyal leaders.
- Bureaucrats leading universities may discourage innovation and debate.
- Students are taught using outdated materials, limiting their ability to tackle modern challenges.

Global Examples and Lessons

- U.S. and China invested in strong, independent research ecosystems, enabling them to lead in technology and global ideas.
- However, attacks on U.S. universities are now weakening that very system.
- Harvard is resisting politically motivated action, gaining support from over 150 universities.

Funding Realities and the Need for Untied Support

- Even elite universities require government funding for research in science, social sciences, and arts.
- Public funding must come without conditions to protect institutional independence.

- Liberal and democratic regimes are better positioned to support this model.

Consequences of Short-Termism and Political Control

- Universities begin to reflect the agenda of rulers instead of challenging it.
- Complex realities are oversimplified, and misinformation is widely spread.
- Without autonomy, institutions lose their core values, leading to a "hollowing out" — only the name remains, but not the purpose.

Regulating India's virtual digital assets revolution: TH Editorial

Economy

EASY EXPLANATION

India is leading the world in **grassroots crypto adoption**, for the second year in a row, according to Chainalysis. Indian retail investors have invested around **$6.6 billion in crypto assets**, and the industry is expected to generate **over 8 lakh jobs by 2030**. India also has one of the largest and fastest-growing communities of developers working on Web3 (the next generation of the internet based on blockchain).

This growth is surprising because India's **crypto policy has been unclear and restrictive**. In May 2025, the **Supreme Court of India criticized** the lack of clear rules, saying banning crypto is like closing your eyes to reality. This comment highlights how far ahead the actual crypto usage is compared to the policies meant to govern it.

India has strict capital controls and payment laws, which are hard to match with how crypto works — it's decentralized and global. The **Reserve Bank of India (RBI)** has been skeptical about crypto since 2013. In 2018, it even **banned banks from dealing with crypto-related businesses**, but the **Supreme Court struck down that ban in 2020**.

Later, the government turned to **taxes as a temporary solution**:

- In 2022, it imposed a **1% TDS (tax deducted at source)** on large crypto transactions.
- It also introduced a **30% capital gains tax** on crypto profits, with **no option to offset losses**.

However, these taxes haven't worked well. Between 2022 and 2024, Indian users traded trillions of rupees worth of crypto on **offshore (foreign) platforms**, avoiding domestic exchanges. As a result, India **lost thousands of crores in tax revenue**.

Blocking these offshore websites didn't help much. People **used VPNs and mirror sites** to continue trading. In fact, web traffic to these sites even went up.

International experts (like the IMF and FATF) recommend that countries should create **smart and risk-based regulations** for crypto. A key part of this approach is working with **VASPs (Virtual Asset Service Providers)** — companies that help users buy, sell, and store digital assets. VASPs act as a bridge between the users and the government, making it easier to monitor and regulate the industry.

In India, VASPs are trying to follow rules. After a **massive hack in 2024 that cost $230 million**, many Indian exchanges:

- Strengthened their cybersecurity,
- Created insurance funds to protect users, and
- Came together to form industry-wide safety standards.

These steps show that Indian VASPs are **ready to work with the government**, but they need a proper legal framework. Currently, crypto is being taxed — but **without any comprehensive regulation**. This gap leads to confusion, tax evasion, and higher risks.

India now needs to create **clear and practical laws** that balance innovation with safety. A proper framework would help grow the economy, increase tax collections, and reduce illegal activity in the crypto space.

KEY TAKEAWAYS

India's Crypto Growth Story

- India leads globally in grassroots crypto adoption (Chainalysis, 2024).
- Retail investors have invested **$6.6 billion** into crypto assets.
- The crypto sector could create **8+ lakh jobs by 2030**.
- India also has one of the largest Web3 developer bases.

Regulatory Uncertainty in India

- The **Supreme Court** criticized the lack of clear crypto regulations in May 2025.
- India has struggled to align crypto with its **strict capital control** and payment systems.
- **RBI warnings** date back to 2013; a ban on crypto-linked banking in 2018 was reversed in 2020.

Current Tax Regime

- **1% TDS** on crypto transactions over ₹10,000 (Section 194S).
- **30% capital gains tax** with **no loss adjustment** (Section 115BBH).
- These measures were introduced in 2022 to increase transparency.

Tax Revenue Loss and Offshore Trading

- From 2022–2024, over **₹3.6 trillion** in crypto trades occurred on offshore platforms.
- India **lost over ₹6,000 crore** in potential tax revenue.
- URL blocks failed; users bypassed them using **VPNs and mirror platforms**.
- Nine blocked platforms still handled **over 60%** of total offshore volume.

Role of VASPs (Virtual Asset Service Providers)

- VASPs are key to enforcing rules and maintaining transparency.
- Indian VASPs have been **compliant and proactive**, especially after a **$230 million hack** in 2024.
- They strengthened **cybersecurity**, set up **insurance funds**, and created **industry safety standards**.
- VASPs collaborated with the **Financial Intelligence Unit** to support anti-money laundering efforts.

What India Needs

- A **comprehensive, forward-looking, and risk-based legal framework** for crypto.
- Regulation that promotes innovation while **safeguarding users and ensuring compliance**.
- Current policies are focused on taxation without providing legal clarity — this needs to change.

Global Recommendations

- Bodies like the **IMF**, **FATF**, and **Financial Stability Board** recommend **harmonized international crypto regulation**.

- India's alignment with these standards will enhance both **security and economic growth**.

Growing pains: TH Editorial

Economy

EASY EXPLANATION

India's economic data for 2024–25 presents a mixed picture. On the surface, there's some good news — the economy grew by **7.4% in the fourth quarter**, which was better than expected. This growth was mainly driven by strong performance in **construction**, **agriculture**, and **services**, all of which also create a lot of jobs. However, **manufacturing growth was weak**, at just 4.8%, compared to 11.3% in the same period last year.

If you zoom out and look at the whole year, the full-year GDP growth was **6.5%**, the **slowest since the COVID-19 pandemic**. That means while the final quarter looked good, the rest of the year was quite underwhelming.

There's a catch in the high Q4 growth too. A big part of the 7.4% growth came from a **jump in net tax collections (12.7%)**, not from real production or spending. If you remove this tax impact, real economic activity grew closer to **6.8%**.

Also, there was hope that the **Maha Kumbh** (a major religious event) would boost consumption. But that didn't happen. **Consumer spending (Private Final Consumption Expenditure)** grew only **6%**, which was the slowest in five quarters.

On the positive side, **capital investment** (money spent on building infrastructure, factories, etc.) grew by **9.4%**, as the government finally pushed more funds into public projects.

Government officials are pointing out that 6.5% growth is still **better than most countries**, especially in a world where global growth is weak. That's true. But the article argues that **"not bad" is not good enough** for India, given its big goals for becoming a **developed country (Viksit Bharat) by 2047**.

To reach that goal, India needs to grow at **around 8% every year for at least a decade**, according to the Economic Survey. So, current growth rates — even if steady — are **too slow** to meet that target.

Chief Economic Adviser V. Anantha Nageswaran said India is entering a period of **stable growth with low inflation**, which is good for predictability. But the concern is whether this kind of **stability without high acceleration** is enough for a fast-changing, developing economy like India.

KEY TAKEAWAYS

Quarterly and Annual Growth Overview

- **Q4 2024–25 GDP growth**: 7.4% (better than expected).
- **Full-year GDP growth**: 6.5%, the **lowest since the pandemic**.
- Growth in Q4 was **boosted by tax collections**, not purely economic activity.

Sector-wise Performance

- **Construction and agriculture**: Strong performance, both major job providers.

- **Services**: Continued steady growth.
- **Manufacturing**: Slowed to 4.8%, down from 11.3% in Q4 of previous year.

Consumption and Investment

- **Private consumption** grew only 6% in Q4 — **lowest in five quarters**.
- The expected **"Kumbh effect"** on consumer spending did **not materialise**.
- **Capital formation** rose 9.4% — showing increased government investment.

Role of Tax Boost

- A **12.7% growth in net taxes** inflated the GDP growth figure.
- Without this tax bump, real economic growth in Q4 would have been closer to 6.8%.

Global Comparison and Government View

- Government officials say 6.5% growth is **good in a weak global economy**.
- India is currently among the **fastest-growing major economies**.
- Chief Economic Adviser predicts a phase of **low inflation and stable growth**.

Critical Analysis: Is It Enough?

- The article argues that **"not bad" is not good enough** for India's ambitions.
- To achieve **Viksit Bharat by 2047**, India needs **around 8% growth annually for the next decade**.
- Current growth rates, while steady, are **too slow to meet long-term development goals**.
- Stability is good — but **acceleration is necessary** for a rapidly changing economy like India's.

[Is India the world's fourth largest economy?: TH Text&Context]

Economy

EASY EXPLANATION

India's GDP numbers for 2024–25 have generated a lot of buzz. According to the International Monetary Fund (IMF), India is expected to overtake Japan in 2025 to become the **fourth-largest economy in the world** — behind only the U.S., China, and Germany. This has sparked both political celebration and national pride, with claims that India could become the **third-largest economy by 2028** and a **"Viksit Bharat" (developed country)** by 2047.

But the article cautions us: **GDP size alone doesn't show how people actually live**. It doesn't tell us about the health, education, or income equality of the population. It also ignores unpaid work, like what many women do at home. So, while India's GDP might be large, that doesn't mean its people are doing equally well.

When comparing countries, **GDP can be calculated in different ways**, and that affects rankings:

1. **Market Exchange Rate Method**: GDP is converted into U.S. dollars using current exchange rates. Using this method, India is expected to rank 4th in 2025 and 3rd by 2028.

2. **Purchasing Power Parity (PPP) Method**: This compares how much people can buy with their income in each country, adjusting for local prices. Using this method, **India has already been the 3rd largest economy since 2009**.

The **PPP method gives a better sense of people's actual buying power** because it considers that goods and services are cheaper in countries like India. For example, a meal or haircut is much cheaper in Mumbai than in New York. But this method can also be **misleading** — a poorer country can appear richer just because things cost less, not because its people earn more or live better.

So, even if India's PPP GDP is high, its **per capita income** — what the average person earns — is still very low:

- India's per capita GDP in 2024: **$2,711**
- Vietnam: **$4,536**
- Sri Lanka: **$4,325**
- Bhutan: **$3,913**

In fact, India now ranks **144th out of 196 countries** in per capita GDP (using market rates) and **127th** using PPP — both quite low.

That means **India's large GDP is partly because of its large population**, not because its people are rich or well-off. So, talking about India as a "big economy" can create an illusion if we ignore **income levels, inequality, health, education, and quality of life**.

The article argues that if we really want to understand how India compares to the U.S., China, Japan, or Germany, we should **look beyond GDP** and measure things that actually matter to everyday citizens — such as access to healthcare, job quality, education, and well-being.

KEY TAKEAWAYS

India's Rising GDP Rank

- IMF projects India will become the **4th-largest economy** in 2025, overtaking Japan.
- It could become **3rd-largest by 2028**, behind only the U.S. and China.
- These rankings are based on **market exchange rates**.

What GDP Doesn't Show

- GDP doesn't reflect:
  - Income inequality
  - Health or education levels
  - Living conditions
  - Unpaid or informal work (especially by women)
- A **big GDP doesn't mean all citizens are doing well**.

Two Ways to Compare GDP

1. **Market Exchange Rates**:
    - Converts GDP to dollars using current currency rates.
    - India ranks 5th (2024), expected to be 4th (2025), and 3rd (2028).
2. **Purchasing Power Parity (PPP)**:
    - Adjusts for local price differences.
    - India has been the **3rd-largest economy since 2009** using PPP.
    - In PPP terms, the U.S. economy is only **1.8 times** larger than India's (vs. **7.5 times** using market exchange rates).

Dangers of the "Big Economy Illusion"

- High PPP GDP doesn't mean people earn more.
- Lower wages and costs in India inflate PPP numbers.
- Many Indian workers earn **less than minimum wage**, and large numbers work **unpaid or informally**.
- Example: Suman Berry (NITI Aayog) claimed India's GDP is $15 trillion in PPP terms — misleading without context.

India's Low Per Capita Income

- **India's per capita GDP (2024): $2,711**
    - Vietnam: $4,536
    - Sri Lanka: $4,325
    - Bhutan: $3,913
- India ranks:
    - **144th out of 196 countries** (market exchange rates)
    - **127th out of 196 countries** (PPP)

Real Measures of Development

- India's GDP size doesn't reflect:
    - Individual well-being
    - Quality of education or healthcare
    - Equality or opportunity
- To assess true progress, we need **better indicators** like:
    - Health outcomes
    - Education levels
    - Social mobility
    - Living standards

Final Point

- Celebrating GDP rank **without fixing core developmental gaps** creates a **false narrative**.
- India needs to focus not just on economic size, but also on **inclusive growth and human development**.

How the technology industry is trying to meet its climate goals: TH Text&Context

Science

EASY EXPLANATION

A new study by researchers from **Microsoft and WSP Global**, published in *Nature*, has found that **advanced cooling technologies** like *cold plates* and *immersion cooling* can significantly reduce the environmental impact of data centres.

Data centres — the backbone of our digital world — generate a lot of **heat** while processing data. Just like a kitchen gets hotter the more burners you use, computers and servers heat up as they work harder. If not cooled properly, this heat can damage the hardware and slow things down. Traditional cooling uses fans and air conditioners, but these use **a lot of electricity and water**.

The new study found that switching to advanced cooling techniques can:

- **Cut greenhouse gas emissions by 15–21%**
- **Reduce energy use by 15–20%**
- **Lower water use by 31–52%**

These methods are important because **data centres need to cut emissions by 42% by 2030** to meet global climate goals.

Cold plate cooling works like putting an ice pack on a fever. The plate sits directly on the hot part of the chip and transfers the heat into liquid channels. This is much more efficient than blowing air with fans.

Immersion cooling goes one step further. It's like dunking a hot pan into a tub of heat-absorbing oil. The oil either stays liquid (one-phase) or turns to vapour and condenses back (two-phase), cooling the hardware in the process. This method removes nearly **100% of the heat** directly.

These techniques are already being used by big companies like **Microsoft and Alibaba**.

However, these methods aren't perfect. Some of the coolants have environmental regulations, and setting up these systems can be complex and costly. Like switching from plastic to paper straws — it's better, but still comes with trade-offs. Also, if the electricity used still comes from coal, cooling may be cleaner but emissions are just being shifted elsewhere.

The researchers did a **life cycle assessment** — studying the environmental impact from beginning to end — and found that combining **better cooling** with **renewable energy** like solar or wind gives the best results. With green electricity, **emissions drop by up to 90%**, and water and energy use also fall sharply.

The big message: To make data centres truly sustainable, we must **rethink how they're cooled**, and not just switch to renewable energy but use it along with smarter, more efficient cooling technology.

KEY TAKEAWAYS

What the Study Found

- Advanced cooling methods like **cold plates** and **immersion cooling** can:
  - Cut **emissions by 15–21%**
  - Reduce **energy use by 15–20%**
  - Lower **water consumption by 31–52%**

- These methods are better than traditional **air cooling**, especially in large data centres.

Why Cooling Matters

- Data centres generate **huge amounts of heat**, which must be removed to prevent hardware damage.
- Cooling uses **almost as much electricity as computing** itself.
- Better cooling is essential to meet the ICT sector's target to **cut emissions by 42% by 2030** (from 2015 levels).

How Cold Plate and Immersion Cooling Work

- **Cold Plates**: Like ice packs for chips. Use liquid-filled microchannels to absorb heat directly from the source.
- **Immersion Cooling**: Hardware is submerged in special cooling liquids or oils that absorb heat instantly and silently.
- Two-phase immersion cooling allows fluid to **evaporate, cool, and return**, increasing efficiency.

Benefits of These Technologies

- **No fans needed** – they run silently.
- **Less wear and tear**, more reliability, and fewer failures.
- Already being deployed by industry leaders like **Microsoft and Alibaba**.

Environmental Trade-offs

- Even with better cooling, if the electricity comes from **fossil fuels**, the overall emissions remain high.
- There are **regulatory hurdles** around coolants and installation complexity.
- Green solutions can still have **unintended side effects**, so full system-level thinking is necessary.

Role of Renewable Energy

- Switching to 100% **renewables** can reduce:
  - **Emissions by 85–90%**
  - **Energy use by 6–7%**
  - **Water use by 55–85%**
- Combining renewable energy with advanced cooling gives the **best environmental outcomes**.

Final Message

- The future of ICT's sustainability depends on how we **cool our data centres**.
- **Life cycle assessments** are essential to avoid hidden environmental costs.
- A greener digital world will come not just from clean energy but from **clean cooling** too.

A woman army chief? Why path is easier now: IE Explained

Sociology

EASY EXPLANATION

On Friday, **17 women cadets graduated** from the National Defence Academy (NDA) in Khadakwasla — the first-ever batch of women to do so. This marks a **historic moment** for the Indian armed forces because it finally opens the path for women to rise to the top leadership roles, just like men.

Before this, women were allowed in the military, but mostly in **non-combat and support roles**, often on **short-term commissions** without command positions. Over time, women fought in court to get **equal rights**, including **permanent commissions** and **command roles**, especially after the Supreme Court's 2020 judgment that rejected gender stereotypes in the military.

In **2021**, the Supreme Court ruled that **eligible women must be allowed to appear for the NDA entrance exam**. These 17 women were part of the first group admitted after that decision.

At NDA, women are now fully **integrated into the same squadrons as men**, live in the same environment, and go through **the same rigorous training**. This creates **equal opportunities** from the start, which is essential for long-term military careers.

Previously, women joined as **short service officers** and didn't have a long enough career span to be eligible for top positions like **service chiefs**. Now, NDA training gives women the same early start as men — a 35–40 year career path, leadership training, and chances at **combat command roles** — all crucial for promotions.

Senior officers, including ex-Army Chiefs, have expressed hope that in a few decades, **a woman could rise to become Chief of the Army, Navy, or Air Force**. However, they also acknowledged that more needs to be done — including cultural shifts, maternity policies, infrastructure support, and promotions criteria — to truly ensure women get equal footing.

KEY TAKEAWAYS

Historic Milestone

- **First 17 women cadets graduate** from NDA (Batch 148).
- Marks a **transformational shift** in women's role in the Indian military.
- Earlier, women entered the military only through **Short Service Commission (SSC)** or direct entry into select roles.

Key Milestones in Women's Military Journey

- **1888**: British established Military Nursing Service.
- **1958**: Regular commissions granted to women doctors in India.
- **1992**: Women inducted into non-combat roles via Women Special Entry Scheme.
- **2008–2020**: Legal battle for **Permanent Commission (PC)**.
- **2020**: Supreme Court allows PC + command roles in 10 streams.
- **2021**: Court directs NDA to allow women cadets.

NDA Integration and Training

- Since 2022, **126 women cadets** admitted to NDA.
- Women are trained in a **gender-neutral** environment with **no change in core curriculum**.
- Training is aligned with standards at other academies like OTA, INA, and AFA.
- Women cadets now **live and train with men in the same squadrons**, a major step in inclusion.

Long-Term Career Opportunity

- NDA offers:
  - **Early entry age**
  - **Leadership training**
  - **Access to command roles**

  - A **35–40 year career**, needed to reach top posts like Chief of Army/Navy/Air Force.
- **Combat roles** such as infantry, artillery, warships, and fighter squadrons are now within reach.

Future Challenges and Recommendations

- Cultural change within forces is still needed to normalize **women in leadership**.
- Some branches still **do not allow women** – policies need to evolve further.
- Armed forces must improve:
  - **Maternity support**
  - **Childcare**
  - **Spousal posting policies**
  - **Promotion and evaluation systems**

Symbolic Impact

- Senior officers see this as the beginning of an era where **women can lead India's defence forces at the highest level**.
- It is not just about equality but about tapping into the **full potential of military talent** in the country.

Inside the 'human-made' hunger crisis in Gaza: scale, causes, effects: IE Explained

International Relations

EASY EXPLANATION

In the last week, **over 32 Palestinians died and 200 were injured in Rafah** while trying to get food from aid centers run by a group called GHF, supported by the US and Israel. Gaza was completely cut off for nearly three months until recently, with no aid getting in. The UN's main Palestinian refugee agency, UNRWA, has refused to work with GHF, and even GHF's head resigned, saying the aid work violated humanitarian principles.

People in Gaza are now on the edge of **famine**. Families are so desperate that a piece of bread is shared among many, saved across days. Even during a brief ceasefire earlier this year, aid was barely enough. When the blockade resumed in March, **no aid entered Gaza for almost 11 weeks**, causing extreme food shortages. This kind of starvation **violates international law**, which bans using hunger as a war tactic.

Israel recently said that **665 aid trucks had entered Gaza**, but experts say **500–600 trucks are needed every day**, not over a week. There are also doubts about whether these trucks are carrying full supplies, due to past restrictions.

GHF created **collection points** for food, where people had to travel to receive aid. But this goes against humanitarian norms, which say aid should reach people **wherever they are**, especially those who are injured or can't move. It also risks forcing people to relocate again, when many have already been displaced multiple times.

Gaza is now the most dangerous place in the world for aid workers. Over 400 have died since the war began, including more than 300 UNRWA staff. Some aid workers have lost their own families while continuing to help others.

Israel also passed two laws in late January:

1. One law banned UNRWA from operating in East Jerusalem, affecting schools and clinics that many Palestinians rely on.

2. The other law blocked communication between Israeli officials and UNRWA, disrupting life-saving coordination.

Despite these issues, **UNRWA still operates in Gaza**, with over 12,000 staff providing health care, education, sanitation, and psychological support to displaced children. It has denied being biased, and when some of its staff were accused of links to Hamas, it **suspended and investigated them immediately**. In 9 cases, firings were upheld, though Israel failed to provide clear evidence.

Finally, countries like **India** can help by standing up for **international law and multilateral systems**, like the UN and the International Court of Justice. These global systems are not perfect, but without them, the world becomes even more unstable and unsafe.

KEY TAKEAWAYS

Gaza's Humanitarian Crisis

- **32 Palestinians killed**, 200+ injured in Rafah while trying to get food aid.
- Aid distribution by **Gaza Humanitarian Foundation (GHF)** caused chaos.
- GHF's head resigned, calling its aid operations unethical.
- UNRWA refuses to work with GHF due to lack of adherence to humanitarian principles.

On the Brink of Famine

- Gaza faces a **man-made hunger crisis** due to prolonged blockade and restricted aid.
- Families are severely rationing food; even bread is shared over days.
- Aid was nearly **completely blocked for 11 weeks** after the ceasefire ended on March 2.
- This violates **Article 54 of the Geneva Convention**, which bans starvation as a war tactic.

Aid Needs vs Reality

- **500–600 aid trucks are needed daily** to meet basic survival needs.
- Israel claimed 665 trucks entered over a week, which is grossly insufficient.
- In the past, inspection rules forced trucks to be only half full.

Problems with GHF's Aid Distribution

- Aid was given only at fixed **collection points**, excluding:
  - The injured
  - The disabled
  - People unable to travel
- Forced people to relocate again, despite already being repeatedly displaced.

Aid Worker Casualties and Dangers

- **Gaza is the deadliest place for aid workers** in modern history.
- **Over 400 aid workers killed**, including **300+ UNRWA staff**.
- Aid workers are facing the same hunger and loss as the civilians they help.

Impact of Israeli Laws on UNRWA

- **Two Israeli laws (Jan 2025)**:
  - Banned UNRWA in East Jerusalem, disrupting schools and healthcare.
  - Blocked all official contact with Israeli authorities, affecting coordination during military actions.
- About **800 students** and **70,000 patients** impacted.

UNRWA's Current Role in Gaza

- Not banned in Gaza; remains **the largest humanitarian agency** there.
- Has **12,000 staff**, compared to 300 in the rest of the UN.
- Offers:
  - Mobile health care
  - Education (20,000+ children in 'Back to Learning')
  - Sanitation services
- Does **not run refugee camps**, but provides vital support services.

Allegations of Bias

- UNRWA has strict neutrality policies and punishes staff who violate them.
- Allegations have been made, but **only 9 out of 30,000 staff were found to be likely involved**, and they were fired.
- Israel did not provide strong evidence in most cases.

Role of Countries like India

- Countries believing in **international law and UN systems** must speak up.
- Support for **multilateralism** is key to maintaining global peace and order.
- Weakening international systems will lead to a **more dangerous world**.

WHY HAS A NEWLY DISCOVERED STAR TAKEN SCIENTISTS BY SURPRISE?: IE Explained

Science

EASY EXPLANATION

Astronomers have found a strange star in our Milky Way galaxy, about **15,000 light-years away**, that behaves like no other. It sends out bursts of **both radio waves and X-rays** every **44 minutes**. Most stars don't do this. In fact, only a few stars have been found that send out long-period radio signals like this — and this is the **first one** known to emit **X-rays** too.

The star, named **ASKAP J1832-0911**, is part of a new group of space objects called **"long-period radio transients."** These stars don't flash quickly like **pulsars** (which blink every second or even millisecond), but rather shine in bursts that come **every few minutes or hours**.

Scientists used data from **NASA's Chandra X-ray Observatory**, Australia's **ASKAP radio telescope**, and other observatories to study this star. They believe it could be:

- A **magnetar** (a super-magnetic type of neutron star), or

- A **white dwarf** (the dense leftover of a star that has burned out), possibly orbiting very closely around another small star.

But neither of these explanations fully fits what they've observed — which makes it even more mysterious.

Interestingly, **before November 2023**, this star didn't emit any radio signals. But in **February 2024**, it suddenly became one of the **brightest radio objects** in the sky — and at the same time, X-ray pulses were also detected. Since then, the radio signal has dimmed, but it's still detectable.

This star could help scientists better understand some **unknown behaviors of dead or dying stars** and reveal new kinds of space objects we've never seen before.

KEY TAKEAWAYS

Discovery and Location

- A star named **ASKAP J1832-0911** has been found in the **Scutum** constellation in the Milky Way.
- It's located **15,000 light-years from Earth**.
- It emits **radio waves and X-rays every 44 minutes** — an unusual combination.

What Makes It Unique

- It's part of a rare class: **long-period radio transients**.
- Only about **10 such objects** are known so far.
- This is the **first and only one** in the group to also emit **X-rays**.

What Could It Be?

- Possible explanations:
  - A **magnetar** (a neutron star with a powerful magnetic field).
  - A **white dwarf** in a tight orbit with a small companion star.
- But **neither explanation perfectly fits** all the strange signals.

Behavior Over Time

- No radio signals were detected **before November 2023**.
- In **February 2024**, it became **extremely bright** in radio.
- At the same time, it also emitted X-rays — a rare and notable coincidence.
- It's now still visible in radio, but **much fainter**.

Broader Scientific Relevance

- The discovery was published in **Nature** on **May 28**.
- Scientists are still **trying to understand** what kind of star this truly is.
- It may point to **a completely new class** of stellar object.

Back on road to growth: IE Editorial

Economy

EASY EXPLANATION

India's economy is expected to grow by **6.5% in 2024–25**, and in the last quarter (January–March), growth was **7.4%**, which is quite strong. This growth matches India's typical pre-Covid decade average of 6.6%, meaning we're now returning to normal growth levels. These numbers are more reliable because they are based on updated and broader data.

India's **nominal GDP** (which includes inflation) grew **9.8%**, taking the size of the economy to **$3.91 trillion**, up from $3.6 trillion last year.

A few important things happened:

- **Rural demand** helped private consumption grow by 7.2%, though it slowed down to 6% in the last quarter.
- Government **spending was cautious**, and it actually declined in the final quarter.
- But the **government invested more in infrastructure**, especially in the last quarter, which helped boost overall investment.
- **Construction** (which gives many people jobs) grew strongly, while **manufacturing** remained weak.

On the global side, India could face problems due to new **trade tensions** and **tariffs** between major economies like the US and China. If the US economy slows, it may buy fewer goods from India. Also, China might send its excess goods to countries like India, making it harder for Indian producers to compete.

Still, India has some protection:

- Our **services exports** (like IT and consulting) are more stable than goods exports.
- India has **healthy foreign reserves**, low debt, and a small current account deficit.

Domestically, things look steady:

- A **good monsoon and strong farm output** are expected.
- **Oil prices are likely to stay low**, which helps control inflation.
- The **RBI might cut interest rates**, making loans cheaper.

- **Lower taxes and interest rates** will likely increase spending in cities and villages.

Also, global companies like **Apple** and others are investing in India as they move out of China. This helps job creation and growth. But for long-term success, India still needs to **fix deep structural problems** in its economy to attract more investment and maintain high growth.

KEY TAKEAWAYS

GDP Growth Projections

- **6.5% growth** projected for 2024–25.
- **7.4% growth** in the Jan–Mar quarter; strongest in the year.
- Growth in line with pre-Covid average of **6.6%**.
- **Nominal GDP** grew 9.8%, reaching **$3.91 trillion**.

Spending and Investment Trends

- **Private consumption** grew 7.2%, driven by **rural demand**.
- **Government consumption** grew just 2.3%, and fell in Q4.
- **Capital expenditure (capex)** rose sharply in Q4, exceeding targets.
- **Construction sector** rose 9.4%, strong for employment.
- **Manufacturing** grew only 4.5%, slower than agriculture.

Global Risks and Trade Challenges

- **US tariffs and trade tensions** create uncertainty.
- US economic slowdown to 1.5% in 2025 could reduce Indian exports.
- China may dump goods globally due to overcapacity, affecting Indian markets.
- Temporary 90-day US-China tariff truce offers limited relief.

Resilience Factors

- **Services exports** (nearly half of total exports) are less affected by trade cycles.
- India has strong **forex reserves ($686 billion)** and low external debt.
- **Good monsoon, high farm output, and low oil prices** expected.
- **RBI may cut rates** twice, helping lower borrowing costs.

Consumption Boost Factors

- **Low inflation** could raise spending among lower-income groups.
- **Urban consumption** to improve with tax cuts and interest rate relief.

Investment Climate

- **April capex already at ₹1.59 lakh crore**, or 14.3% of annual target.
- **Private investment** still hesitant due to global uncertainty.
- India benefiting from **supply chain shifts**:
  - Apple to make more iPhones in India.
  - Vietnamese EV company entering Indian market.
- **Corporate balance sheets are strong**, aiding future investments.

Long-Term Needs

- Despite short-term positives, **structural reforms** are essential to:
  - Improve infrastructure.
  - Ease doing business.
  - Attract foreign and private investment.

Final Outlook

- India's economy is **growing steadily**, but faces **external risks**.
- **6.5% GDP growth** expected in 2025, but **risks are tilted to the downside**.

2nd June 2025

A woman army chief?Why path is easier now-Indian Express Explained

Internal security

Easy Explanation

Seventeen women have just finished training at the National Defence Academy (NDA) for the first time. This became possible after Supreme Court rulings in 2020 and 2021 removed rules that kept women from NDA entry and permanent commissions. Now, women can start military careers at the same young age as men, go through the same tough drills, and live in the same squadrons. This early start means they can serve long enough—and gather the command experience needed—to rise all the way to the top posts in the Army, Navy, or Air Force. Full equality still awaits changes in combat-arm postings, family-support policies, and promotion rules, but the path is finally open.

Key Takeaways

Entry Gate Reopened

- Supreme Court orders let women sit NDA exams and gain permanent commissions, ending decades-old restrictions.

Training and Integration

- Women train and live with male cadets under an unchanged, gender-neutral curriculum, ensuring equal professional standards.

Long Career Runway

- Starting in their late teens allows women up to 40 years of service—enough time and experience to become service chiefs.

Remaining Hurdles

- Combat roles, maternity provisions, partner-posting rules, and evaluation criteria still need updates for complete parity.

Strategic Significance

- A wider talent pool and visible women leaders strengthen India's military readiness and signal true commitment to gender equality.

WHY HAS A NEWLY DISCOVERED STAR TAKEN SCIENTISTS BY SURPRISE?-Indian Express Explained

Science and technology

Easy Explanation

Astronomers have discovered a Milky Way object called ASKAP J1832-0911, 15,000 light-years away, that flashes bright radio waves and X-rays every 44 minutes—far slower than ordinary pulsars yet far brighter than most cosmic radio sources. Objects with such long, rhythmic radio bursts were first noticed only in 2022, but this is the first one that also shoots out X-rays. That extra energy band suggests an unusually powerful magnetic field or a strange interaction in a compact binary system. Researchers considered two options—a magnetar (a neutron star whose magnetic field is trillions of times stronger than Earth's) or a fast-orbiting white dwarf with a tiny companion—but neither model alone matches every feature they see. The discovery hints that the universe may still hide an entire class of exotic stars whose emission mechanisms we don't yet understand.

Key Takeaways

Class of Object

- ASKAP J1832-0911 belongs to "long-period radio transients," which burst every minutes to hours instead of milliseconds like classic pulsars.

Why It Stands Out

- It is the only known member of its class to emit X-rays alongside radio waves, pointing to very energetic processes.

Possible Identities

- Magnetar scenario: a slowly rotating neutron star with an extreme magnetic field.

- White-dwarf binary scenario: a dense stellar core spiraling rapidly around a small companion.

- Neither explanation yet fits all data, keeping the object mysterious.

Signals and Brightness

- Radio brightness surged between November 2023 and February 2024, reaching levels seen in fewer than 30 objects ever; X-ray pulses appeared at the same 44-minute interval.

Scientific Impact

- Challenges current theories on how compact stars radiate and evolve.

- Encourages deeper surveys in both radio and X-ray bands to find more such hybrids, which could reveal new physics of magnetic fields, particle acceleration, and stellar death.

Next Steps

- Continuous monitoring with radio arrays and X-ray observatories.

- Detailed modeling of emission mechanisms to pin down whether magnetar, white-dwarf binary, or an entirely new object type best fits the evidence.

A raincheck for our cities-The Hindu Text and Context

Sociology

Easy Explanation

Indian cities like Mumbai, Delhi, and Hyderabad now flood more often because their storm-drain systems were built for lighter, less frequent rains and for landscapes that once soaked up much of the runoff. Over decades, natural ground has been replaced by concrete, sending far more water into drains than they were sized to carry. Silt, plastic waste, and even raw sewage clog these pipes, further cutting capacity. Climate change adds another layer: today's rainstorms are stronger and dump more water in short bursts, quickly overwhelming old infrastructure. While we cannot banish floods entirely, we can shrink their impact by redesigning drains for bigger storms, cleaning them regularly, reviving lakes and wetlands to store excess water, encouraging rooftop gardens, and letting more rain filter into the ground.

Key Takeaways

Design Limits

- Most city drains were engineered for a "one-in-two-year" rain; storms now often exceed that benchmark.

- Catchment expansion and steeper flow rates demand wider, deeper conduits that were never built.

Land-Use Change

- Paving and concretising absorbent land has sharply increased surface runoff, straining every link in the drainage network.

Maintenance Gaps

- Silt deposition, solid-waste dumping, and hidden, covered stretches hinder routine desilting and cut pipe capacity.

- Many storm lines carry sewage because peripheral areas lack proper sewers, compounding blockages.

Climate Factor

- Warmer air holds more moisture, producing intense cloudbursts that old systems cannot match, even when clean.

Mitigation Tools

- Upgrade design standards to at least a "one-in-five-year" storm.

- Install pumps for unavoidable low points like underpasses.

- Promote groundwater recharge, underground retention tanks, and lake revival to hold excess water.

- Consider costly but effective storm-tunnel projects where feasible.

Bottom Line
Regular maintenance plus smarter, climate-ready infrastructure can turn catastrophic floods into manageable high-water events.

Is India the world's fourth largest economy?-The Hindu Text and Context

Economy

Easy Explanation
India's rank among the world's economies changes depending on how you convert national output into US dollars. Using market exchange rates (rupee divided by the current dollar rate), India is projected to become the 4th-largest economy in 2025, overtaking Japan, and 3rd by 2028. But a different method—purchasing-power parity (PPP)—adjusts for India's lower prices; by that yardstick India has already been the 3rd-largest economy since 2009. Big GDP totals, however, say little about ordinary people's lives. When India's output is divided among its 1.4 billion citizens, per-capita income is still low—ranked around 144th at market rates and 127th at PPP. To judge real development we must look beyond raw GDP to indicators such as health, education, wages, and inequality.

Key Takeaways

Measurement Methods

- Market exchange rate: India 5th now, 4th in 2025, 3rd in 2028.

- PPP method: India has been 3rd since 2009.

Why PPP Inflates Poorer Economies

- Cheaper goods and services raise India's PPP GDP relative to rich countries.

- Market rates are volatile and reflect currency swings rather than local purchasing power.

Big-Economy Illusion

- Large GDP mainly reflects India's huge population; per-capita income remains low.

- High aggregate rank does not equal higher living standards.

Limits of GDP

- Ignores unpaid household work, informal underemployment, health, and education gaps.

- Masks regional inequalities and gender disparities.

Better Benchmarks

- Combine GDP with life expectancy, school completion, inequality, job quality, and clean-water access to gauge real progress.

How the technology industry is trying to meet its climate goals-The Hindu text and Context

Environment

Easy Explanation

Data centres need powerful cooling because servers packed together overheat quickly—much like thousands of hot laptops crammed in one room. Traditional air-conditioning is energy-hungry and water-intensive. A new Nature study by researchers from Microsoft and WSP Global shows that two liquid-based methods—cold-plate cooling (coolant channels pressed directly against chips) and immersion cooling (entire servers submerged in heat-absorbing fluid)—can make a big difference. Across a full "cradle-to-grave" life-cycle analysis, these methods cut greenhouse-gas emissions and electricity use by roughly one-fifth, and water draw by up to half, compared with today's air cooling. Pairing liquid cooling with renewable electricity slashes emissions even further, highlighting that greener data centres need both advanced cooling and cleaner power.

Key Takeaways

1. Cooling load matters
   Liquid systems save 15-21 % in emissions and 15-20 % in energy versus air coolers, while reducing water use 31-52 %.
2. Two main techniques
   • Cold plates: coolant channels sit directly on hot chips, whisking heat away.
   • Immersion: whole servers are dunked in special fluid that absorbs and re-circulates heat.
3. Bigger gains with renewables
   Switching the same centre to 100 % green power trims emissions by 85-90 % and water demand by up to 85 %, whatever cooling method is used.
4. Life-cycle lens is crucial
   Assessing manufacture, operation, and disposal together prevents shifting pollution from one stage or place to another.
5. Practical hurdles
   Coolant fluids face regulatory checks, and complex plumbing slows deployment; without careful design, a greener fix could create new problems.
6. Bottom line
   Cutting the ICT sector's carbon footprint hinges on twin engines: advanced liquid cooling plus a renewable-energy grid.

Wrong call-The Hindu Editorial

Governance

Easy Explanation

Assam has decided to give gun licences to "eligible" people from certain indigenous communities who live in remote areas near the Bangladesh border. The State says this will deter criminals and make

residents feel safer. Critics point out that handing firearms to civilians weakens the basic rule that only the police and security forces should carry weapons. Once guns spread among the public, they can be misused for vigilantism, deepen inter-community tensions, or leak into black markets—especially in a State with a history of insurgency. Past examples, such as arming civilian groups in Chhattisgarh during the Salwa Judum campaign, led to human-rights abuses and were struck down by the Supreme Court. Strengthening regular policing and border security is seen as a safer alternative.

Key Takeaways

Legal Framework

- India's Arms Act limits gun licences to individuals after strict vetting, not to whole communities.
- Issuing licences en masse risks breaching the Act's intent and complicates tracking and retrieval of weapons.

Public-Safety Risks

- More guns among civilians can fuel vigilantism, inter-group conflict, and illegal arms markets.
- Assam's insurgency background means any extra weapons could be absorbed by militant networks.

Precedent Matters

- Salwa Judum (Chhattisgarh, late 2000s) showed that arming civilians led to rights violations and was declared illegal by the Supreme Court.

Governance Responsibility

- Maintaining security is a state duty; outsourcing it to armed civilians signals abdication of that responsibility.
- Better options: expand police presence, improve intelligence, and deploy trained border forces.

Bottom Line
Arming select civilian groups may create more problems than it solves; Assam would be safer strengthening formal law-enforcement rather than distributing firearms.

3rd June 2025

How is President's Rule imposed?-The Hindu text and Context

Polity

Easy Explanation
President's Rule, authorised by Article 356, lets the Union executive temporarily run a State when the Governor (or the Centre under Article 365) reports that its government cannot function according to the Constitution. A proclamation must win simple-majority approval of both Houses of Parliament within two months; each approval lasts six months and the total life of President's Rule cannot exceed three years.

Before Parliament signs off, the Assembly must stay in "suspended animation", not dissolution. Use of Article 356 was frequent after Independence, often on partisan grounds, but the Supreme Court's landmark S. R. Bommai ruling (1994) curtailed that misuse: it affirmed judicial review, limited the ground to a genuine "constitutional breakdown", and barred premature dissolution of the Assembly. Since then the Court has struck down several improper proclamations (Bihar 2005, Uttarakhand 2016, Arunachal Pradesh 2016). Manipur has been under President's Rule since February 2025; with its Assembly's term running to March 2027, installing a majority government is constitutionally preferable to prolonged central rule.

Key Takeaways

1. Constitutional Mechanism

• Article 356 empowers the President to assume State functions if governance cannot follow the Constitution, but only with parliamentary consent and limited duration.

2. Governor's Report vs. Union Action

• A proclamation may rely on the Governor's report or arise under Article 365 for non-compliance with Union directions; political expediency once drove many such recommendations.

3. Judicial Guardrails after Bommai

• The Supreme Court made President's Rule justiciable, confined it to "constitutional" (not mere law-and-order) breakdown, and forbade dissolving the Assembly before Parliament's vote.

4. Variable Role of Governors in Dissolution

• Past Governors have differed: some dissolved Assemblies on shaky advice (Kerala 1970, Punjab 1971) while others sought alternate ministries first (Punjab 1967, U.P. 1968).

5. Current Scenario in Manipur

• With more than 18 months left in the Assembly's term, revoking President's Rule after proving majority support could restore elected governance and societal confidence.

What would a French nuclear umbrella mean for Europe?-The Hindu Text and Context

International relations

Easy Explanation

French President Emmanuel Macron recently suggested that France could extend its nuclear protection—its "nuclear umbrella"—to other European countries. This offer comes amid rising insecurity due to the Russia-Ukraine war and uncertainty over future U.S. commitment to NATO. Traditionally, France has kept its nuclear weapons under national control, but this move signals a shift toward greater European defense autonomy. The idea mirrors NATO's "nuclear sharing" model, where U.S. nuclear weapons are stationed in allied countries but remain under American control. France, with about 290 warheads, may need to expand its arsenal and infrastructure to make this work. The proposal could boost deterrence against Russia, but might also provoke escalation. Legally, under the Nuclear Non-Proliferation Treaty (NPT), transferring control of nuclear weapons is banned. France insists it will retain full control, like the U.S. does, to stay within legal limits. Still, some experts question whether such arrangements really follow the spirit of the NPT.

Key Takeaways

1. Strategic Shift by France

- Macron proposed extending France's nuclear umbrella to other European states to enhance EU's security autonomy.

2. Context: Russia & U.S. Doubts

- Triggered by Russia-Ukraine war and U.S. threats to reduce NATO commitments if allies don't meet defense spending targets.

3. Nuclear Sharing Model

- Similar to U.S. in NATO: warheads remain under national control but are stationed in allied countries for deterrence.

4. Limitations of French Arsenal

- France has ~290 warheads; may need to expand stockpile and infrastructure to ensure credible extended deterrence.

5. Risks of Escalation

- Russia may respond militarily; Belarus already hosts Russian nuclear weapons as a counter to NATO expansion.

6. Legal Position under NPT

- France claims legality as long as control isn't transferred; critics argue such stationing violates the treaty's spirit.

7. Symbolism vs. Reality

- Proposal could strengthen Europe's defense resolve but needs political will, logistical clarity, and legal safeguards.

How Japan's new AI Act fosters an innovation-first ecosystem-The Hindu Text and Context

Science and technology

Easy Explanation

Japan's new AI law—formally titled the *Act on the Promotion of Research, Development and Utilisation of AI-Related Technologies*—focuses on enabling innovation rather than enforcing strict regulation. Unlike the European Union's AI Act, which imposes penalties based on the risk level of AI systems, Japan's law is based on voluntary cooperation, government coordination, and ethical guidance. It creates an Artificial Intelligence Strategy Headquarters to steer national AI plans across sectors, from research to public education. The law assumes that innovation thrives with fewer regulatory burdens and that collaboration can effectively manage risks like privacy breaches or algorithmic bias. However, it lacks binding rules or enforcement mechanisms, which raises concerns about accountability if AI systems cause harm. Japan's approach reflects its cultural trust in consensus-driven governance and aims to boost its digital economy amid global competition. But success depends on how well voluntary measures can handle real-world AI risks without formal regulation.

Key Takeaways:

1. **Innovation-Centric Philosophy**
    - The law avoids rigid, risk-based AI regulations.
    - It assumes innovation thrives better with fewer regulatory burdens and more voluntary cooperation.
2. **No Binding Enforcement or Risk Tiers**
    - Unlike the EU's AI Act, Japan does not classify AI systems into risk categories.
    - No legal penalties are prescribed for non-compliance; the focus is on soft regulation.
3. **Establishment of AI Strategy Headquarters**
    - A central coordinating body under the Cabinet formulates and implements a Basic AI Plan.
    - It oversees national strategy, industry deployment, public education, and global cooperation.
4. **Collaborative Roles for All Stakeholders**
    - Local governments, universities, businesses, and citizens are assigned roles under the law's guiding principles.
    - Emphasizes shared responsibility for ethical and transparent AI development.
5. **Voluntary Guidelines and Ethical Norms**
    - Article 13 mandates government-issued guidelines to prevent misuse, data breaches, and IP violations.
    - Emphasis is on aligning with international norms without hard laws.

6. **Support for Infrastructure and Workforce**
    - Government facilitates research, infrastructure development, and skill-building for AI adoption.
    - Seen as critical for national growth and administrative efficiency.
7. **International Cooperation Mandated**
    - Article 17 obliges Japan to engage in global AI governance efforts (G7, OECD, UN).
    - Aims to align Japan's flexible model with emerging global standards.
8. **Risk of Weak Accountability**
    - Lack of enforcement mechanisms raises questions about dealing with harms like algorithmic bias or disinformation.
    - Clarity on legal liability in high-risk sectors (e.g., healthcare, defense) remains absent.
9. **Strategic Economic Motivation**
    - Reflects Japan's response to demographic decline and global tech competition.
    - Positions AI as a key driver of economic revival and national security.
10. **Review and Flexibility Built-In**

- The law allows for future revisions based on real-world feedback and technological changes.
- Acknowledges today's flexible approach may require firmer guardrails in future.

Phytoplankton overfed on iron, depleting ocean nutrients faster-The Hindu Science

Science

Easy Explanation

A recent study found that human-caused pollution has greatly increased the amount of dissolved iron entering the north Pacific Ocean. Researchers sailed in spring and autumn from 2016 to 2019 to measure iron levels, used satellite data to track phytoplankton growth, and analysed gene activity linked to iron stress in phytoplankton. They discovered that about 39% of springtime surface iron comes from East Asian air pollution. This extra iron fuels larger spring blooms of phytoplankton, which then draw down more nitrate nutrients. Over the past 25 years, rising iron pollution has sped up the disappearance of nitrates, causing nutrient-poor conditions to spread farther north and south of the transition zone chlorophyll front (TZCF). As phytoplankton form the base of the marine food web, shifting their abundance and location could disrupt zooplankton, fish, and larger predators, risking ecological imbalance and economic harm to fishing and coastal communities.

Key Takeaways

1. Anthropogenic Iron Input
   - Nearly 39% of spring surface iron in the north Pacific originates from human air pollution, mainly East Asia.
   - Iron enters the ocean when aerosols travel on westerly winds during spring.

2. Impact on Phytoplankton Blooms
   - Extra dissolved iron boosts spring phytoplankton growth, especially north of the transition zone chlorophyll front (TZCF).
   - Satellite data over 26 years show higher chlorophyll-a levels in spring linked to increased iron.

3. Nutrient Consumption and Depletion
   - Enhanced phytoplankton growth consumes more nitrates, accelerating nitrate depletion in surface waters.
   - Over the past quarter-century, rising iron pollution has hastened the shift toward nitrogen-limited, nutrient-poor conditions.

4. Shifting Ecosystem Boundary
   - The TZCF, which divides nutrient-rich and nutrient-poor waters, is retreating as nutrient-poor zones expand.
   - Changes in this boundary affect where phytoplankton can thrive and alter food-web dynamics.

5. Ecological and Socioeconomic Risks
   - Phytoplankton form the base of marine food chains; their redistribution can impact zooplankton, fish, seabirds, and whales.
   - Species unable to migrate or adapt may decline or go extinct, threatening fisheries and coastal livelihoods.

6. Synergy with Climate Change
   - Iron pollution works together with climate-driven ocean warming and stratification to intensify nutrient limitation.
   - This synergy may accelerate the march toward broader “ocean deserts” with low biological productivity.

Team from CCMB finds clues to Darwin's 'abominable mystery'-The Hindu Science

science

Easy Explanation

Researchers at the CSIR-Centre for Cellular and Molecular Biology studied how flowering plants rapidly diversified about 125–130 million years ago—a puzzle Darwin called the "abominable mystery." They focused on a gene named SHUKR, found in Arabidopsis thaliana and most eudicot flowering plants. Unlike mosses, where the gametophyte controls its own reproductive cells, SHUKR in the sporophyte influences pollen (the male gametophyte). SHUKR regulates rapidly evolving F-box genes that modify proteins during pollen development. Because flowering plants reproduce in varied environments—heat, cold, dryness—SHUKR's ability to adjust pollen traits helps them adapt and reproduce successfully. The emergence of SHUKR around 125 million years ago may have enabled flowering plants to develop diverse anatomies and habitats quickly, solving part of Darwin's mystery. Understanding SHUKR could also guide breeding crops that resist stress, helping maintain food security under climate change.

Key Takeaways

1. Rapid Diversification Puzzle

- Flowering plants appeared around 130 million years ago and diversified unusually fast, a phenomenon called Darwin's "abominable mystery."
- Fossil records show a sudden increase in flowering plant variety in anatomy and habitat.

2. Plant Life-Cycle Phases

- Early land plants (e.g., mosses) spend most of their life as gametophytes that make eggs or sperm, with sporophytes attached.
- Flowering plants spend most of their life as sporophytes; gametophytes (pollen and embryo sacs) are small and enclosed.

3. Discovery of SHUKR Gene

- SHUKR was identified in Arabidopsis thaliana and later found in other eudicots, making up about 75% of flowering plants.
- SHUKR emerged roughly 125 million years ago, coinciding with rapid angiosperm diversification.

4. SHUKR's Role in Pollen Development

- SHUKR is expressed in sporophyte cells and controls pollen viability by regulating F-box genes.
- F-box genes remove or replace proteins during pollen development, allowing pollen to adjust to environmental conditions.

5. Sporophyte Control of Gametophyte

- Contrary to previous assumptions, SHUKR shows that the sporophyte influences gametophyte development in flowering plants.
- This coordination allows pollen quality to match the needs of the parent plant.

6. Rapid Evolution of SHUKR and F-box Genes

- Both SHUKR and its regulated F-box genes evolve quickly to respond to diverse stresses like heat, cold, humidity, or drought.
- This genetic flexibility underlies the ability of flowering plants to inhabit varied ecosystems.

7. Implications for Darwin's Mystery

- SHUKR's emergence likely enabled flowering plants to produce pollen suited to many environments, driving fast diversification.
- Molecular innovation in reproduction may explain why angiosperms replaced earlier plant groups so rapidly.

8. Relevance to Food Security

• Flowering plants (eudicots) include major crops—cereals, pulses, oilseeds—vital for human and animal food.

• Understanding SHUKR can help breed stress-resistant varieties, safeguarding yields against climate-induced pollen sterility.

9. Future Research Directions

• Scientists may explore how exposing parent plants to certain conditions can produce pollen preadapted to stress.

• SHUKR offers a new target for improving plant fitness, immunity, and tolerance to salinity or drought.

10. Broader Evolutionary Insight

• The study highlights how changes in sporophyte-gametophyte interaction can drive large-scale evolutionary shifts.

• It emphasizes the importance of reproductive genes in shaping biodiversity over geological timescales.

Strengthening the U.S.-India subsea cable agenda-The Hindu Editorial

International relations

Easy Explanation

The article discusses how India and the United States are collaborating to build a stronger network of undersea internet cables, which carry over 95% of global data traffic. As part of broader efforts to diversify and secure technology supply chains under frameworks like TRUST and a pending trade agreement, both countries see reliable subsea connectivity as critical—especially given China's growing influence via its Digital Silk Road. India currently has most of its international cables landing in Mumbai, making it vulnerable to disruptions. By spreading landing stations across its 11,098 km coastline and encouraging investment in domestic cable repairs, India could become a transit hub linking Europe, Africa, and Asia. The U.S. can support through financing, technical assistance, and by backing private-sector projects like Meta's 50,000 km cable. Reforming India's complex licensing process and developing a local repair fleet would reduce downtime and strengthen digital resilience in the Indo-Pacific.

Key Takeaways

1. **Strategic Role of Subsea Cables**
   Subsea cables carry over 95% of international data traffic, making them crucial for global internet connectivity and national security.

2. **India's Geographic Advantage**
   With an 11,098 km coastline and proximity to major maritime chokepoints, India is poised to become a key transit hub linking Europe, Africa, and Asia.

3. **Current Vulnerability Concentration**
   Fifteen of India's 17 international cables land within a six-kilometre stretch in Mumbai, creating a single point of failure and underscoring the need for diversified landing stations.

4. **Licensing and Regulatory Hurdles**
   India's undersea cable licensing process requires more than 50 clearances from multiple

ministries, discouraging investment and slowing infrastructure expansion.

5. **Domestic Repair Ecosystem Deficit**
   Reliance on foreign-flagged repair ships—typically based in Singapore or Dubai—leads to 3–5 month response times for outages; developing an Indian repair fleet and depot infrastructure would reduce downtime.

6. **U.S. Support and Collaboration**
   Under frameworks like TRUST and a forthcoming trade agreement, the U.S. can provide concessional financing, technical assistance for route diversification and cybersecurity, and encourage American firms (e.g., Meta's 50,000 km cable) to anchor projects.

7. **Economic and Security Benefits**
   Enhanced subsea infrastructure will meet India's projected 38% bandwidth growth (2021–2028), fortify digital resilience in the Indo-Pacific against Chinese influence, and promote regional economic development through reliable connectivity.

Monsoon woes-The Hindu Editorial

Geography

Easy Explanation

The article highlights the severe flooding and landslide issues in India's northeastern states at the start of the southwest monsoon. Although the Arabian Sea branch of the monsoon brings rains to central and western India first, the Bay of Bengal branch hits the northeast almost simultaneously, often causing extreme downpours. In 2025, Assam's ten major rivers overflowed, affecting over 300,000 people in 19 districts. Tripura also faced heavy rains, and landslides in North Sikkim trapped 1,500 tourists, killing at least two when a bus fell into the swollen Teesta River. By late May, 30 people had died across the region. Even if total rainfall is slightly below normal, the northeast's inherently high baseline rainfall means extreme events and damage are likely each year. Historic underinvestment and challenging geography mean infrastructure has lagged, increasing vulnerability. The article calls for a coordinated, long-term plan—crafted by northeastern states and the Centre—to build resilient infrastructure, reduce fatalities, and manage flood risks year-round.

Key Takeaways

1. **Dual Monsoon Branches**
   • The Arabian Sea branch arrives via Kerala and moves northward, while the Bay of Bengal branch enters the northeast first, bringing destructive rains and landslides.

2. **Severe Impact in 2025**
   • Over 300,000 people in Assam (across 19 districts) were affected as ten rivers flowed above danger levels.
   • North Sikkim landslides stranded 1,500 tourists, and a bus crash in the Teesta River killed at least two people.

3. **High Baseline Rainfall**
   • Even if overall rainfall is below normal, the northeast's baseline monsoon precipitation is higher than most of India, making extreme flooding nearly inevitable.

4. **Year-Round Vulnerability**
   • Besides the June–September southwest monsoon, the northeast experiences a smaller October–December monsoon, amplifying flood risk for several months of the year.

5. **Infrastructure Shortcomings**
   • Challenging terrain and historic underinvestment have left roads, bridges, and drainage systems ill-equipped to handle heavy rains, increasing fatalities and economic losses.

6. **Need for Regional Coordination**
   • A sustainable, long-term flood-management plan requires systematic review and collaboration between all northeastern states and the Centre to design resilient infrastructure and effective disaster response.

7. **Climate Change Implications**
   • With monsoon forecasts calling for "above normal" rains in 2025, climate-driven extremes are likely to worsen, making urgent planning and investment essential.

Misinformation a bigger threat than COVID-19 uptick-The Hindu Editorial

Science

Easy Explanation

India has seen COVID-19 cases rise from a few per day to a few hundred since mid-May 2025, driven by the Omicron-descendant variant JN.1. However, this uptick is neither unusual nor alarming. SARS-CoV-2 behaves like other respiratory viruses, showing seasonal surges every eight to ten months. JN.1 has circulated since late 2023, and no new variant of concern has emerged. Increased testing and wastewater surveillance also contribute to higher reported numbers. Most Indians possess "hybrid immunity" from prior infections and vaccination, so fresh infections tend to be mild. In comparison, diseases like tuberculosis and influenza cause far more daily cases and deaths. Counting everyone who tests positive as an "active case" now overstates risk, because immunity clears the virus quickly. No additional COVID-19 booster is needed; focusing on other vaccines and existing health conditions is more prudent. The real danger comes from misinformation, which can cause undue panic and strain resources.

Key Takeaways

1. **Seasonal Pattern of SARS-CoV-2**
   • COVID-19 shows surges every eight to ten months in India, similar to other respiratory viruses.
   • Past upticks occurred in early 2023, late 2023, mid-2024, and now mid-2025.

2. **Absence of a New Variant of Concern**
   • The current rise is linked to JN.1 (Pirola), an Omicron sub-lineage first reported in August 2023.
   • No significant clinical differences or heightened severity have been noted.

3. **Hybrid Immunity Reduces Severity**
   • Most Indians have immunity from previous infection and vaccination, which prevents severe illness.
   • Natural infection or vaccination does not stop new infections but keeps cases mild.

4. **Inflated "Active Case" Metrics**
   • Counting every positive test as an active case is outdated; immunity now clears the virus in a day or two.
   • Relying on this metric can exaggerate the perceived threat and fuel panic.

5. **Comparative Health Risks**
   • COVID-19's current daily infections (200–300 cases) are minuscule compared to diseases like tuberculosis (8,000 new cases/day) or influenza-related deaths.
   • Air pollution and other respiratory illnesses also cause far more hospitalizations and fatalities.

6. **No Need for Additional COVID-19 Vaccines**
   • Antibody levels may wane, but memory immune cells still protect against severe disease.
   • There is no scientific basis for recommending extra COVID-19 booster doses in India now.

7. **Misinformation Is the Greater Threat**
   • Excessive focus on minor case upticks can lead to "infodemic" panic, draining health resources.
   • A balanced, data-driven approach—avoiding unverified rumors—ensures rational responses to seasonal spikes.

[A resilience test-Indian Express Editorial]

Economy

Easy Explanation

India's GDP growth has swung between 8.4 percent, 5.6 percent, and now 7.4 percent over the past three quarters. Rather than reflecting abrupt private-sector booms or busts, these fluctuations largely stem from predictable swings in government spending and agriculture. In an election year, the Centre and state governments held back non-interest spending in the first half of the fiscal, then accelerated it in the second half to hit budget targets. Subsidies front-loaded earlier in the year depressed tax revenues (and measured GDP) before normalizing later. At the same time, a weak agricultural season in the first half gave way to strong farm output after monsoon rains, contributing to faster growth in rural demand. Stripping out these "exogenous" factors shows underlying GDP growth hovering steadily around 6.5 percent for the year. Going forward, India must navigate global uncertainties—tariffs, trade-deal questions, and slowing external demand—by shifting growth drivers from investment to consumption, especially bolstering rural incomes as urban impulses lose steam.

Key Takeaways

1. **Fiscal Impulse Reversal**
   • In the first half of 2024–25 (an election year), government non-interest spending rose only 2 percent. In the second half, it surged to 15 percent as authorities rushed to meet budget targets.

2. **Subsidy Timing & Tax Revenues**
   • Subsidies were concentrated early, depressing net indirect taxes and measured GDP in the first two quarters. By the final quarter, subsidy outlays normalized, boosting tax revenue and headline growth.

3. **Agricultural Resurgence**
   • Farm growth was under 3 percent in the first half but exceeded 6 percent in the second half due to a strong monsoon, which lifted rural incomes and downstream demand.

4. **Underlying Growth Stable at ~6.5 Percent**
   • Adjusting for these fiscal and agricultural swings reveals that India's true economic momentum remained around 6.5 percent, rather than swinging widely.

5. **External Uncertainty & Trade-Deal Imperatives**
   • Rising global tariff risks and U.S. trade policy ambiguity threaten exports. Finalizing trade agreements with the U.S., EU, and U.K. would reduce one major source of uncertainty and signal openness.

6. **Investment-to-Consumption Rotation**
   • Public capex and real estate cycles have peaked. With corporate investment unlikely to surge amid global headwinds, private consumption must fill the gap. Urban consumption is cooling, so rural demand—propelled by schemes like MGNREGA, rising tractor sales, and FMCG uptake—will be critical.

7. **Policy Actions for Resilience**
   • Domestically, the focus should be on effective monetary policy transmission, hitting fiscal capex targets, and implementing new labor codes to spur labor-intensive manufacturing. Agility in these areas will determine India's ability to sustain and accelerate growth amid global storms.

4th June 2025

WHAT CAUSED THE MASSIVE ERUPTION OF ITALY'S MOUNT ETNA-Indian Express Explained

Geography

Easy Explanation

On Monday morning, Mount Etna—Europe's largest and one of the world's most active volcanoes—suddenly erupted. Deep underground, heat and pressure caused dissolved gases in Etna's magma chamber to expand rapidly. As these gases pushed upward, they fractured the volcano's southeast crater rim, creating a new opening for lava, ash, and rock fragments to escape. The eruption cast a cloud of ash and glowing material several kilometres into the sky, visible from afar but causing no reported injuries or major disruptions. Some experts call this a Strombolian eruption (characterized by bursts of gas-driven

material), while others label it Plinian (a more violent explosion reaching the stratosphere) because of the height and intensity of the plume. In either case, the event was driven by sudden gas release, typical of Etna's frequent activity, and reminds us of how fast pressure buildup beneath a volcano can lead to dramatic but generally short-lived eruptions.

Key takeaways:

Location and history

Etna lies on the east coast of Sicily and has been active for at least 500,000 years. It has five summit craters and around 300 vents on its flanks. Since 1600, it has produced dozens of summit and flank eruptions, making it one of the most studied volcanoes in the world.

Cause of the eruption

Magma beneath Etna contains dissolved gases. As magma rises, these gases expand, increasing pressure. When the pressure exceeded what the southeast crater rim could contain, it collapsed and opened a new vent, allowing lava, ash, and fragments to erupt.

Types of eruption

A Strombolian eruption features moderate, discrete bursts of gas-driven fragments, while a Plinian eruption involves more powerful explosions that can send ash and gas into the stratosphere. In this case, the height of the ash plume led some scientists to classify it as Plinian, although the bursting gas bubbles are typical of Strombolian activity.

Impact and disruption

Despite the spectacular ash cloud, the eruption caused no reported injuries or significant damage. Flights in the surrounding region experienced minimal disruption. Etna's frequent activity means that local authorities and residents are well prepared for sudden eruptions.

Lessons about volcanic behavior

This event illustrates how rapidly gas pressure can build and release in an active volcano. Monitoring changes in gas levels and crater stability is crucial for early warnings. Etna's ongoing eruptions serve as a reminder of both the power and predictability of volcanoes when properly observed.

New protections for Ladakh-Indian Express Explained

Polity

Easy Explanation

The central government has introduced five new regulations for the Union Territory of Ladakh to protect local land, jobs, and culture. First, people who have lived in Ladakh for 15 years or studied there for seven years (and appeared in Class 10 or 12 exams), as well as children of central government employees posted in Ladakh for at least ten years, now qualify as Ladakh domiciles. This means they have priority for government jobs. A clear process has been set up to apply for a domicile certificate. Second, reservation for Scheduled Castes, Scheduled Tribes, Other Backward Classes, and other backward groups is now capped at 85 percent (excluding the 10 percent Economically Weaker Sections quota). This applies to both jobs and professional college admissions. Third, official languages—English, Hindi, Urdu, Bhoti, and Purig—are recognized, and support is mandated for local dialects like Shina, Brokskat, Balti, and Ladakhi. Fourth, one-third of seats in the Ladakh Autonomous Hill Development Councils (LAHDC) are now

reserved for women. These changes aim to address demands from local groups for constitutional protection, but they fall short of the Sixth Schedule's guarantees. There are still no land ownership restrictions for outsiders, no legislative assembly, and no binding roadmap to use local languages in education or governance. Civil society leaders view these as initial steps and will continue to push for stronger, permanent safeguards.

Key Takeaways

1. Domicile and Job Reservations

- Individuals who meet residency or education criteria, or whose parents served in Ladakh, qualify for Ladakh domicile status.
- Domiciles and their children/spouses get priority in government job recruitments under the Ladakh Civil Services Decentralization and Recruitment (Amendment) Regulation, 2025.
- A clear procedure and documentation requirements for obtaining a domicile certificate have been established, with the tehsildar as issuing authority and the Deputy Commissioner as appellate authority.

2. Reservation Limits and Education Quotas

- Total reservations (excluding the 10 percent EWS quota) for SC, ST, OBC, and other backward groups are capped at 85 percent under the Union Territory of Ladakh Reservation (Amendment) Regulation, 2025.
- These reservation limits apply to both government jobs and admissions in professional institutions (engineering and medical colleges).
- The previous cap of 50 percent for SC, ST, and OBC in professional admissions has been raised to 85 percent to increase local access.

3. Language Recognition and Cultural Preservation

- English, Hindi, Urdu, Bhoti, and Purig are now official languages of Ladakh under the Ladakh Official Languages Regulation, 2025.
- The regulation mandates institutional support for promoting Shina, Brokskat, Balti, and Ladakhi to preserve linguistic diversity.
- Despite recognition, there is no detailed plan for using these languages in schools, government offices, or courts.

4. Women's Representation in Local Councils

- The Ladakh Autonomous Hill Development Councils (Amendment) Regulation, 2025, reserves one-third of seats for women by rotation in both Leh and Kargil councils.
- LAHDCs remain administrative bodies without legislative power; they cannot make laws on land, forests, or education even after the amendment.

5. Comparison with Sixth Schedule Demands

- The Sixth Schedule would provide constitutional guarantees, including legislative autonomy, control over land and forests, and financial independence—none of which these regulations include.
- Current measures are executive orders under Article 240 and can be changed or withdrawn by the central government at any time.
- There are no protections against outsiders buying land in Ladakh, and no provision for a legislative assembly to give residents a direct voice in lawmaking.

6. Civil Society Response and Future Steps

- Local groups like the Leh Apex Body and Kargil Democratic Alliance see these regulations as initial steps but not sufficient.
- Key outstanding demands include increasing the domicile residency requirement to 30 years, introducing explicit land and environmental safeguards, and creating a legislative assembly.

• Delegations from Ladakh plan to meet Home Ministry officials next month to continue negotiations and push for stronger constitutional protections.

The great churn in Asia-Indian Express Editorial

International relations

Easy Explanation

This article discusses two major recent events that show how Asian geopolitics are changing quickly. First, at the Shangri-La Dialogue in Singapore, the U.S. and Europe presented different views on security in Asia. The U.S. focused on military strength and warned against China's ambitions, while France emphasized Europe's role and a balanced approach. Second, South Korea's presidential election is likely won by Lee Jae-myung, who favors a more independent foreign policy. He wants to keep the U.S. alliance but also engage China and North Korea to protect trade and reduce risks. These shifts highlight growing uncertainty in Asia: countries are torn between relying on traditional alliances and asserting their own strategic freedom. For India, which has long depended on stable relations in the region, this means it must strengthen its own capabilities and be more flexible in responding to a more turbulent geopolitical environment.

Key Takeaways

1. Divergent U.S. and European Perspectives
• At the Shangri-La Dialogue, U.S. officials emphasized military deterrence and warned against Chinese expansion.
• Europe, led by France, called for "strategic autonomy" and new coalitions, suggesting a more balanced, non-confrontational stance toward China.

2. U.S. Commitment vs. Conditions
• The U.S. reaffirmed support for alliances in Asia but urged partners to increase defense spending to 5 percent of GDP—an unrealistic target for most Asian nations.
• Japan struggles to meet its 2 percent target, and India spends only about 2 percent despite security challenges.

3. South Korea's Political Shift
• Lee Jae-myung, likely to win the presidency, represents a "pragmatic realism" approach: maintaining the U.S. alliance while engaging China economically and reopening dialogue with North Korea.
• He aims to balance trade interests (semiconductors, batteries) with security considerations and demand historical accountability from Japan.

4. Implications for U.S. Strategy
• A more autonomous South Korea could complicate U.S. contingency plans, especially regarding Taiwan.
• Dependence on China for exports makes Seoul's approach a delicate balancing act between economic pragmatism and security alignment.

5. Rising Uncertainty in Asia
• Both events underscore growing friction between alliance dependence and strategic autonomy across Asian countries.
• Economic integration with China clashes with security concerns arising from an unpredictable U.S.-China rivalry.

6. Challenge for India's Strategy
• India's long-standing Asian policy relied on great-power harmony and stable regional institutions.

• The emerging disorder demands that India bolster its national capabilities—military, economic, and diplomatic—and adopt greater strategic flexibility to navigate a more volatile environment.

Does the civil services examination need reform?-The Hindu text and Context

Governance

Easy Explanation

The Civil Services Examination (CSE) is India's gateway to recruiting top bureaucrats. Over time, it has become lengthy and complex, with three stages: prelims, mains, and an interview. Prelims filter thousands to about 10,000 candidates quickly, but its aptitude paper (CSAT) favors science backgrounds, while the general studies paper can be unpredictable. Mains test knowledge through multiple short-answer papers, but lack long essay questions that evaluate analytical skills. Candidates often pick optional subjects based on scoring trends, not relevance to administration. The interview remains opaque and subjective, with little feedback on performance. To make the process fairer and more aligned with real administrative needs, experts suggest rebalancing prelims to test core knowledge, introducing analytical essays in mains, replacing optional subjects with governance-policy papers, making interviews more structured, and shortening the overall timeline. These changes aim to reduce guesswork, reward analytical ability, and ensure candidates possess skills essential for modern governance.

Key Takeaways

1. Rebalancing the Preliminary Exam
• Convert CSAT from merely qualifying to a scoring paper, emphasizing critical thinking over raw math ability.
• Fix clearer syllabus boundaries for the general studies paper to reduce uncertainty and publish detailed past cutoffs.

2. Enhancing the Main Examination
• Introduce long-form analytical questions in General Studies to test policy analysis and problem-solving.
• Replace the single optional subject with two specialized governance and public policy papers to align with administrative duties.

3. Making Interviews More Transparent
• Use a structured interview format with defined competency categories (e.g., leadership, ethics) and rotate board members regularly.
• Provide limited feedback to candidates on strengths and weaknesses after the interview.

4. Streamlining the Overall Process
• Adopt a tighter exam calendar—prelims in May, mains by August, interviews in November—to reduce waiting periods.
• Implement a cap on total attempts or an age limit to encourage focused preparation and reduce repeated cycles.

5. Emphasizing Real-World Skills
• Introduce optional group discussions or simulation exercises to assess leadership and communication in real time.
• Add a basic digital literacy test to ensure minimum proficiency in computer and data-handling tools.

6. Continuous Feedback Mechanism
• Conduct annual surveys of aspirants after each exam cycle to gather feedback on difficulty, clarity, and relevance.

• Form an expert advisory panel (former top-rankers, coaching experts, senior administrators) to review trends and suggest fine-tuning regularly.

Building-Integrated Photovoltaics: converting buildings into solar assets-The Hindu text and Context

Science and technology

Easy Explanation

Building-Integrated Photovoltaics (BIPV) means using solar panels as actual building materials—such as façades, windows, and roofs—so that the structure itself generates electricity. Unlike rooftop solar panels (RTS), which need clear roof space, BIPV turns walls and windows into solar surfaces. Although initial costs are higher than RTS, BIPV can offset those costs over time through energy savings. In India's crowded cities, where rooftops are often too small for significant solar installations, BIPV uses available vertical and horizontal building surfaces more efficiently. Examples in India include data centers, railway stations, and public institutions already using BIPV. Key barriers are high upfront expenses, lack of clear policies, and limited technical know-how. To scale up, India needs stronger incentives, updated building codes, pilot projects in public infrastructure, domestic manufacturing support, and awareness programs for architects and developers. Given urban growth and a 300 GW solar target by 2030, BIPV's land-neutral potential (estimated at 309 GW) can be critical for India's clean-energy transition.

Key Takeaways

1. What Is BIPV and Why It Matters
• BIPV integrates solar panels into building elements (façades, windows, roofs) instead of mounting them on top.
• It generates electricity and serves as structural building material (replacing glass, tiles, cladding).
• In dense urban areas, BIPV uses otherwise unused surfaces, overcoming rooftop space constraints.

2. Cost and Long-Term Benefits
• Initial costs are higher than conventional construction and rooftop solar.
• Over time, energy savings can offset capital costs, especially when solar tariffs rise.
• BIPV reduces heat gain (through semi-transparent panels) and can lower cooling loads.

3. Examples of BIPV in India
• CtrlS Datacenters in Navi Mumbai: 863 kWp installation across four façades.
• Renewable Energy Museum (Kolkata): Solar-powered dome with over 2,000 integrated panels.
• Jindal Steel & Power facility (Angul, Odisha): One of India's largest BIPV installations.
• Railway stations in Vijayawada and Sahibabad: Façade-mounted BIPV generating on-site power.

4. Scalability and Potential
• India's urban population is projected to reach 600 million by 2031 and 850 million by 2051, increasing demand for space-efficient solar.
• A 16-storey building example: A 4,000 sq ft rooftop supports ~40 kWp RTS, whereas a single south-facing façade could yield ~150 kWp with BIPV.
• The estimated BIPV potential in India's existing building stock is 309 GW—significant toward the 300 GW solar-by-2030 goal.

5. Barriers to Wider Adoption
• High upfront costs compared to conventional materials and RTS systems.
• Policy gaps: no dedicated incentives, absence of clear technical standards, and limited inclusion in building codes.

• Heavy reliance on imports for solar glass and specialized modules.
• Low awareness among architects, planners, and developers about BIPV design and benefits.

6. Policy and Regulatory Recommendations
• Introduce dedicated BIPV incentives (similar to Seoul's 80 percent subsidy) under existing solar schemes.
• Embed BIPV provisions in the National Building Code, Energy Conservation Building Code, and Eco Niwas Samhita.
• Launch pilot projects through public–private partnerships (e.g., in schools, hospitals, public transport hubs) to demonstrate feasibility.

7. Strengthening the Ecosystem
• Boost indigenous manufacturing via production-linked incentive (PLI) schemes and targeted R&D to reduce import dependence.
• Develop clear technical standards for BIPV modules (transparent, semi-transparent, opaque).
• Conduct awareness workshops for architects, builders, and urban planners to integrate BIPV at the design stage.

8. Financial and Business Models
• Promote Renewable Energy Service Company (RESCO) models: third parties install and maintain BIPV, selling electricity back to building owners under long-term agreements.
• Encourage power purchase agreements (PPAs) for large commercial and institutional buildings to ensure financial viability.
• Offer low-interest loans or grants for early adopters to bridge the higher initial investment gap.

9. Role in India's Clean-Energy Future
• BIPV is land-neutral, avoiding the need for additional land that ground-mounted systems require.
• With 70 percent of future urban infrastructure still to be built by 2047, new buildings can be "solar-ready" from the outset.
• Combining rooftop solar, ground-mounted parks, and BIPV is essential to meet India's 300 GW solar capacity target by 2030.

Bacteria found at Rajgir hot spring lake shows antimicrobial activity-The Hindu Science

Science

Easy Explanation

Researchers at Vellore Institute of Technology studied microbes in the Rajgir hot spring lake, where water temperatures reach around 45 °C. Such hot springs often host thermophilic bacteria, which thrive in high heat. Using 16S rRNA analysis, the team found that Actinobacteria—a group known for producing antibiotics—made up about 40–43 percent of the bacterial community. Lab tests showed seven Actinobacteria strains could inhibit pathogens like Escherichia coli, Salmonella typhimurium, Klebsiella pneumoniae, Pseudomonas aeruginosa, and Staphylococcus aureus. Further work isolated an antibacterial compound, diethyl phthalate, from one Actinomycetales strain; this compound was effective against Listeria monocytogenes, which causes severe foodborne illness. Beyond antibiotic discovery, thermophilic bacteria have other uses— for example, the PCR enzyme Taq polymerase comes from a heat-loving microbe. Overall, the study highlights Rajgir hot spring as a promising source of antimicrobial and industrially valuable thermophiles.

Key Takeaways

1. Thermophiles and Hot Springs
• Thermophilic bacteria thrive at 45–70 °C, conditions lethal to most organisms.
• Hot springs offer mineral-rich niches with few competitors, encouraging some thermophiles to produce antibiotics to outcompete rivals.

2. High Actinobacteria Diversity at Rajgir
• Actinobacteria accounted for 40–43 percent of the microbial diversity at Rajgir hot spring—much higher than in many other hot springs.
• This group is historically important for antibiotics; drugs like streptomycin and tetracycline originate from Actinobacteria.

3. Antimicrobial Activity Against Pathogens
• Seven Actinobacteria strains inhibited growth of major pathogens (E. coli, Salmonella typhimurium, Klebsiella pneumoniae, Pseudomonas aeruginosa, Staphylococcus aureus) in culture.
• Demonstrated potential for new antibiotic discovery to combat antimicrobial resistance.

4. Isolation of Diethyl Phthalate
• Researchers used gas chromatography–mass spectrometry to isolate diethyl phthalate from one Actinomycetales strain.
• Diethyl phthalate effectively inhibited Listeria monocytogenes, indicating possible development into a drug against listeriosis.

5. Broader Industrial and Agricultural Applications
• Thermophiles supply heat-tolerant enzymes—for instance, Taq polymerase in PCR tests originally came from Thermus aquaticus.
• A previous study from Leh hot spring found thermophilic bacterial mixes promote plant growth, suggesting agricultural biofertilizer potential.

6. Importance Amid Antimicrobial Resistance
• As bacteria develop resistance to existing drugs, discovering new antibiotics from extreme environments like Rajgir is crucial.
• The World Health Organization projects antimicrobial resistance could add $1 trillion in healthcare costs by 2050 if unaddressed.

7. Rajgir Hot Spring as an Understudied Resource
• While global hot springs have been tapped for antibiotic-producing microbes, Indian hot springs are less explored.
• Rajgir's high Actinobacteria abundance makes it a promising reservoir for novel antimicrobial compounds.

8. Next Steps for Research and Application
• Further characterization of other antibacterial compounds produced by Rajgir thermophiles.
• Exploring scale-up methods to produce these compounds and test their safety and efficacy in clinical settings.
• Investigating additional industrial enzymes and agricultural bioactive molecules from Rajgir's thermophiles.

India-Australia defence ties beyond American shadows-The Hindu Editorial

International relations

Easy Explanation

As U.S. security guarantees become less predictable under the new American administration, India and Australia see an opportunity to strengthen their defence partnership. Both countries share concerns about China's growing assertiveness in the Indo-Pacific, and Australia's geographic reach—from the Indian Ocean to Southeast Asia—matches India's naval ambitions. Over the past decade, New Delhi and Canberra have built a framework of cooperation: a Comprehensive Strategic Partnership (2020), a 2+2 ministerial dialogue (2021), a Mutual Logistics Support Agreement, and an air-to-air refuelling arrangement. Their armies and navies regularly exercise together (AUSTRAHIND, AUSINDEX), and they participate jointly in multilateral drills like Pitch Black and Malabar. To deepen this relationship, they must broaden defence engagement beyond just naval cooperation—through combined army and air exercises, upgraded defence representation, more coordination on Pacific Island outreach, joint maintenance and patrol-boat programs, and closer collaboration between small and medium defence enterprises. Such steps would help India and Australia pool resources and capabilities, reducing reliance on an uncertain U.S. presence.

Key Takeaways

1. Shared Strategic Interests

- Both India and Australia worry about China's growing influence in their maritime neighbourhoods.
- Australia's position between the Indian and Pacific Oceans complements India's goal of a strong blue-water navy.
- Deeper cooperation advances their common vision of regional stability and sovereign resilience.

2. Existing Frameworks of Cooperation

- In 2020, India and Australia upgraded ties to a Comprehensive Strategic Partnership, with a 2+2 ministerial dialogue launched in 2021.
- The Mutual Logistics Support Agreement streamlines basing, refuelling, and maintenance during joint exercises and operations.
- Since November 2024, an air-to-air refuelling arrangement allows the Royal Australian Air Force to extend the operational reach of Indian aircraft.

3. Expanding Beyond Naval Silos

- Navy exercises (AUSINDEX) set a strong precedent, but both nations need more joint army and air force drills that simulate real-world contingencies.
- A combined, decade-scale exercise—testing land, sea, and air coordination—should be planned to build truly integrated capabilities.
- A dedicated forum for joint staff talks can break down service barriers and ensure all branches work together smoothly.

4. Upgrading Defence Representation

- India's Defence Adviser in Canberra should be elevated to a one-star rank to reflect the strategic importance of ties with Australia.
- Adding dedicated Army and Air Force officers to the mission would balance service representation (the position has historically been held by a Navy officer).
- India needs personnel focused solely on Pacific Island engagement—currently managed as an added duty by the Defence Adviser—given the significance of those partnerships.

5. Maintenance, Repair & Overhaul (MRO) Collaboration

- India already repairs and services vessels for U.S. and U.K. navies; extending these MRO capabilities to Australian ships would strengthen industrial linkages.
- Joint manufacturing or provisioning of patrol boats for small island states in the Indian Ocean Region and the Pacific signals shared security intentions.

• Even modest MRO and boat programs can catalyze deeper technological exchange and trust between their defence industries.

6. Engaging MSMEs in Defence Cooperation

• Australian original equipment manufacturers (OEMs) largely operate as subsidiaries of foreign firms, prompting Indian OEMs to deal with overseas headquarters instead.
• India and Australia both run indigenization initiatives in their defence sectors; connecting their respective startups and small-to-medium enterprises (MSMEs) would harness cutting-edge dual-use technologies.
• A model similar to the U.S.-India INDUS X partnership could facilitate joint R&D, co-production, and market access for defence and aerospace SMEs in both countries.

7. Reducing Dependence on U.S. Guarantees

• With U.S. burden-sharing demands rising and a transactional approach to alliances, India and Australia must build confidence in each other's capabilities.
• Institutionalizing deeper, bilateral defence ties helps both nations face security challenges if U.S. support becomes uncertain.
• A robust India-Australia defence partnership contributes to a balance of power in the Indo-Pacific, reinforcing collective regional security.

5th June 2025

The Census of 1931-Indian Express Explained

Society

Easy Explanation

The 1931 Census was the last comprehensive count of India's population and castes before Independence. Conducted under British rule by Census Commissioner John Henry Hutton, it covered over 350 million people across a vast territory from Baluchistan to Burma. The exercise faced significant hurdles: political unrest during Gandhi's Civil Disobedience Movement led to sporadic boycotts, and the Great Depression forced budget cuts that left enumerators unpaid for months. Field officers sometimes encountered hostility from local communities, and in remote areas they risked wild-animal attacks. Despite these difficulties, the census recorded India's population at 350.5 million—a 10.6 percent increase over 1921—thanks to improvements in public health and stable agricultural conditions. Population density varied greatly: fertile regions had very high densities (for example, parts of Cochin at over 800 people per square kilometer), while arid areas like Baluchistan had fewer than three per square kilometer. The census also continued the practice of enumerating individual Hindu castes, a process complicated by fluid caste names and resistance from reform movements. Overall, the 1931 Census provided a crucial demographic baseline and highlighted India's changing social patterns.

Key Takeaways

1. Context and Scope

- British India in 1931 included present-day India, Pakistan, Bangladesh, and Myanmar.

- The census aimed to count over 350 million people across nearly two million square miles—about one-sixth of the world's population.

2. Political and Economic Challenges

- The Civil Disobedience Movement led by Gandhi prompted localized boycotts in cities such as Ahmedabad and Surat, but did not derail the overall count.

- The Great Depression reduced government revenue, forcing budget cuts and causing delays in paying enumerators, many of whom were teachers or low-level officials.

3. Operational Difficulties

- Enumerators often covered huge areas—up to 2,165 square kilometers in Baluchistan—and sometimes faced violence from locals opposed to numbering houses or resisting British authority.

- Some teams were attacked by wild animals, including a tiger that tried to jump onto a census inspector's vehicle in Bastar State.

4. Population Growth and Health Improvements

- India's total population reached 350.5 million, a 10.6 percent increase since 1921, driven by high birth rates and reduced mortality from plague, cholera, and smallpox.

- Unlike earlier decades, there were no major epidemics during this period, and nearly universal marriage among Hindus contributed to sustained growth.

5. Regional Variations in Density

- Overall density was 85 persons per square kilometer, but regions differed greatly: Baluchistan had fewer than three people per square kilometer, while Cochin State had 800.

- Fertile agricultural areas like Bengal saw high density (375 per square kilometer), whereas less arable regions experienced faster population growth through internal migration.

6. Urban Centers

- The most populous city was Calcutta (1.485 million), followed by Bombay (1.161 million), Madras (0.647 million), Hyderabad (0.466 million), and Delhi (0.447 million).

- Only a few other cities—Lahore and Rangoon—exceeded 400,000 inhabitants in British India at the time.

7. Enumeration of Castes

- The census included detailed questions on caste for Hindus, continuing a practice from 1872. Question eight of eighteen asked specifically about "Race, Tribe or Caste."

- Resistance came from Arya Samaj and Brahmo groups, particularly in Punjab, where many Hindus refused to specify caste.

- Enumerators struggled with inconsistent caste terminology and multiple surnames for the same caste, making data interpretation difficult.

8. Cost and Efficiency

- The total expenditure was about Rs 48.76 lakh, compared to Rs 40 lakh in 1921. In per-capita terms, it cost Rs 12.80 per thousand people versus Rs 14 per thousand in the previous decade.

- Cost savings arose largely from not paying nearly 20 lakh enumerators for extended periods and pushing superintendents to complete the work quickly.

9. Importance for Future Planning

- The 1931 Census became the baseline for tracking demographic changes and caste distributions until a more detailed caste count could be undertaken again.

- Its findings remain a critical reference for understanding pre-Independence population patterns, migration trends, and the social hierarchy.

10. Legacy and Relevance Today

- Many debates about methodology—such as how to classify fluid caste identities—began in 1931 and continue into modern efforts to collect granular caste data.

- The upcoming Census (beginning in October 2026) will mark the first time since 1931 that detailed caste information beyond SC/ST categories is collected, making the 1931 report a foundational document for comparison.

Justice Hema Committee report:Why police have dropped sexual assault cases-Indian Express Explained

Society

Easy Explanation

In August 2024, Kerala released the Justice Hema Committee report on sexual harassment in its film industry. The committee, led by retired judge K. Hema and formed in 2017 after a high-profile assault case involving actor Dileep, uncovered widespread abuse—casting couches, vulgar comments, and coercion by influential men. Although the report documented numerous allegations, it remained unpublished until a Right to Information request forced its partial release (63 pages redacted) in mid-2024. After the findings went public, many survivors filed complaints, prompting police to register around 60 cases. However, by late 2024, police dropped 35 of these cases. Officials cited lack of evidence or survivors' unwillingness to continue formal proceedings, often because the incidents were years old or survivors feared retaliation. Industry insiders argue that police action alone is insufficient; they call for systemic reforms and internal grievance mechanisms to protect women in Malayalam cinema.

Key Takeaways

1. Origin of the Committee

- Formed in July 2017 by Kerala's government after a Malayalam actress was abducted and assaulted in February 2017.

- Led by Justice K. Hema, bureaucrat K. B. Valsalakumari, and actor T. Sarada to investigate harassment in the film industry.

2. Delayed Publication

- Completed in December 2019 but withheld due to "personal stories" and privacy concerns.

- Released on August 14, 2024, after Right to Information petitions; 63 pages redacted.

3. Findings on Industry Culture

- Documented pervasive casting-couch practices, suggestive comments, and drunk male actors forcing themselves on women.

- Many survivors did not report harassment originally, fearing retaliation.

4. Police Action Post-Report

- Following public release, around 60 cases emerged—filed by police and survivors.

- By late 2024, Kerala police dropped 35 cases.

5. Reasons for Dropping Cases

- "Lack of evidence" due to incidents occurring a decade or more ago.

- "Non-cooperation" as some survivors only wanted to share their stories, not pursue legal processes.

- Fear of defamation suits and industry backlash deterred continued cooperation.

6. Survivor Perspectives

- Some actors and technicians expressed sadness and frustration, feeling justice was denied.

- Many cited ongoing defamation suits filed by accused individuals, adding pressure to withdraw.

7. Calls for Systemic Reform

- Industry workers demand internal grievance cells and safer reporting channels.

- Advocates argue police action alone is ineffective; reforms needed at studio and association levels.

8. Broader Implications

- The Justice Hema report is a landmark state-level inquiry into film-industry harassment.

- Its partial publication and subsequent case withdrawals highlight challenges in prosecuting historical abuses and the need for cultural change.

How air pollution can increase the risk of premature birth-Indian Express Explained

Environment

Easy Explanation

When a pregnant woman breathes polluted air containing fine particles (PM2.5), these tiny particles enter her lungs and can cross into her bloodstream. Once in her blood, PM2.5 influences levels of certain molecules—specifically, cortexolone (a stress-regulating hormone) and lysoPE(20:3) (a fat critical for cell health). Cortexolone helps control inflammation and immune responses, while lysoPE(20:3) supports normal cell function. Exposure to PM2.5 disrupts how proteins are digested and absorbed in the mother's body, which is essential for healthy fetal growth and a strong immune system. These disruptions interfere with the placenta and the developing baby, increasing the chance that labor will start too soon. In short, air pollution affects key biological pathways, tipping the balance toward premature labor.

Key Takeaways

1. PM2.5 Translocation into Bloodstream
Fine particulate matter (PM2.5) inhaled by the mother crosses the lungs and enters her bloodstream, allowing pollutants to reach the placenta and fetus.

2. Disruption of Cortexolone Levels
PM2.5 exposure alters cortexolone, a hormone that regulates inflammation and metabolism, leading to improper immune responses that can trigger early labor.

3. Impairment of LysoPE(20:3) Function
Changes in lysoPE(20:3), a lipid essential for cell health, compromise cellular signaling and nutrient exchange between mother and fetus.

4. Protein Digestion and Absorption Issues
Exposure to PM2.5 disrupts how the mother's body breaks down and absorbs proteins, depriving the fetus of vital nutrients necessary for proper development.

5. Elevated Premature Birth Risk
Molecular disruptions in both cortexolone and lysoPE(20:3) correlate with a higher likelihood that labor will begin before full term, increasing adverse birth outcomes.

6. Higher Exposure in Urban Areas
Pregnant women living near major highways in downtown and midtown regions experience greater PM2.5 levels compared to those in suburban outskirts, amplifying health risks.

7. Need for Targeted Interventions

Identifying these specific biological pathways enables focused preventive measures—such as using air purifiers, limiting outdoor exposure during peak pollution times, and monitoring hormone and lipid markers—to reduce preterm birth rates.

ON THE GREEN TRACK-Indian ExPress Editorial

Economy

Easy Explanation

Indian Railways is a critical driver of India's push toward net-zero emissions by 2070. By shifting vast amounts of freight from trucks to trains—and electrifying nearly its entire broad-gauge network—Railways drastically cuts carbon dioxide output and saves fuel costs. In 2024-25, it moved 1,617 million tonnes of cargo, up from 1,055 million in 2013-14. Experts estimate this modal shift has prevented about 143 million tonnes of CO_2—equivalent to planting 12.1 billion trees—and saved roughly ₹2 lakh crore in diesel costs. Today, 99 percent of broad-gauge tracks are electrified, and projects like Dedicated Freight Corridors (2,741 km operational) further reduce diesel use. Railways is also installing solar panels at stations and depots and planning hydrogen-powered trains. With these measures, Railways aims to reach net-zero (Scope 1) by 2025, well ahead of India's 2070 target. Every kilowatt of green energy added and every freight car that moves off the road advances a cleaner, greener Bharat.

Key Takeaways

1. Freight carried rose from 1,055 million tonnes (2013–14) to 1,617 million tonnes (2024–25), cutting 143 million tonnes of CO_2 emissions.

2. Diesel savings total 2,857 crore litres—approximately ₹2 lakh crore in fuel costs—by moving goods from road to rail.

3. Electrification expanded from 21,000 km before 2014 to 68,000 km today, covering 99 percent of the broad-gauge network.

4. Dedicated Freight Corridors (2,741 km operational) allow high-capacity, electric freight movement, easing highway congestion.

5. Solar installations at stations and depots power operations with renewable energy; hydrogen-powered train trials are underway on routes like Jind–Sonipat.

6. Improved rail efficiency boosted India's rank to 38th out of 139 on the World Bank's Logistics Performance Index 2023—up 16 places since 2014.

7. With accelerated electrification and modal shift, Indian Railways is on track to achieve net-zero Scope 1 emissions by 2025, supporting India's 2070 net-zero goal.

FOOD FOR TIGER-Indian Express Editorial

Environment

Easy Explanation

India saw its tiger numbers plummet to around 1,400 in 2006, but conservation efforts have since boosted the population to over 3,600 by 2023. However, a new study highlights that in some states—Telangana, Chhattisgarh, Jharkhand, and Odisha—the wild prey (like deer, sambhar, and Indian bison) that tigers depend on is declining. In poorer districts where these reserves are located, locals often resort to trapping and bushmeat hunting, which reduces prey numbers and sometimes harms tigers themselves. Simply breeding prey in protected enclosures can help in the short term, but herbivores raised this way lack natural defenses and cannot sustain tiger populations indefinitely. The real solution lies in improving habitat quality and making local communities active partners in conservation—linking better livelihoods to wildlife recovery so that poaching decreases and tigers have enough food without straying into villages.

Key Takeaways

1. **Prey Decline in Key States**
   • Tiger numbers have fallen in reserves like Guru Ghasidas, Indravati, and Udanti–Sitanadi (Chhattisgarh), Similipal and Satkosia (Odisha), and Palamau (Jharkhand).
   • Surveys show populations of chital, sambhar, and Indian bison are decreasing, threatening the tigers' primary food source.

2. **Link between Poverty and Poaching**
   • These reserves are located in some of India's poorest districts, where bushmeat consumption is common.
   • Indiscriminate traps and snares used to catch ungulates often kill both prey and predators, worsening the prey shortage.

3. **Short-Term Breeding Is Not Enough**
   • On-site ungulate breeding in predator-proof enclosures can temporarily boost prey numbers.
   • However, herbivores raised in protected pens lack natural anti-predator behaviors and cannot sustain a wild prey base over time.

4. **Importance of Habitat Quality**
   • Some areas with declining tiger and prey numbers still retain good-quality forests.
   • Restoring and protecting these forests is essential so wild ungulates can reproduce naturally and support tiger populations.

5. **Need for People-Centric Conservation**
   • Socioeconomic improvements—such as alternative livelihoods, eco-tourism, and community incentives—reduce dependence on bushmeat hunting.
   • When local communities benefit directly from wildlife tourism and conservation, they are more likely to protect both prey and predators.

6. **Challenges and Opportunities**
   • Left-wing extremism has declined in affected areas, making it easier to implement community programs and improve conservation enforcement.

• Strengthening law enforcement, offering livelihood support, and involving villagers in habitat restoration can all help rebuild the prey base.

7. **Long-Term Vision for Tiger Recovery**
   • A holistic approach—combining habitat improvement, community engagement, and targeted breeding—will provide a stable prey population.
   • Only by linking biodiversity recovery to socioeconomic uplift can India ensure tigers no longer stray from reserves in search of food and human-wildlife conflicts drop.

What Dhaka needs-Indian Express Editorial

International relations

Easy Explanation

Bangladesh's interim government, led by Muhammad Yunus, won broad support to push reforms after major political unrest in 2024. However, its decision to ban the Awami League and put ex-prime minister Sheikh Hasina on trial in her absence has sparked fears that revenge politics is undermining its credibility. A United Nations fact-finding report found that up to 1,400 people may have been killed during protests in mid-2024, with security forces using lethal weapons under political direction. The interim government quickly amended the law governing its International Crimes Tribunal (ICT), but key fair-trial protections—especially for trials in absentia—remain missing. Critics worry the ICT cannot conduct truly independent proceedings. While some argue that waiting can open new paths to justice as power dynamics shift, the absence of a neutral election-time caretaker government has removed an important safeguard against partisan rule. Restoring a caretaker mechanism and strengthening constitutional checks would help ensure accountability, fair trials, and lasting political reform.

Key Takeaways

1. **Erosion of Interim Government's Goodwill**
   • Initially backed by major parties, the army, and student leaders, the interim administration's decision to ban the Awami League and try Sheikh Hasina in absentia has eroded trust.
   • Such moves contribute to "revenge politics" rather than constructive reform.

2. **UN Fact-Finding Report on 2024 Protests**
   • The UN human rights office concluded that up to 1,400 people died between July 1 and August 15, 2024, during large protests.
   • Security forces used military rifles and metal-pellet shotguns, actions "coordinated and directed" by political and security leadership to suppress dissent.

3. **Controversial In Absentia Trial**
   • Bangladesh's ICT is a domestic court; under the Rome Statute (to which Bangladesh is party), accused individuals must be present at trial.
   • Trying Hasina in her absence violates this principle, raising serious fair-trial concerns.

4. **Partial Amendments to ICT Law**
   • The interim government amended the ICT Act following UN criticism but did not fully address due-process issues—particularly the lack of protections for absent defendants.

• Ongoing legal and procedural gaps cast doubt on the tribunal's independence and fairness.

5. **Justice Delayed vs. Justice Denied**
   • While some argue that waiting for conditions to improve can open new avenues for accountability, war crimes and crimes against humanity carry no statute of limitations.
   • The example of John Demjanjuk—convicted decades after the Holocaust—shows that delays do not preclude fair trials when political obstacles fade.

6. **Historic Role of Caretaker Governments**
   • Bangladesh's pre-2008 caretaker system ensured a neutral interim administration before elections, preventing misuse of power by incumbents.
   • The Awami League abolished this institution after winning the 2008 election, removing a key check on partisan politics.

7. **Path Forward: Restoring Constitutional Safeguards**
   • To rebuild confidence, Bangladesh should reinstate an election-time caretaker government with clear guardrails.
   • Strengthening independent institutions—like the judiciary and election commission—will help secure fair trials, genuine accountability, and lasting democratic reform.

Is global warming becoming a distraction?-The Hindu text and context

Environment

Easy Explanation

Long-term climate models rely on guesses about future emissions, energy technologies, and policies, making projections beyond 2050 highly uncertain. Focusing on global average temperature thresholds (like 1.5 °C or 2 °C) helps set global goals but does not tell us where and when specific climate disasters—such as floods, heatwaves, or droughts—will strike. Meanwhile, communities already face severe weather events that require immediate action: accurate short-term forecasts, early warnings, and resilient infrastructure. By improving local disaster preparedness now—upgrading drainage systems, reinforcing buildings, and ensuring forecasts reach the last mile—we can reduce loss of life and property regardless of how much the planet warms by 2100. In other words, while cutting greenhouse gases remains vital, focusing too much on distant temperature targets risks sidelining urgent measures needed to tackle disasters unfolding today.

Key Takeaways

1. **Long-term model uncertainties**
   Projections past mid-century depend on speculative scenarios about future societies, making estimates of 1.5 °C or 2 °C warming inherently uncertain.

2. **Global mean temperature limits have limited local relevance**
   A few tenths of a degree difference in the global average does not reveal which regions will suffer severe floods, heatwaves, or storms.

3. **Immediate disaster risks are rising**
   Extreme weather events—heatwaves, heavy rainfall, droughts—are already becoming more frequent and intense, driving up insurance losses and human suffering year after year.

4. **Early warning systems save lives**
   Accurate forecasts a few days to weeks in advance give communities time to evacuate, protect crops, and safeguard infrastructure; improving these systems is critical.

5. **Resilient infrastructure is essential**
   Investing in flood-resistant roads, heat-tolerant buildings, and robust water management yields immediate benefits, reducing vulnerability regardless of future global warming.

6. **Adaptation must go hand in hand with mitigation**
   While reducing greenhouse gas emissions is vital for the long run, equal resources should be devoted now to strengthen emergency preparedness and local resilience.

7. **Accountability and feedback loops matter**
   After a disaster, it is crucial to evaluate whether forecasts were accurate, whether warnings reached the right people, and where preparation failed—then correct those gaps quickly.

Has the environmental crisis in India exacerbated?-The Hindu text and Context

Environment

Easy Explanation

Over the past decade, India's environmental challenges—carbon emissions, biodiversity loss, and pollution—have worsened. Coal still provides about 70 percent of electricity, driving CO_2 emissions from 2.33 billion tonnes in 2015 to 3.12 billion tonnes in 2024. Forests are cleared for infrastructure and mining, while intensive farming replaces diverse habitats. Cities like Delhi suffer severe air pollution, and rivers such as the Ganga and Yamuna remain polluted due to untreated sewage, industrial waste, and unmanaged solid waste (only 20 percent of 62 million tonnes is processed). Climate impacts—more intense monsoons, floods, heatwaves, and droughts—hit vulnerable communities hardest. To reverse these trends, India must shift rapidly to renewables, enforce forest-and pollution-control laws, adopt ecological farming, overhaul waste management, and hold corporations accountable. Developed nations must provide climate finance and technology. Community-based conservation and decentralized renewable projects can help align economic growth with ecological sustainability.

Key Takeaways

1. **Rising Emissions**: India's CO_2 output grew nearly 34 percent from 2015 to 2024 due to continued coal dependency and industrial expansion.

2. **Deforestation**: Forest clearances for roads, mines, and dams endanger biodiversity hotspots like the Western Ghats and northeast.

3. **Agricultural Impacts**: High-input monocultures degrade soil, pollute water, and reduce habitat diversity.

4. **Persistent Pollution**: Delhi consistently ranks among the world's most polluted cities; major rivers suffer from untreated waste.

5. **Climate Vulnerability**: Extreme weather events—intensified monsoons, floods, and heatwaves—disproportionately affect India's poorest.

6. **Policy Reforms Needed**: Rapid clean-energy transition, strict pollution regulations, carbon pricing, and "green compliance" standards for corporations are essential.

7. **Local and Global Action**: Decentralized renewables and community conservation must be paired with international climate finance and technology transfer for a sustainable development path.

The seeds of sustainability for India's textile leadership-The Hindu Editorial

Economy

Easy Explanation

India's textile industry is one of the world's largest but faces challenges from geopolitical shifts, supply-chain fragmentation, and price swings. To secure long-term competitiveness and global leadership—especially as companies seek alternatives to China—it must embrace sustainability at every stage. Key strategies include regenerative farming of cotton to improve yields, restore soils, and engage rural communities; tech-driven traceability to prove authenticity and meet eco-conscious consumer demands; and product circularity to reduce waste, extend lifecycles, and recycle factory scraps. By weaving these practices into farming, manufacturing, and design, India can strengthen its "Make in India" vision, attract new trade opportunities under agreements like the India-UK FTA, and create millions of green jobs.

Key Takeaways

1. Regenerative Farming Transforms Raw-Material Sourcing
• Programs in states like Maharashtra train cotton farmers in soil-building, cover crops, and minimal chemicals.
• Over 6,000 farmers in Aurangabad have seen better yields, lower input costs, and more climate resilience.
• Regen farming connects farmers with certification bodies and global brands, boosting incomes and ensuring traceable, eco-friendly cotton.

2. Traceability Builds Brand Credibility
• Modern AI and blockchain tools let brands document every step—from seed to garment—to prove ethical sourcing.
• Over 37% of consumers prioritize sustainability and traceability when buying textiles.
• Initiatives like Kasturi Cotton showcase India's transparency; the upcoming India-UK Free Trade Agreement can amplify these strengths in Europe.

3. Product Circularity Reduces Waste

• India generates about 8.5% of global textile waste; circularity aims to redesign products for longevity, recyclability, and biodegradability.

• Factory scraps can be reengineered into new fabrics, and end-of-life garments returned to soil or recycled into fibers.

• A circular economy fosters innovation, creates jobs, and lowers dependence on virgin raw materials.

4. "China Plus One" Opportunity

• As global buyers diversify beyond China, India can capture market share by offering a sustainable, traceable supply chain.

• Aligning with climate goals and technology—rather than inputting volume alone—differentiates India, making it a preferred partner for brands seeking ethical alternatives.

5. Aligning with Consumer Values

• Eco-conscious buyers in Europe and North America demand proof of fair labor practices, minimal chemical use, and low-carbon footprints.

• Traceability narratives and certifications (e.g., organic, fair trade) help Indian firms command better prices and access premium segments.

6. Policy and Collaboration Are Critical

• Government support—such as pilot projects on over one million hectares of regenerative farmland—is already rolling out, but broader incentives are needed for traceability technology adoption and circular infrastructure.

• Public-private partnerships can fund research into low-impact dyes, plastic-free packaging, and new recycling machinery.

7. Future-Proof Growth and Job Creation

• The textile sector could reach $350 billion by 2030 and add 35 million jobs if it integrates climate-smart methods and digital innovation.

• Prioritizing sustainability transforms textiles from a volume-based business into a value-driven engine, ensuring resilience against supply-chain shocks and evolving consumer expectations.

Exposomics for better environmental health-The Hindu Editorial

Environment

Easy Explanation

India faces a heavy disease burden from environmental exposures—air and water pollution, chemicals, noise, and more—that current methods only partly capture. "Exposomics" measures all of a person's exposures over their lifetime (pollutants, diet, stress, social factors) and examines how these interact with genetics and biology to cause disease. By combining wearable sensors, untargeted chemical tests in blood or urine, human organ–chip studies, and AI-driven data analysis, exposomics can reveal hidden risks—like how mixed pollutants plus poor diet trigger heart disease or diabetes. Building centralized data platforms and investing in long-term exposure monitoring will allow India to design holistic prevention strategies, target interventions where they matter most, and reduce escalating health costs linked to environmental hazards.

Key Takeaways

1. **High Environmental Disease Burden**
   • In India, nearly 3 million deaths yearly (and 100 million DALYs) are linked to environmental and occupational risks—air pollution, unsafe water, industrial chemicals, and lead exposure.

• Over half of noncommunicable diseases (heart disease, stroke, COPD, lung cancer, asthma, diabetes, kidney disease) are driven by environmental factors.

2. **Limitations of Current Assessments**
   • The Global Burden of Disease study only includes about 11 environmental risk categories, missing many chemicals, microplastics, noise, and complex mixture effects due to scarce human data.
   • Single-risk assessments fail to capture how exposures interact with genetics, metabolism (e.g., high blood pressure), behavior (e.g., smoking, diet), and socioeconomic status.

3. **The Exposome Concept**
   • Defined as the sum of all exposures—physical, chemical, biological, and psychosocial—an individual experiences over their lifetime and how these interact with internal factors (genes, epigenetics, physiology) to influence health.
   • Aims to perform Exposure-Wide Association Studies (EWAS) analogous to Genome-Wide Association Studies (GWAS) for discovering novel environment–disease links.

4. **Key Exposomic Tools and Technologies**
   • **Wearable Sensors**: Real-time personal monitoring of air pollutants, noise, and other environmental factors.
   • **Untargeted Biomonitoring**: Broad chemical screening in blood, urine, or saliva to detect thousands of compounds without preselecting targets.
   • **Organs-on-a-Chip**: Miniature human-tissue models that mimic organ functions to study mechanistic biological responses to exposures.
   • **Big Data and AI**: Integrate diverse datasets—sensor readings, biomarker levels, medical records, genomics, demographics—to identify patterns and predict disease risk.

5. **Data Gaps and the Need for Centralized Repositories**
   • India lacks interoperable platforms for long-term exposure and health data sharing.
   • Building harmonized, accessible data ecosystems is critical to support exposomic research and policy translation.

6. **Mainstreaming Exposomics in Public Health**
   • Exposomic frameworks enable more accurate predictive models for chronic diseases by accounting for real-life mixed exposures and social determinants.
   • Precision public health interventions—like targeted clean-air zones or nutrition programs—can be designed using exposomic insights to address high-risk communities.

7. **Policy and Equity Implications**
   • Exposomic data can inform stricter regulations on industrial emissions, chemical usage, and waste management by identifying the most harmful exposure combinations.
   • Revealing how low-income or marginalized groups face higher cumulative exposures highlights environmental inequities and guides resource allocation.
   • Strategic investments in exposome research and infrastructure promise cost-effective prevention, reducing health-care expenditures and promoting health equity over the long term.

Falling short-The Hindu Editorial

Science and technology

Easy Explanation

In June 2025, India allowed EV makers to import up to 8,000 fully built cars at a 15 percent duty if they invest about ₹4,150 crore over three years and reach 25 percent domestic value addition rising to 50 percent within two more years. While this boosts local manufacturing, it does not guarantee technology transfer especially for batteries. China's earlier strategy of mandatory joint ventures, declining import duties, and about 230 billion dollars in subsidies forced battery technology sharing and made it the world's leading EV market. To replicate that success, India should require foreign EV companies to form joint ventures with domestic firms to secure vital battery know-how rather than simply repurposing internal combustion engine vehicle parts.

Key Takeaways

1. Concessional imports versus technology gaps
   • A 15 percent import duty applies to 8,000 EVs per year if firms invest ₹4,150 crore and achieve 25 to 50 percent domestic value addition.
   • The current policy mainly leverages existing internal combustion engine vehicle components and does not address true EV battery technology.

2. China's proven model
   • Since 2009, China mandated joint ventures and cut import duties while investing about 230 billion dollars in EV subsidies and infrastructure.
   • This approach forced foreign firms to transfer battery and EV know-how, leading to China's global leadership.

3. Need for joint ventures
   • To secure essential battery technology, India should require foreign EV makers to partner with local firms.
   • Over time, these partnerships can evolve into fully indigenous battery manufacturing.

4. Strategic imperative
   • Without genuine technology transfer, Indian EVs will remain costlier and less competitive.
   • Deep battery know-how is crucial for rapid EV adoption and transport decarbonization.

6th June 2025

'Muslim ban' to US security: Trump's no-entry signs, 2017-25-Indian Express Explained

International relations

Easy explanation

Trump's new travel order: Starting 9 June 2025, the United States will not issue new visas to people from 12 countries such as Afghanistan, Iran and Somalia. Seven other countries, including Cuba and Venezuela, face lighter limits. The White House says their identity checks are weak, many visitors overstay, and some

places shelter terrorists. People who already hold a valid U.S. visa or a green card can still enter. The goal is to look tougher on security and immigration while trying to write the rules so courts will allow them.

Ayushman Bharat in Jharkhand: The state's hospitals have not been paid about ₹190 crore for treating poor patients under the Ayushman Bharat health-insurance plan. Two problems block the money. First, 212 hospitals are under investigation for creating fake patients and inflating bills, so their payments are frozen. Second, a new online payment portal (HEM 2.0) has software glitches, slowing reimbursements even for honest hospitals. About 28 lakh enrolled families risk losing cash-free treatment if more hospitals stop accepting the scheme.

Key takeaways

1. Scope: Twelve nations face a full U.S. visa stop; seven get partial limits.

2. Exemptions: Current visa-holders and U.S. residents keep their travel rights.

3. Legal strategy: Officials rely on "data-based" risks to defend the ban in court.

4. Political context: The order follows a Colorado bombing and fits Trump's broader hard-line stance on immigration.

5. Jharkhand's crunch: Unpaid hospital bills threaten Ayushman coverage for lakhs of poor families.

6. Fraud probe: Payments to 212 hospitals are frozen until investigators finish checking "ghost beneficiaries."

7. Tech hurdle: A new portal lacking key filters delays all other claims.

8. Next steps: The state promises to clear dues for unflagged hospitals and penalise confirmed fraud, but service gaps may widen if reimbursements stay stuck.

Hydrology of the Brahmaputra-Indian Express Explained

Geography

Easy Explanation

Chinese dams on the upper Brahmaputra (Yarlung Tsangpo) are unlikely to cut the river's overall flow inside India, because most of its water is produced after the river enters Arunachal Pradesh. Rain-heavy monsoon clouds from the Bay of Bengal drench the basin; official Indian analyses show that although only about one-third of the basin lies in India, more than 80 per cent of the annual runoff is generated there. The planned 60 GW Medog dam in Tibet and several smaller run-of-river projects are far upstream and designed mainly for power, with little long-term storage. They could, however, alter the day-to-day timing of water releases, raise flood or low-flow risks if reservoirs are mis-operated, and affect sediment and ecology. Mitigation options for India include building strategic

storage (e.g., Upper Siang project), strengthening real-time data sharing with China, and conducting detailed scientific studies to prepare adaptive, basin-wide management plans.

Key Takeaways

1. MAJORITY OF FLOW IS INDIA-MADE
   • Heavy monsoon rainfall and dozens of large tributaries in Arunachal Pradesh and Assam contribute roughly 65–80 % of the Brahmaputra's annual water; Tibet's arid plateau supplies the rest, mostly as snow- and glacier-melt.

2. TYPE OF CHINESE DAM MATTERS
   • Existing and announced Chinese projects upstream are "run-of-river" hydropower schemes that pass water quickly; they store little and thus cannot withhold large volumes for long periods.

3. MEGADAM AT MEDOG
   • The proposed Medog hydropower station near the Great Bend will dwarf today's dams but is still expected to have limited storage. Its main downstream effects would be on daily flow patterns and sediment load, not total yearly volume.

4. POTENTIAL RISKS
   • Sudden peaking releases, emergency drawdowns, or accidental dam failures could intensify floods. Conversely, reduced releases in the dry season could trim winter flows used for irrigation and ecology.

5. FLOOD-MITIGATION ARGUMENT
   • Because Assam's recurrent floods are driven by intense local rainfall, a moderate temporary reduction in peak inflows from Tibet might even lower flood peaks in some years.

6. ADAPTIVE MEASURES FOR INDIA
   • Develop upstream buffering reservoirs inside India (e.g., Upper Siang, Subansiri); expand basin-scale forecasting; and agree on transparent reservoir-operation rules with China.

7. DATA-SHARING NEEDS
   • Timely exchange of river-level, reservoir-operation and weather data is critical for disaster preparedness; India should push for binding protocols rather than ad-hoc seasonal sharing.

8. INDUS AND SUTLEJ PARALLEL
   • Chinese projects on the upper Indus and Sutlej could alter daily flow patterns, but large Indian reservoirs like Bhakra give India room to absorb such variations, limiting long-term impact on supplies and hydropower generation downstream.

State of the ungulates:why health of tiger is dependent on that of its prey-Indian Express Explained

Environment

Easy Explanation

Ungulates—hoofed mammals such as chital, sambar, wild pig, nilgai, gaur and various antelopes—form the primary prey base for India's 3,600-plus tigers. A new nationwide assessment that drew on 2022 tiger-census data shows healthy ungulate numbers in Uttarakhand, the Western Ghats, central India and parts of the Northeast, especially within well-protected tiger reserves. In contrast, Odisha, Jharkhand and Chhattisgarh report sharp declines, linked to habitat loss, forest fragmentation, mining, infrastructure expansion and subsistence hunting. Species with narrow habitat needs—hog deer, swamp deer (barasingha), wild buffalo and pygmy hog—are most vulnerable. When prey densities fall, tigers turn to livestock, increasing human-wildlife conflict. Areas with depleted prey cannot absorb dispersing tigers from high-density states such as Madhya Pradesh and Maharashtra. Conservation success therefore hinges on restoring natural grasslands, wetlands and forest corridors, curbing hunting, and regulating development projects that break habitat continuity.

Key Takeaways

1. Prey equals protection
   • Tigers thrive only where ungulates are abundant; reduced prey pushes big cats toward villages and livestock.

2. Regional contrasts
   • Core reserves still hold robust chital, sambar and gaur populations, but adjoining sanctuaries and forest divisions lag behind in protection and prey density.

3. Habitat fragmentation
   • Roads, rail lines, power corridors and mining blocks slice through forests, isolating small ungulate populations and eroding genetic diversity.

4. Species at greatest risk
   • Grassland- and wetland-dependent species—hog deer, swamp deer, wild buffalo, pygmy hog—are shrinking fastest because their specialised habitats are being drained, farmed or built over.

5. Human dimensions
   • Crop-raiding by nilgai and wild pig rises when natural forage disappears, adding another layer of conflict and prompting retaliatory actions.

6. East-central opportunity
   • Odisha, Jharkhand and Chhattisgarh still contain sizeable forest tracts. Restoring prey here is vital for future tiger range expansion and for easing pressure on saturated reserves elsewhere.

7. Recommended actions
   • Secure and reconnect grassland–wetland mosaics, control illegal hunting, manage livestock grazing, realign or modify linear infrastructure, and create community-based incentives to safeguard ungulates.

FromOperationSindoortoSpider'sWeb,newtechnologieshavechangedthebattleground.Whatdoesthismeanforthefutureofconflict?-Infantry needs an upgrade-Indian Express Editorial

Science and technology

Easy Explanation

Drones—especially First-Person View (FPV) models—have become the modern equivalent of the World War I machine gun, making infantry in open formations extremely vulnerable. FPV drones provide live camera feeds for precise reconnaissance and strikes, and their low cost lets armies deploy them in large numbers. This has forced infantry to shift tactics: they must operate in small, dispersed teams; rely on stealth, concealment and prepared defenses like trenches or bunkers; and integrate tightly with armor, artillery, engineers and air support. Anti-drone tools—jammers, smokescreens or special handheld weapons—are now essential at the platoon level. While robotics and AI will further enhance infantry capabilities, human soldiers remain indispensable for close-quarters combat, holding ground and making complex decisions.

Key Takeaways

1. FPV drones enable real-time spotting and precision attacks at ranges up to 30 km, dramatically changing reconnaissance and strike capabilities.

2. Infantry in concentrated formations or using unsecured communications face high casualties; dispersal and concealment have become critical survival tactics.

3. Effective combat now requires infantry, armor, artillery, engineers and air support to function as a single, combined-arms team that includes drone operators.

4. Platoon-level anti-drone measures—such as electronic jammers, smokescreens and dedicated handheld weapons—are necessary to defend against loitering munitions.

5. Small-unit tactics must focus on initiative and adaptability; junior leaders need training and authority to make rapid decentralized decisions under drone threat.

6. Prepared defenses—trenches, deep bunkers or underground positions—are vital for mitigating drone strikes and protecting troops from guided munitions.

7. While autonomous systems and AI will augment infantry, human soldiers remain crucial for ground seizure, close combat and ethical judgments that machines cannot handle.

FromOperationSindoortoSpider'sWeb,newtechnologieshavechangedthebattleground.Whatdoesthismeanforthefutureofconflict?-Ground force still first line of defence-Indian Express Editorial

Science and technology

Easy Explanation

Despite high-tech advances—drones, precision munitions, AI surveillance—the core role of ground forces (infantry and armour) remains vital. Unmanned systems can strike from afar and gather data, but they cannot hold territory, interact with civilians, or operate in harsh terrain like Siachen or Arunachal Pradesh. Infantry provides the physical presence needed for deterrence, counter-insurgency, and securing population centres. Armoured units still dominate open battlefields, exploiting breakthroughs and supporting combined-arms operations. India's unique geography and hybrid threats (e.g., narco-terrorism) make boots-on-the-ground essential. The future of land warfare lies in integrating new technologies—smart sensors, battlefield management systems, autonomous support vehicles—into traditional units, rather than replacing them. Well-equipped, well-trained soldiers and tank crews will continue to be the first line of defence.

Key Takeaways

1. Physical presence irreplaceable: No drone or missile can "hold" a ridge, win hearts and minds, or separate insurgents from civilians—tasks that require infantry on the ground.

2. Armour remains decisive: Tanks and mechanised units exploit breakthroughs, provide direct fire support, and serve as force multipliers when integrated with infantry and firepower.

3. Harsh terrain demands boots: High-altitude posts like Siachen or patrols along the Line of Control need acclimatised troops; unmanned systems cannot survive extreme weather or navigate complex mountain passes.

4. Hybrid threats require patrols: Counter-narcotics and counter-insurgency operations depend on physical patrols, checkpoints and community engagement that technology alone cannot deliver.

5. Combined-arms synergy: Future warfare hinges on merging infantry, armour, artillery, engineers, air support and drones into a cohesive battle network—technology enhances but does not replace ground troops.

6. Modernisation gap: The Army still fields many legacy platforms and lacks integrated sensors, active protection and secure communications; it must catch up with the Air Force and Navy.

7. Evolving, not obsolete: Infantry and Armoured Corps roles are changing—soldiers need smarter equipment (night vision, battle-management systems, robotic support) but remain the backbone of land warfare.

Is IBC an effective resolution tool?-The Hindu Text and Context

Economy

Easy Explanation

India's Insolvency and Bankruptcy Code (IBC), launched in 2016, created a single, time-bound process to resolve stressed companies within 330 days, shifting control from debtors to creditors. Over eight years,

creditors have recovered nearly ₹3.9 lakh crore—about 33% of admitted claims—while resolution plans typically fetch over 90% of a company's fair value. The Code has helped bring down gross NPAs from 11.2% in 2018 to 2.8% in 2024 and now accounts for almost half of all bank recoveries. Borrowers act sooner to avoid losing control, leading to over 30,000 pre-admission settlements worth ₹13.8 lakh crore. Despite these gains, tribunal backlogs and protracted litigation often push cases beyond the 330-day mark. Recent Supreme Court scrutiny of the Bhushan Power & Steel deal has reignited concerns about the finality of resolutions, underscoring the need for faster adjudication and stronger legal certainty once a plan is approved.

Key Takeaways

1. Why the IBC was needed
   • Earlier laws caused decade-long delays and sub-20% recoveries. The IBC unified and streamlined insolvency processes, giving creditors control.

2. Behavioural change among borrowers
   • Fear of losing control drives early settlements: over 30,000 cases (₹13.8 lakh crore defaults) were resolved before formal admission. Distressed firms see a roughly 3% reduction in borrowing costs.

3. Recovery and resolution metrics
   • For every five companies liquidated, about ten find a successful resolution. On average, plans recover 93% of a company's fair value, well above legacy regimes.

4. Persistent challenges
   • NCLT backlogs and appeals often extend timelines beyond the intended 330 days.
   • Post-approval litigation can unsettle successful bidders and financiers.
   • The Code needs clearer guidance on IP valuation, employee dues, and tech continuity to handle future business models.

5. Bhushan verdict and resolution certainty
   • Supreme Court reopening of a long-closed Bhushan Steel transaction affirms strict compliance standards but risks deterring bidders who fear late-stage reversals. Ensuring legal finality after plan approval is crucial for investor confidence.

6. Way forward
   • Expand tribunal capacity, introduce pre-pack schemes for mid-sized cases, and establish legal safe harbours to protect reasonable commercial decisions from endless challenges.

What is new in Ladakh's govt. job reservation policy?-The Hindu text and Context

Polity

Easy Explanation

On June 3 2025 the President formally issued four new regulations for the Union Territory of Ladakh. Together, they set aside 85 per cent of government jobs for Ladakh's own residents and add a 10 per cent quota for Economically Weaker Sections, taking total reservation to 95 per cent. A tehsildar will now

grant domicile certificates; outsiders can qualify for a 5 per cent share only if they can show 15 years of continuous residence after 31 October 2019. One-third of the seats in the Leh hill council will rotate among women, and five official languages—English, Hindi, Urdu, Bhoti and Purgi—are recognised. These measures answer long-running protests by Ladakhi groups seeking safeguards lost when Article 370/35A were revoked. While the job issue is settled, local bodies say they will keep pressing for Sixth-Schedule tribal autonomy, full statehood, separate Lok Sabha seats for Leh and Kargil, and protection of land and resources.

Key Takeaways

1. New Job Quotas
   • 85 % posts reserved for Ladakh domiciles; 10 % EWS adds up to a 95 % total.

2. Domicile Rules
   • Tehsildar issues certificates; non-locals need 15 years' residence since 31 Oct 2019 to access the remaining 5 % jobs.

3. Women's Representation
   • At least one-third of Leh hill-council seats will be reserved for women on a rotating basis.

4. Official Languages
   • English, Hindi, Urdu, Bhoti and Purgi gain formal status across the U.T.

5. Background of Protests
   • Concerns over land and jobs after the 2019 state reorganisation led to the formation of the Leh Apex Body and Kargil Democratic Alliance, uniting Buddhist and Muslim groups.

6. Outstanding Demands
   • Local leaders will keep pursuing Sixth-Schedule inclusion, statehood, two separate Lok Sabha seats, and stronger land-sale restrictions.

7. Next Steps
   • The Union Home Minister has promised continued dialogue; civil groups plan to press remaining issues in upcoming negotiations.

Should India amend its nuclear energy laws?-The Hindu Editorial

Economy

Easy Explanation

India wants to raise nuclear-power capacity from 8 GW to 100 GW by 2047. To do that it may amend two laws—the Civil Liability for Nuclear Damages Act 2010 and the Atomic Energy Act 1962—to let private and foreign companies build and run reactors. Supporters (such as analyst Ashley Tellis) argue that the present liability law makes suppliers carry an open-ended risk, so Western firms stay away; without their money and technology India cannot scale up quickly. Critics (such as D. Raghunandan) reply that investment, not liability, is the real bottleneck: global suppliers themselves are shrinking, and no

evidence shows that easing liability will unleash big funds. They also warn that shifting risk from suppliers to taxpayers echoes the Bhopal gas tragedy and may discourage rigorous safety. Even if the law changes, India must still resolve high capital costs, uncertain technology-transfer terms and the economics of new small modular reactors.

Key Takeaways

1. Present law channels most accident liability to suppliers, deterring foreign entry.

2. Amendments would shift or cap supplier liability, aiming to attract U.S., French and Japanese firms.

3. Critics doubt investors will rush in: global nuclear construction is sluggish except in China.

4. High capital costs and untested assembly-line production make small modular reactors a financial gamble.

5. Technology transfer will depend on each supplier's profit calculus and home-government export rules.

6. India's own suppliers have already balked at open-ended liability; reforms could revive stalled domestic projects.

7. Strong, independent regulation and quick-pay compensation funds under the CSC remain essential whatever the law says.

A Eurocentric reset, a gateway for India-The Hindu Editorial

International relations

Easy Explanation

The new agreement between the United Kingdom and the European Union to realign standards on food safety, fishing rights, defence, and border checks could simplify trade procedures and regulatory compliance for Indian exporters, especially in pharmaceuticals, textiles, and seafood. For policymakers, a cohesive U.K.–EU foreign policy offers India deeper collaboration on defence, climate, and Indo-Pacific security, strengthening its voice in global forums like the UN and G20. Indian firms must prepare for tighter common standards by upgrading production, while government schemes like RoDTEP and PLI can help offset costs. The large Indian diaspora stands to gain from more seamless mobility across the U.K. and EU, potentially opening semi-integrated talent corridors. Overall, India can leverage this "Eurocentric reset" to modernize its export infrastructure, deepen strategic ties with Western partners, and amplify leadership on issues ranging from climate finance to digital governance.

Key Takeaways

1. Unified regulations ease exports: Harmonised U.K.–EU rules on food safety, customs, and fisheries could reduce duplication for Indian exporters, cutting costs in sectors like pharmaceuticals and seafood.

2. Compliance challenges for SMEs: Small and medium-sized Indian firms may struggle with higher common standards, necessitating support through schemes such as RoDTEP and PLI to remain competitive.

3. Stronger strategic partnerships: A coordinated U.K.–EU approach on defence and Indo-Pacific security allows India to deepen trilateral and multilateral engagement with France, Germany, and the U.K. on technology transfers and joint development.

4. Amplified global influence: India can leverage a unified Western bloc to build broader coalitions on climate finance, digital infrastructure, and governance reforms, bolstering its leadership of the Global South.

5. Mobility and talent corridors: Renewed border coordination could ease partial movement of students and professionals between India, the U.K., and EU member states, benefiting education and skilled migration.

6. Export ecosystem modernization: To capitalize on smoother market access, India needs to upgrade port facilities, logistics, and quality-control labs while accelerating structural reforms in manufacturing.

7. Deepening diaspora engagement: With over a million Indian students in the U.K. and significant communities across Europe, streamlined visa processes and partnerships with Germany, France, and Portugal can strengthen India's soft power.

8. Urgent policy action: India must act swiftly—align export incentives, invest in supply-chain resilience, and articulate a clear diplomatic strategy—to seize opportunities created by this Eurocentric reset.

The university versus constitutionally protected speech-The Hindu Editorial

Polity

Easy Explanation

The essay argues that university teachers should freely express opinions without needing government or institutional permission. Drawing on thinkers like John Milton, John Stuart Mill, and William Blackstone, it emphasizes that free speech is key to human dignity, truth-seeking, and vibrant academic life. In India, courts are hearing cases about restrictions on campus speech, but the Constitution allows only "reasonable restrictions" (for security, public order, defamation, etc.). Any limitation must follow clear legal tests and show necessity and proportionality. Private universities are treated as "state" actors when they carry out public functions, so they cannot impose arbitrary speech bans. Universities must welcome diverse—and even unpopular—views to foster genuine scholarship. Ultimately, protecting constitutionally guaranteed speech on campus strengthens India's claim to ethical leadership and supports democracy by ensuring all opinions can compete in the marketplace of ideas.

Key Takeaways

1. Historical foundations of free speech:
   • Milton's Areopagitica (1644) opposed pre-publication licensing; Mill and Blackstone later emphasized open debate and a free press as pillars of liberty.

2. Constitutional protections in India:
   • Article 19(1)(a) guarantees freedom of speech and expression; Article 19(2) allows only "reasonable restrictions" for sovereignty, security, public order, decency, defamation, and foreign relations.

3. Restriction tests and proportionality:
   • Courts must apply the "doctrine of proportionality," ensuring any limitation is legitimate, necessary, and the least intrusive means possible (Anuradha Bhasin v. U.O.I., 2020). The state bears the burden of proving reasonableness.

4. Private universities as state actors:
   • Under Dr. Janet Jeyapaul v. S.R.M. University (2015), private institutions performing public functions must uphold free-speech norms and cannot arbitrarily punish faculty for lawful expression.

5. Distinguishing dissent from activism:
   • Expressing personal opinions—even dissent—does not automatically amount to "activism." Universities should not label or penalize teachers for sharing views within constitutional limits.

6. Academic freedom and truth-seeking:
   • Robust debate, including repugnant or unpopular ideas, is essential for discovering truth (Milton's analogy of truth overcoming falsehood in open combat). Suppressing speech stifles knowledge creation.

7. Universities as spaces for diverse ideas:
   • Overregulation and underfunding hamper academic inquiry. To produce scholarship akin to ancient Indian greats, universities must remain open forums where all viewpoints can compete.

8. Role of speech in democracy:
   • Democracy depends on informed choice; citizens need access to diverse perspectives to evaluate government actions. Free campus speech fosters self-fulfillment and public participation in governance.

9. Consequences of excessive restrictions:
   • When teachers fear reprisal, institutions lose credibility, students become passive, and the academic environment deteriorates, undermining India's global standing in press freedom (India ranks 151/180).

10. Call to action for institutions and courts:
    • Universities must support faculty dissent within constitutional bounds. Courts should consistently protect campus speech, aligning with past pro-speech judgments to maintain India's ethical leadership as a "Vishwaguru."

7th June 2025

THE TRAIN TO KASHMIR-Indian Express Explained

Economy

Easy Explanation

The Udhampur–Srinagar–Baramulla Rail Link is a new 272-kilometre train line that finally brings Kashmir Valley into India's rail network. Built over three decades through some of the world's most unstable and snow-bound mountain terrain, it required 36 tunnels (the longest nearly 13 km) and 943 bridges, including the world's highest railway arch bridge over the Chenab River. Two fast "Vande Bharat" trains now run between Katra and Srinagar in about three hours, cutting journey time in half and operating all year, even in deep winter. This direct link will make it much easier and cheaper to move people and goods—like apples, dry fruits and handicrafts—boosting tourism and helping Jammu & Kashmir's economy grow.

Key Takeaways

1. **Scale and Investment**
   A 272 km line built at a total cost of ₹43,780 crore as a national infrastructure priority.

2. **Engineering Feats**
   Includes 36 tunnels (longest 12.77 km), 943 bridges, the world's highest railway arch (359 m) and India's first cable-stayed rail bridge.

3. **All-Weather Connectivity**
   Two Vande Bharat trains link Katra and Srinagar in three hours throughout the year, soon extending to Jammu Tawi.

4. **Economic Boost**
   Faster, lower-cost transport for local products (apples, dry fruits, pashmina, handicrafts) to markets across India.

5. **Tourism and Integration**
   Easier access is expected to attract more visitors to Kashmir and strengthen its social and economic ties with the rest of the country.

OHIO BILLS THAT CAN CURB PROPERTY RIGHTS OF GREEN CARD HOLDERS-Indian Express Explained

International relation

Easy Explanation

Ohio lawmakers have proposed two bills that would bar non-citizens—including Green Card holders—from buying land within a 25-mile radius of military bases, power plants, water treatment facilities, pipelines, and major transport hubs. This zone effectively covers the entire state. Unlike similar laws in places like Florida or Texas, which target nationals of specific "adversary" countries, Ohio's bills would apply to all permanent residents regardless of origin. If passed in their current form, these measures would be unprecedented and likely challenged as unconstitutional under the 14th Amendment's guarantees of equal protection and due process for Green Card holders.

Key Takeaways

1. **Broad Restriction Zone**
   Prohibits land purchases within a 25-mile (≈40 km) radius of critical infrastructure and military sites, effectively covering most of Ohio.

2. **All Green Card Holders Affected**
   Unlike other states' laws targeting "adversary" nations, Ohio's bills encompass every lawful permanent resident, irrespective of their home country.

3. **Economic and Security Rationale**
   Framed as a national-security safeguard against "foreign influence," lawmakers cite the need to control sensitive areas.

4. **Contrast with Other States**
   States such as Florida, Texas, Montana, and Utah restrict only certain foreign nationals, whereas Ohio's approach is far more sweeping.

5. **Constitutional Challenge Ahead**
   Equal Protection and Due Process rights under the 14th Amendment may lead courts to strike down any law discriminating solely on immigration status.

USED IN COVID-19 SHOTS,mRNAMAY HELP DEFEAT HIV,SUGGESTS STUDY-Indian Express Explained

Science

Easy Explanation

Researchers in Australia have shown in a laboratory study that the same mRNA technology used in COVID-19 vaccines can be adapted to target HIV. By packaging instructions for molecules that wake up "sleeping" HIV hiding in cells, the mRNA forces the virus out of its hiding places—an essential first step toward eliminating it from the body. Although these results have only been demonstrated in lab dishes so far, they suggest mRNA could be a powerful tool not just for vaccines but for delivering precise therapies against diseases like HIV.

Key Takeaways

1. **mRNA for HIV Cure Research**
   Scientists used mRNA to encode molecules that coax dormant HIV out of hiding, a crucial move toward fully clearing the virus.

2. **Preliminary Lab Results**
   The technique has succeeded in cell-culture experiments but has not yet been tested in living animals or people.

3. **Broader Therapeutic Potential**
   Beyond vaccines, mRNA could deliver missing proteins or correct genetic defects in a range of diseases.

4. **Safety Profile**
   mRNA vaccines have been administered to millions worldwide, providing a solid understanding of their risks and reinforcing confidence in the platform.

5. **Next Steps**
   Further research—including animal studies and clinical trials—is needed to determine if this mRNA approach can safely and effectively lead to an HIV cure.

How Trump-Musk break-up can severely affect NASA's future space missions-Indian Express Explained

International relations

Easy Explanation

The public clash between President Trump and SpaceX founder Elon Musk threatens NASA's reliance on SpaceX for key missions. SpaceX's Crew Dragon is currently the only spacecraft NASA uses to ferry astronauts—and cargo—to the International Space Station (ISS). The upcoming Axiom-4 crewed mission, including India's Shubhanshu Shukla, depends on a Falcon 9 launch. NASA also plans to use SpaceX's Starship for future Artemis lunar missions. If Trump suspends contracts with Musk's companies over their tax-bill criticism, NASA could face multi-year delays in ISS rotations, Axiom flights, and lunar program schedules, forcing the agency to rebuild in-house capabilities or turn to less-ready alternatives like Boeing's Starliner.

Key Takeaways

1. **NASA's Dependence on SpaceX**
   Crew Dragon/Falcon 9 is currently NASA's sole reliable vehicle for crewed ISS missions and frequent cargo runs.

2. **Axiom-4 at Risk**
   Next week's private Axiom-4 mission—carrying four astronauts including an Indian national—relies on SpaceX hardware and NASA approval.

3. **Artemis and Starship**
   NASA's plan to return humans to the Moon in 2027 uses SpaceX's Starship; any contract suspension could push back Artemis timelines significantly.

4. **Limited Alternatives**
   Boeing's Starliner has only completed one troubled crewed flight, and without Crew Dragon NASA would struggle to maintain ISS operations.

5. **Potential Agency Shake-up**
   A contract cutoff might force NASA to rebuild its own launch systems or accelerate partnerships with other providers, causing years of program delays.

IN PURSUIT OF GROWTH-Indian Express Editorial

Economy

Easy Explanation

The Reserve Bank of India's June policy meeting surprised markets by cutting its repo rate by 50 basis points—bringing it down to 5.5%—and slashing the cash reserve ratio by 100 basis points to free up liquidity. With inflation muted around 3.2% and a likely good monsoon, the RBI has room to stimulate consumption and investment. However, it simultaneously shifted its stance from "accommodative" to "neutral," signaling a pause in rate cuts. While growth is still forecast at 6.5% for 2025–26, geopolitical tensions, trade uncertainties, and weather risks cloud the outlook. Going forward, the RBI is likely to adopt a wait-and-watch approach, letting recent rate and liquidity measures take effect before deciding on further action.

Key Takeaways

1. **Repo Rate Cut**
   The RBI trimmed its benchmark repo rate by 50 bps to 5.5%, marking a cumulative 100 bps reduction since February.

2. **Liquidity Boost**
   A 100 bps cut in the cash reserve ratio could release ₹2.5 lakh crore of primary liquidity by December 2025.

3. **Inflation Outlook**
   Retail inflation eased to 3.16% in April and is projected to average 3.7% in 2025–26, below earlier estimates.

4. **Stance Shift**
   Moving from "accommodative" to "neutral" suggests the RBI may pause further rate cuts and assess the impact of recent measures.

5. **Growth Risks**
   Despite a 6.5% GDP growth forecast, spillovers from geopolitical tensions, global trade, and weather pose downside risks.

Water management in India needs a new course-The Hindu Editorial

Geography

Easy Explanation

India's water challenges—from shrinking Himalayan glaciers to polluted rivers and over-exploited aquifers—stem from treating mountains, rivers, and coasts as separate systems. While global efforts now promote a "Source to Sea" (S2S) approach that links snow-melt, river flows, and coastal health in one continuum, India still manages water in fragmented silos: dams, groundwater boards, pollution regulators, and state borders. This has led to uneven access, rampant pollution, and groundwater stress threatening agriculture, drinking supplies, and livelihoods. Adopting S2S would integrate scientific analysis, cross-jurisdiction coordination, and stakeholder involvement from glacier to ocean—aligning with Sustainable Development Goals for clean water (SDG 6) and healthy seas (SDG 14).

Key Takeaways

1. **Fragmented Management**
   India's water bodies fall under multiple agencies and jurisdictions, resulting in uncoordinated policies and governance gaps.

2. **Source to Sea Principle**
   The S2S approach treats the hydrological cycle as a single system—glaciers, rivers, aquifers, and coasts—to address land-based pollution and resource use holistically.

3. **Serious Stress Indicators**
   Nearly 600 million people face water stress; 311 river stretches are polluted; and over-extraction means states like Punjab are withdrawing more groundwater than is replenished.

4. **Need for Integrated Policy**
   Despite national water policies and Jal Shakti initiatives, India lacks implementation of S2S frameworks that link targets for integrated water management (SDG 6.5) and reducing land-based marine pollution (SDG 14.1).

5. **Path Forward**
   Pilot S2S projects—such as nutrient management in Delhi's water bodies and land-use studies in the Indo-Gangetic basin—can demonstrate cross-sector coordination, scientific diagnostics, and inclusive stakeholder engagement.

Maintaining India's progress in food safety standards-The Hindu Editorial

Economy

Easy Explanation

India's food safety framework has transformed from a simple "adulterated or not" model under the 1954 PFA Act to a risk-based, science-driven system under the 2006 FSSAI. Today, maximum residue limits for pesticides, safe levels for additives, and contaminant thresholds align with global norms. However, India still lacks local toxicological data and total diet studies, so many standards rely on international assumptions that may not fit Indian diets. Risk communication remains technical—labels like the mandatory MSG warning for infants cause unwarranted fear. To sustain progress, India must generate home-grown research, simplify public messaging, and regularly update standards based on new science.

Key Takeaways

1. **Science-Based Regulations**
   FSSAI's shift to setting pesticide MRLs, additive ADIs, and contaminant limits mirrors international best practices.

2. **Evidence Gaps**
   Absence of India-specific toxicology and total diet studies weakens the scientific accuracy of safety standards.

3. **Communication Gaps**
   Technical units (ppm/ppb) and outdated labels—such as infant-unsafe MSG warnings—lead to consumer confusion and mistrust.

4. **Legacy Policies**
   Some outdated rules persist despite global consensus (e.g., MSG warnings), highlighting the need to retire obsolete regulations.

5. **Way Forward**
   Invest in localized research, train risk assessors continuously, simplify risk messages for consumers, update standards transparently, and engage stakeholders to build trust.

8th June 2025

What is the COVID-19 situation in India?: TH FAQ

Science Tech

EASY EXPLANATION

India has recently seen a rise in COVID-19 cases, following a similar trend in Southeast Asia. As of now, over 5,700 cases have been reported, but the situation isn't considered serious. Most patients have mild symptoms like cough, fever, sore throat, or fatigue—similar to a regular cold or seasonal flu.

Doctors are not alarmed because COVID-19 has now become an "endemic" illness, meaning it's likely to stay around in small waves, just like the flu. The currently spreading variant is related to the Omicron strain, which most people in India have already been exposed to. This prior exposure, combined with vaccines, has built good immunity in the population.

The new variants (like LF.7 and NB.1.8.1) are spreading fast but not causing severe disease. Hospitals are not under pressure, and most patients are recovering at home without needing COVID-specific medicines.

As for vaccines, India's massive vaccination drive gave over 220 crore doses of Covishield and Covaxin earlier. But now, vaccine stocks have expired and are unavailable. Experts and the government believe there is no need for a mass vaccination drive at this moment. Most people have "hybrid immunity"—from both vaccines and past infections—which is enough to prevent severe disease.

Still, vaccines might be needed for vulnerable people like the elderly or those with serious health issues. Currently, states like Kerala and Tamil Nadu are waiting for more data before deciding on new vaccination drives. If a new, more dangerous variant emerges, India is capable of restarting vaccine production quickly.

The Delhi High Court has asked the central government to prepare detailed guidelines on how to manage COVID going forward, especially around testing and sample collection.

The takeaway: Stay alert, maintain hygiene, and protect the vulnerable—but there is no need to panic or expect lockdowns. India is better prepared now than during the earlier waves.

KEY TAKEAWAYS

Current COVID-19 Situation

- India has reported a recent rise in COVID-19 cases, over **5,700 active cases**.
- The circulating strains are **Omicron sub-variants** (NB.1.8.1 and LF.7).
- Most symptoms resemble the **common cold or seasonal flu**.
- Cases are **mild**, with **no major hospitalisation spike**.

Medical Perspective

- Experts consider COVID-19 an **endemic** illness now—regular ups and downs expected.
- **R0 (transmissibility)** is not high enough to raise alarm.
- Patients are mostly treated symptomatically; **antiviral drugs rarely needed**.
- **Prior exposure and vaccines** offer good protection from severe illness.

Vaccine Position in India

- Over **220 crore vaccine doses** administered in past campaigns.
- Current stock has **expired**; **no mass vaccination planned**.
- Government and ICMR suggest **booster doses only on a case-by-case basis**.
- Vaccination may be needed again **if a dangerous mutation emerges**.

Priority Groups for Future Vaccination

- People **above 70 years**, **immunocompromised**, or with **co-morbidities**.
- Those who **missed vaccination or prior infection**.
- No current need for **children under 6 years**, unless high-risk.

Government and State Position

- No booster advocacy yet from most states due to **lack of data**.
- Kerala and Tamil Nadu are **neutral** on recommending boosters.
- The **Delhi High Court** has directed the Centre to finalize COVID SOPs.

Outlook and Advice

- **No need to panic**, but stay cautious.
- Basic preventive steps like **masking, hand hygiene, avoiding crowds** still important.
- India is equipped to **scale up vaccines quickly** if required in the future.

India's Giant Cosmic Leap: TH FAQ

Science Tech

What's this all about?

- **Group Captain Shubhangshu Shukla** is set to become the **first Indian astronaut to go to the International Space Station (ISS)** for a **14-day mission** aboard the **Axiom Mission (Ax-4)**.
- This mission marks a **milestone for India** in space exploration, especially in collaboration with **private players** like Axiom Space.

Mission Overview

- **Mission Name:** Axiom Mission 4 (Ax-4)
- **Operator:** Axiom Space (private company)
- **Launch Date: June 10, 2025**
- **Mission Duration:** 14 days aboard the ISS
- **Launch Site:** Kennedy Space Centre, Florida, U.S.
- **Crew Capsule:** SpaceX **Crew Dragon C213**
- **Launch Vehicle: SpaceX Falcon 9**
- **Agencies Involved:** ISRO, ESA, Poland, Hungary, and private space agency Axiom Space

India's Role

- **Group Captain Shubhangshu Shukla**
  - First **Indian Air Force pilot** to visit the ISS
  - First **Indian astronaut** to go to ISS through **a private mission**
  - Will conduct **scientific experiments** and **space outreach**

ISRO Payloads on Board

1. **Voyager Displays** – Study of computer screen impact in microgravity.
2. **Voyager Tardigrades** – Gene expression research for future deep space missions.
3. **Crop Seeds on ISS** – Study on how seeds grow and behave in space.
4. **Stemonauts** – Four STEM outreach activities for Indian students.
5. **Sprouts** – Effects of microgravity on plant growth.
6. **Space Microalgae** – Behavior of microalgae for food/fuel and life-support.
7. **Myogenesis** – Research on muscle weakening in space and treatments.
8. **Tissue Chips and Disease Model on ISS** – Studying brain diseases and finding drug responses.

Payload Details

- **Around 60 scientific studies and outreach activities**
- Representing **31 countries**, including India, U.S., Saudi Arabia, Hungary, Brazil, UAE

Crew Details

- **Shubhangshu Shukla (India)** – Pilot

- **Peggy Whitson (USA)** – Commander, veteran NASA astronaut
- **Sławosz Uznański (Poland)** – Mission Specialist
- **Tibor Kapu (Hungary)** – Payload Specialist

Significance for Gaganyaan

- The experience and exposure gained by Shukla is expected to be **crucial for India's upcoming Gaganyaan mission**.
- Collaboration with Axiom helps build **human spaceflight operational capability** for India.

Scientists detect heaviest proton emitter astatine-188: TH Science

Science

EASY EXPLANATION

A group of scientists from Finland and India, including researchers from IIT Roorkee, has discovered and measured the half-life of a very rare type of radioactive decay — **proton emission** — in a heavy element called **Astatine** (chemical symbol: At). Normally, radioactive atoms decay by releasing alpha, beta, or gamma particles, but sometimes (very rarely), they can also release a **proton**, which is one of the building blocks of an atom's nucleus.

The specific isotope (or version) they studied is **188At**, which means this atom has 85 protons and 103 neutrons. It was created in a laboratory by **bombarding silver with strontium ions**. Out of the different types of atoms formed during the experiment, scientists carefully isolated and identified 188At.

This 188At isotope lived for only **190 microseconds** (that's a very tiny fraction of a second!) before it released a proton and changed into another element, **187Polonium (Po)**. This chain of decay continues until a stable, non-radioactive element is formed.

The study is remarkable because it's the **first time such heavy proton emission was observed and analyzed in a lab**. Scientists used advanced machines and complex theories to confirm their findings. The theoretical models, developed in India and Portugal since 2008, also helped determine that the shape of this nucleus is **prolate** — shaped like a watermelon stretched from the top and bottom.

KEY TAKEAWAYS

Discovery

- Scientists detected **proton emission** from a rare isotope of Astatine: **188At**.
- This is the **heaviest proton emitter** ever observed.
- The study was published in **Nature Communications**.

Decay and Half-Life

- **188At decays** by emitting a proton to become **187Polonium**, which continues to decay into **stable lead (Pb)**.
- The **half-life of 188At is 190 microseconds** — indicating how fast it decays.

Experimental Method

- The isotope was produced through a **fusion-evaporation reaction** using **strontium ions and a silver target**.
- Detection was done using a **Recoil-Ion Transport Unit recoil separator**.

Scientific Significance

- **Proton emission is extremely rare** and difficult to observe.
- This is the **first time such a process was studied in a lab with this level of detail**.
- Requires **specialized facilities and precise theoretical models**.

Indian Contribution

- A team from **IIT Roorkee** contributed to **theoretical modeling** and interpretation.
- The shape of the 188At nucleus was found to be **prolate (elongated like a watermelon)**.
- **The shape of the nucleus affects how quickly it emits the proton.**

Global Collaboration

- Work involved institutions from **Finland, India, and Portugal**.
- The discovery advances our understanding of **exotic nuclear physics** and the behavior of heavy unstable elements.

Using bacteriophages to combat antimicrobial resistance: TH Science

Science

EASY EXPLANATION

When someone has an infection like a urinary tract infection (UTI), labs check which bacteria is causing it and test which antibiotics can kill it. But a growing problem is that **many bacteria are no longer responding to antibiotics** — they've become **resistant**. This is called **antimicrobial resistance (AMR)**, and it's silently killing nearly **5 million people a year globally**, a number expected to double by 2050.

Developing new antibiotics isn't profitable for pharma companies. Antibiotics are used for short periods and must be used cautiously to avoid resistance — unlike cancer drugs or chronic medications that make more money. So, **drug companies aren't investing much in antibiotic research**.

As an alternative, scientists are revisiting **bacteriophages** — viruses that **naturally kill bacteria**. They exist everywhere — in water, soil, your skin, and your gut. Though they were used about 100 years ago, antibiotics became the norm. But with AMR rising, phages are making a comeback.

Countries like **Georgia in Eastern Europe** have long used phages to treat infections like burns, UTIs, and ulcers. The process involves finding which phage works on a specific bacterial infection and then using it — either from a phage bank or lab-made (even genetically engineered) phages.

Western governments haven't officially approved phages as drugs, but patients in serious condition may get access through emergency or compassionate use. Belgium even allows pharmacies to make custom phage mixes.

Researchers now suggest a futuristic idea: create a **single device** that can take a sample, analyze it with **AI**, find the right phage, **build it inside the machine**, and **treat the patient instantly**. If this works, the **device, not the phage, would be regulated**, solving big hurdles in approval.

KEY TAKEAWAYS

The Growing Threat

- **Antimicrobial resistance (AMR)** is rising globally, causing ~5 million deaths annually.
- Without urgent solutions, this could **double by 2050**, creating a **silent pandemic**.
- Antibiotics are becoming ineffective as bacteria evolve to **resist them all**.

Why Pharma Is Not Interested

- **New antibiotics aren't profitable** — used for a short duration and sparingly.
- Drug development is slow; not enough new antibiotics are being made.

Enter Bacteriophages (Phages)

- **Viruses that kill bacteria naturally**; found in our environment and body.
- Were used a century ago but lost popularity due to antibiotics.
- Now being **rediscovered globally** as a promising solution to AMR.

Use and Customization

- Used to treat **wounds, UTIs, gut/respiratory infections**, etc.
- Two main types:
    - **Natural phages**: found in phage banks and selected to match the bacteria.
    - **Genetically engineered phages**: modified to kill more types of bacteria.

Regulation and Access

- **No Western government** has approved phages as official drugs yet.
- Can be accessed through:
    - **Compassionate use** (urgent, one-time patients),
    - **Special access** in emergencies,
    - **Magistral route** in Belgium (custom phages from pharmacies).

The Future Vision: AI-Powered Phage Device

- Belgian scientists propose an **automated device** that:
    - Isolates the bacteria,
    - Uses **AI** to identify the right phage,
    - **Synthesizes** the phage on the spot,
    - Delivers it directly to the patient.
- Device regulation would replace complex drug regulation.

Final Thought

- AMR is a **global emergency**, and solutions like **phage therapy and AI-driven devices** could be game-changers.
- The **Pirnay route** offers hope and innovation — ideal for microbiologists and researchers looking for **big-impact projects**.

9th June 2025

Stepping up Naxal fight, carrying on welfare push-Indian Express Explained

Governance

Easy Explanation:

In the first year of Modi 3.0, the government has taken strong steps in two major areas — fighting Naxalism and improving welfare schemes.

1. **Naxal Fight:**
   The government wants to end the Naxal problem by 2026. In Chhattisgarh, Jharkhand, and Odisha, many Maoists have been killed, including top leaders. Strong action, better roads, and good planning have helped. But Naxals can still attack, so the fight is not over.

2. **Welfare Schemes:**
   The *Ayushman Bharat* health insurance now covers **all Indians above 70 years**, no matter how rich or poor. This helps elderly people who often face health issues.

3. **Housing and Roads:**
   More houses will be built in villages till 2029 under *PM Awas Yojana*. Also, 25,000 villages will be connected with all-weather roads under *PMGSY-IV*.

4. **Digital Farming:**
   A new Digital Agriculture Mission has started to use technology for better crop planning and farm surveys.

Key Takeaways:

1. Naxal Operations:

- Target to end Naxalism by March 2026.
- Over 209 Maoists killed in 2025 (till May).
- Operations focused on Chhattisgarh, Odisha, Jharkhand.
- Security boosted with better roads and local police teams.

2. Health for Elderly:

- *Ayushman Bharat* now includes everyone aged 70+.
- Helps millions of elderly with free treatment up to ₹5 lakh/year.

3. Rural Housing Boost:

- 2 crore new rural homes under *PMAY-Gramin* by 2029.

- ₹34,000 crore already given to states.

4. Road Connectivity:

- *PMGSY-IV* to link 25,000 villages by 2028-29.

5. Digital Farming Push:

- ₹2,817 crore for crop surveys, digital tools, and public farm data.

Familiar problems linger,global uncertainties complicate picture-Indian Express Explained

Economy

Easy Explanation:

India's economy grew by **6.5% in 2024-25**, boosted by strong growth in agriculture and services. Some industries are doing better, but **private investments and consumption remain weak**. The government has tried several measures like tax cuts and spending on infrastructure to encourage growth, but companies are still **not investing much** because they feel **demand is not strong enough**.

The **RBI has cut interest rates** four times this year to help growth, but both the government and central bank may have **limited room for further action** now. Job growth is slow, household spending is low, and many factories are running below full capacity.

India is facing **global uncertainties**, like higher US tariffs, wars, and slowing economies in China and the US. These external problems, along with internal ones like low investment and slow reforms, make 2025 a **challenging year**.

Still, India's long-term growth potential is good, but **reforms, jobs, and skill-building need urgent focus**.

Key Takeaways:

1. GDP Growth & Sectors:

- India's GDP grew 6.5% in FY 2024–25.

- Agriculture and services did well; industry showed uneven recovery.

2. Weak Private Investment:

- Companies not expanding due to low consumer demand.

- Factory capacity stuck at 75% for over a decade.

- Gross Fixed Capital Formation stagnant at 25% since 2014.

3. Government & RBI Measures:

- RBI cut interest rates by 100 basis points in 2025.

- Corporate and income tax cuts given; capex push ongoing.

- Yet, **reform appetite is low** in 2025 despite fewer state elections.

4. Job & Income Worries:

- Salary growth, hiring lag behind corporate profits.

- A large number of new jobs (8 million/year) needed till 2030.

- Internship and skill schemes underperforming.

5. Global Headwinds:

- US tariffs, protectionism, wars, and slowdowns in US-China hurt trade.

- Defence spending may rise if tensions with Pakistan grow.

6. Opportunities Ahead:

- Global supply chain shifts can benefit India.

- Need to reduce trade barriers and invest in education & skilling.

- Deregulation and compliance easing could help business.

Complex challenges in chaotic Trump world-Indian Express Explained

International Relations

Easy Explanation:

In the past year, India has faced many **sudden changes in its neighbourhood and globally**. When Modi started his third term, things were relatively stable. But now, the world looks very different.

1. **Trump's Return**: Donald Trump returned as US President and created major global uncertainty. His **high tariffs**, **strict immigration rules**, and actions against **Indian students and universities**

have hurt India-US ties. India is under pressure to sign a trade deal with the US.

2. **China Border Thaw**: India and China **agreed to disengage troops** in eastern Ladakh and are trying to normalize relations (like restarting pilgrim yatra and flights). But over 50,000 soldiers are still deployed at the border.

3. **Bangladesh Crisis**: Sheikh Hasina's government fell after 16 years. She fled to India, and the new interim govt has **strained ties with India**. Hindus in Bangladesh have been attacked.

4. **Pakistan Terror Attack**: After a deadly attack on Indian tourists in Pahalgam, India responded with **military strikes**. China supported Pakistan with weapons during the confrontation.

Key Takeaways:

1. USA – Trump's Disruption:

- Returned as US President in Jan 2025.
- Imposed high tariffs, deported illegal immigrants including Indians.
- Cracked down on US universities and foreign students.
- India's diplomatic ties with the US became more difficult.

2. China – Border Cooldown:

- Disengagement at two key points in Ladakh.
- Steps to restore normal ties: Kailash Yatra, flights, visas, media exchange.
- But 50,000 troops remain at the border.

3. Bangladesh – Fall of Hasina:

- Sheikh Hasina ousted after mass protests.
- India gave her asylum; ties with new govt under Prof. Yunus strained.
- Rise in attacks on minorities and pro-India groups.

4. Pakistan – Terror & Response:

- After 26 Indian civilians were killed, India suspended Indus Waters Treaty, cancelled visas, and launched military strikes on terror camps.

- China's arms support to Pakistan was noted during the clash.

5. Diplomatic Outlook – Rough Road Ahead:

- Trump, Xi Jinping, and Pakistan's General Munir present challenges.

- India's **diplomatic balancing and national security will be constantly tested** in a chaotic global order.

RENEWABLE AND PROTECTED-Indian Express Editorial

Economy

Easy Explanation:

India is rapidly expanding its renewable energy, especially wind power, to meet its target of 500 GW non-fossil capacity by 2030. But **just installing more turbines isn't enough** — we must also **protect them from cyberattacks** and **adapt them to Indian conditions**.

A **false report from Pakistan** recently claimed that 70% of India's power was knocked out by cyberattacks. While untrue, it highlighted real concerns about how **digital attacks could harm energy systems**, especially wind farms controlled remotely.

To fix this, India is now planning new rules:

- **All wind turbine data must be stored in India**.

- **No foreign remote access** to Indian wind farms.

- Wind companies must **build R&D labs in India**, not just assemble parts.

- **Wind turbines must be designed for Indian climate** — heat, rain, salt air — not just European conditions.

- There's also a need for **cybersecurity audits** of software in turbines and solar systems.

Key Takeaways:

1. Growing Threat of Cyberattacks:

- Renewable energy assets, like wind farms, are **vulnerable to cyberwarfare**.

- A SCADA system hack could **shut down entire wind power sites** in seconds.

2. Data Sovereignty & Local Control:

- All turbine data must be **stored inside India**.

- No foreign remote control or monitoring allowed.

3. Domestic Innovation Focus:

- Wind equipment companies must build **R&D centres in India**.

- Move from "Made in India" to **"Engineered for India"**.

4. Design for Indian Conditions:

- India faces **extreme climates** (heat, humidity, voltage instability).

- Turbines must undergo **climate-resilience testing** before approval.

5. Software Security Gaps:

- Wind and solar equipment rely on **vulnerable software and firmware**.

- Mandatory **cyber audits** and hardware inspections needed.

6. Enforcement Weakness:

- Policy intent is strong, but **monitoring is weak**.

- Without proper checks, new rules may not be followed.

7. Regulatory Improvements Required:

- Existing guidelines must become **mandatory standards**, not optional.

- Certification, fail-safes, and emergency support protocols needed from vendors.

[FIGURES OF HOPE-Indian Express Editorial]

Sociology

Easy Explanation:

For years, India's poverty data has been unclear due to missing or outdated surveys. But now, **new household consumption surveys from 2022-23 and 2023-24** have provided fresh, reliable figures. These show a **sharp drop in extreme poverty** — from **27.1% in 2011-12 to just 5.3% in 2022-23**, even though the poverty line was made stricter (raised to $3/day from $2.15).

In numbers, around **344 million people** were extremely poor in 2011-12. By 2022-23, that dropped to **75 million**.

Even when using a **higher poverty line ($4.2/day)** for lower-middle-income countries, poverty fell from **57.7% to 23.9%**.

The **multidimensional poverty** (which looks at health, education, and living standards) also dropped sharply from **55% in 2005-06 to 15% in 2019-21**.

Inequality has also declined, based on consumption data, but income-based inequality might still be higher. These new datasets should now help the government design better, more targeted policies.

Key Takeaways:

1. Sharp Decline in Extreme Poverty:

- Fell from **27.1% (2011-12)** to **5.3% (2022-23)**.
- Poverty line used: **$3/day** (higher than earlier $2.15).
- Number of poor dropped from **344 million to 75 million**.

2. Even at Higher Poverty Line:

- Using **$4.2/day**, poverty fell from **57.7% to 23.9%**.

3. Multidimensional Poverty Drop:

- From **55.34% (2005-06)** to **14.96% (2019-21)**.
- Based on 12 indicators from National Family Health Surveys.

4. Inequality Also Reduced:

- Gini and Theil index show decline in consumption-based inequality.
- But income-based inequality may still be higher.

5. Data-Driven Policymaking Ahead:

- New surveys fill earlier data gaps.
- Should guide **targeted welfare policies** and spending decisions.

What is the significance of the Census?-The Hindu text and Context

Sociology

Easy Explanation:

The **Census** is a process of collecting data about people living in a country — their age, gender, religion, caste, education, work, etc. India has conducted a Census every 10 years since **1881**, but the 2021 round was delayed due to COVID-19. The next Census will happen in **two phases**, with a reference date of **March 1, 2027**.

This upcoming Census is very important because:

1. **Caste** (for all Hindus) will be counted for the first time since 1931.

2. The data could be used for **redrawing political boundaries** (delimitation).

3. It will form the basis for **women's reservation** (1/3rd seats) in Parliament and Assemblies.

The **southern and smaller States** are worried. They fear that if seat numbers are revised based on population, they may lose political power because their populations have not grown as fast as some northern States.

Key Takeaways:

1. Historical Background:

- First full Census in **1881** (under British rule).

- Happens every 10 years; last full Census was in **2011**.

2. Two Phases of Census:

- **House Listing**: Info on houses, water, toilet, fuel, assets.

- **Population Enumeration**: Info on individuals — name, age, sex, SC/ST, job, language, religion, etc.

3. Why is the 2027 Census Important?

- **Caste enumeration** for all Hindus after 1931.

- To be used for **delimitation** (adjusting Lok Sabha/Assembly seats).

- Will support **1/3rd reservation for women** in legislatures (from 2029).

4. Apprehensions by Southern & Smaller States:

- Fear of **losing seats** in Parliament due to slower population growth.

- Demand to **freeze current seat numbers** to ensure fairness.

5. Way Forward:

- Ensure caste data collection is **accurate and fair**.

- Build **national consensus** before delimitation.

- Use Census data for **implementing women's reservation** starting 2029.

How is India planning to localise EV manufacturing?-The Hindu text and Context

Science and technology

Easy Explanation:

India wants to boost domestic manufacturing of electric passenger cars, and recently notified a new **policy to attract global EV makers** while ensuring **local production** grows.

The policy allows companies to **import electric cars at a much lower customs duty (15%)**, instead of the usual 70–100%, for **cars priced above $35,000**, but **only for 5 years**. In return, companies must:

- **Invest at least ₹4,150 crore** in India within 3 years.

- Start **local production with 25% local value** in 3 years and **50% in 5 years**.

- **Import only 8,000 EVs per year** at the lower duty.

- The total tax benefit (duty foregone) is capped at **₹6,484 crore**.

However, **critics argue** that:

- It may **favour foreign firms** without ensuring **technology transfer**.

- It could **hurt Indian EV makers** like Tata and Mahindra.

- India should focus on **public EVs**, especially 2- and 3-wheelers, which dominate current sales.

Key Takeaways:

1. What the Scheme Proposes:

- Import duty for high-end EVs reduced to **15%** (from 70–100%).
- Companies must invest **₹4,150 crore** and localise **50% production in 5 years**.
- Limit: **8,000 imported cars/year**; tax benefit capped at **₹6,484 crore**.

2. Goals Behind the Policy:

- Attract **global EV makers** like Tesla.
- Build **local manufacturing facilities** and EV supply chains.

3. Concerns Raised:

- **No assurance of technology sharing** with Indian players.
- Risk of **India becoming an assembly hub** for foreign EVs.
- Critics say policy favours **foreign capital** over local ecosystem building.

4. Sectoral Reality in India:

- EV sales (FY 2025): **Three-wheelers dominate (57%)**, cars only 2.6%.
- India is already **the largest market for electric 3-wheelers** (IEA, 2024).

5. Domestic Players' Position:

- Tata Motors opposed the import duty cut.
- Local OEMs produced **80% of EVs sold in India in 2024**.
- **High duties kept Chinese imports low (<15%)**.

6. Policy Suggestions:

- Focus on **public transport and affordable EVs**.

- Strengthen **local skilling, R&D, and innovation**.

- Ensure **policy supports Indian industry** and long-term tech growth.

New study makes controversial weather-tweaking idea more realistic-The Hindu science

Geography

Easy Explanation:

Stratospheric Aerosol Injection (SAI) is a proposed method to cool the Earth by spraying tiny reflective particles (like sulphur dioxide) into the upper atmosphere (stratosphere). These particles reflect sunlight away, mimicking how volcanic eruptions cool the planet.

A new study suggests that SAI might be possible **using existing aircraft** at lower altitudes (around 13 km), especially near the poles. Though less effective than high-altitude spraying, this method is **cheaper, faster to start**, and technically easier. It could **cool the Earth by 0.6–1°C** depending on how much is sprayed.

But there are **big risks**: side effects like **acid rain**, **ozone damage**, and **unequal cooling** across regions. Also, if one country does this, the whole world gets affected — not always positively. Critics fear it could **reduce the urgency to cut carbon emissions** and that the technology is too hard to govern fairly

Key Takeaways:

1. What is SAI?

- A climate technique that **sprays reflective aerosols** in the stratosphere to cool Earth.

- Inspired by volcanic eruptions (e.g., Mount Pinatubo, 1991).

2. New Study Findings:

- Suggests SAI is possible using **modified existing aircraft** (e.g., Boeing 777F).

- Spraying **12 million tonnes/year at 13 km** could cool Earth by **0.6°C**.

- **Cheaper and quicker** than developing new high-altitude aircraft.

3. Technical Considerations:

- Lower altitude = **easier access** but **shorter particle life** due to rain/cloud washout.

- Higher altitude = **more effective cooling**, but costlier and needs new planes.

4. Risks & Concerns:

- May **delay ozone recovery**, cause **acid rain**, and uneven cooling (more in polar regions).

- Could make countries **complacent about emission cuts**.

- Risk of **global impact from unilateral actions** by one nation.

5. Governance Challenges:

- Technology seen as **"ungovernable"** and needing **global cooperation**.

- In 2021, the US backed open research; in 2022, experts called for a **moratorium**.

Meeting interlocutors-The Hindu Editorial

International relations

Easy Explanation:

After the deadly **Pahalgam terror attack**, India sent **seven delegations** (mainly MPs and diplomats) to **32 countries** to explain its position. Their main message:

- The **terror attack was linked to Pakistan**.

- India responded with **targeted and restrained strikes**.

- India now follows a **"new normal"** — any future terror strike will get a strong response.

They focused on **UN Security Council members**, especially since **Pakistan is now on the UNSC** (2025–26) and used its position to **weaken a UNSC statement** by removing mention of the group (TRF) responsible. Pakistan also chairs key UN anti-terror committees, making it harder for India to push for action.

The delegations also visited **Islamic countries** and the **U.S.**, where Trump claimed he helped mediate peace — a claim India wants to counter.

Some say the effort lacked real foreign engagement and focused more on **diaspora and Indian media**. Still, the mission showed a **united and diverse India**, countering global criticism of majoritarianism.

Key Takeaways:

1. Purpose of Delegation Tours:

- Explain India's response to the **Pahalgam terror attack**.

- Justify **targeted strikes** on Pakistan-based terror groups.

- Promote India's **"new normal" policy** on cross-border terror.

2. Diplomatic Challenges:

- **Pakistan's UNSC membership (2025–26)** helped it edit out TRF reference in UNSC statement.

- Pakistan now chairs the **Taliban Sanctions Committee** and is vice-chair of the **UN Counter-Terrorism Committee**.

- This weakens India's push for international action on terrorism.

3. Strategic Outreach:

- Targeted **UNSC current and future members**.

- Engaged with **OIC nations** that are often critical of India.

- Special outreach to the **U.S.** to counter Trump's mediation claims.

4. Domestic and Global Criticism:

- Some feel the delegations spent more time with the **Indian diaspora and media** than with foreign leaders.

- Pakistan launched **similar diplomatic campaigns** to counter India's message.

5. Symbolic Strength:

- The teams reflected **India's political and cultural diversity**.

- Aimed to project **unity, pluralism, and resolve against terrorism** amidst criticism of democratic backsliding.

10th June 2025

Why Axiom-4 matters-Indian Express Explained

Science and technology

Easy Explanation :

Group Captain Shubhanshu Shukla's spaceflight to the International Space Station (ISS) via Axiom-4 marks a turning point in India's space journey. Unlike Rakesh Sharma's 1984 mission, which was

symbolic, Shukla's flight directly contributes to India's current and future space plans, especially the Gaganyaan human spaceflight and the proposed Indian space station. Shukla, as the pilot, gains real-time spaceflight experience that simulations alone cannot offer. ISRO is also using this opportunity to conduct customized zero-gravity experiments — including muscle behavior and moong dal growth — which will support health research and future mission design. Importantly, this mission fosters India's ambition to be a bigger player in the global space economy, encourages private sector involvement, and inspires young minds. It represents the practical integration of astronaut experience, scientific experimentation, and economic vision — moving India from symbolic participation to strategic leadership in human spaceflight.

Key Takeaways:

1. From Symbolism to Strategy

- Rakesh Sharma's 1984 mission was symbolic; India lacked the capacity to build on it.
- Shubhanshu Shukla's Axiom-4 mission aligns with ISRO's long-term plans, including Gaganyaan and a future space station.

2. Support for Gaganyaan Mission

- Shukla's real-life spaceflight experience as a pilot will provide operational insights.
- This helps ISRO reduce risks and strengthen safety protocols for India's first crewed mission.

3. Scientific Experiments with Indian Relevance

- ISRO is conducting zero-gravity experiments on muscle behavior, moong dal sprouts, and micro-algae.
- These studies will inform health science and agricultural innovations for space conditions.

4. Preparing for India's Own Space Station

- Shukla will observe ISS operations firsthand.
- This will help ISRO plan infrastructure and systems for its proposed space station.

5. Boosting Space Economy and Talent Pipeline

- The mission supports India's goal to expand its 2% global space market share to 10%.
- Inspires schoolchildren and encourages private sector participation and innovation in space tech.

'REALISING THE RETURN':HOW AN INDIAN BECAME PART OF AXIOM-4-Indian Express Explained

Science and technology

Easy Explanation:

India's participation in the Axiom-4 mission was made possible by a strategic spaceflight cooperation agreement between India and the US, announced during PM Modi's 2023 visit to Washington. The deal aimed to send an Indian astronaut to the International Space Station (ISS) before the Gaganyaan mission launches. While Gaganyaan was initially planned for 2022, delays created an opportunity for real-life training. Shubhanshu Shukla's inclusion in Axiom-4 marks a preparatory step for Gaganyaan. This collaboration reflects a growing Indo-US space partnership, strengthened by the upcoming NISAR satellite mission and India's signing of the US-led Artemis Accords for responsible space behavior. AxiomSpace, a private US firm backed by NASA to enable commercial crewed missions, invited India (alongside Hungary and Poland) to join Axiom-4, aptly titled "Realise the Return." The mission symbolizes a return to space after four decades and deepens India's engagement in human spaceflight.

Key Takeaways:

1. Strategic Indo-US Space Partnership

- Announced during PM Modi's US visit in June 2023.
- India and US committed to human spaceflight cooperation, including sending an Indian to the ISS.

2. Real-Life Experience Ahead of Gaganyaan

- Gaganyaan was delayed from its 2022 target.
- Axiom-4 offers India practical human spaceflight exposure in preparation.

3. Artemis Accords and Expanded Collaboration

- India signed the Artemis Accords, promoting responsible space exploration.
- Enabled deeper cooperation in missions like Axiom-4 and future lunar projects.

4. Role of AxiomSpace

- A private US company operating under NASA's initiative to commercialize low-Earth orbit missions.
- Axiom-4 included astronauts from India, Hungary, and Poland — all returning to space after 40+ years.

5. Mission Theme and Significance

- Axiom-4 mission is named "Realise the Return" — symbolizing the re-entry of nations like India into human spaceflight.

- Led by veteran astronaut Peggy Whitson, marking India's growing role in global space efforts.

Why scientists study tardigrades,tiny eight-legged' waterbears', in space-Indian Express Explained

Science

Easy Explanation :

Tardigrades, or "water bears," are tiny, eight-legged microscopic animals known for their extraordinary survival abilities. As part of the Axiom-4 mission, astronaut Shubhanshu Shukla will conduct the *Voyager Tardigrades* experiment on the International Space Station (ISS) to study how these creatures revive, survive, and reproduce in space. Tardigrades can endure extreme temperatures, radiation, and even the vacuum of space by entering a state called *cryptobiosis*, where their metabolism nearly stops and water content drops drastically. They form a durable "tun" state, protected by special proteins like CAHS, which shield their cells. The ISS experiment will focus on identifying the genes and molecular systems that make tardigrades so resilient. This could help scientists protect astronauts from space radiation, develop durable biological systems, and improve organ preservation. Tardigrades were first sent to space in 2007 and became the first animals known to survive direct exposure to the vacuum of space.

Key Takeaways:

1. What Are Tardigrades?

- Microscopic aquatic animals, ~0.5 mm in size, also known as "water bears" or "moss piglets".

- Extremely ancient and resilient—have survived all five mass extinctions.

2. Why Are Tardigrades Studied in Space?

- They survive in extreme conditions: near absolute zero to 150°C, deep-sea pressures, radiation, and space vacuum.

- Useful for developing technologies in astronaut protection, crop resilience, and organ preservation.

3. Unique Survival Mechanisms

- Enter *cryptobiosis* or *anhydrobiosis* to suspend life processes during stress.

- Produce protective CAHS proteins that vitrify (glassify) cells, shielding them from damage.

4. The Voyager Tardigrades Experiment

- Aims to study revival, survival, reproduction in space.

- Focus on identifying genes and biological systems that allow DNA repair and space survival.

5. Applications of the Study

- Could lead to better radiation shields for astronauts and help counter muscle/bone loss in space.

- Also useful for long-term biological material preservation during interplanetary travel.

6. Tardigrades in Previous Space Missions

- First sent to space in 2007 by the ESA.

- Survived vacuum exposure and some reproduced successfully — first animals to do so outside a spacecraft.

POISED TO TAKE OFF-Indian Express Editorial

Economy

Easy Explanation:

India, with a GDP of $4.2 trillion, is set to become the world's third-largest economy in the coming years, driven by consistent growth (6.4% average since 2014) and major reforms. Under Prime Minister Modi, India has transformed its infrastructure — highways expanded from 91,287 km to 1.46 lakh km, railways added nearly 26,000 km of new tracks, and operational airports more than doubled. Digital Public Infrastructure (DPI) like UPI and Aadhaar has revolutionized service delivery and financial inclusion. Clean energy capacity reached 228 GW, placing India among the top global producers. Over 17 crore people have been lifted out of poverty, and inflation has dropped significantly. Projects like Smart Cities and schemes like UDAN have improved connectivity and urban quality of life. As India nears 100 years of independence, strategic reforms, digital inclusion, and global integration will shape its rise as a resilient and inclusive global economic powerhouse.

Key Takeaways:

1. Economic Growth and Positioning

- India's GDP is $4.2 trillion — poised to overtake Japan and Germany.

- Average growth since 2014: 6.4%; latest quarter: 7.4%.

2. Inflation and Poverty Reduction

- Inflation down from 9.4% (2013–14) to 4.6% now.

- 17.1 crore people lifted out of poverty; rate dropped from 29.17% to 11.28%.

3. Infrastructure Expansion

- Highways: 91,287 km (2014) → 1.46 lakh km (2024); speed: 12 km/day → 34 km/day.
- Railways: Added 25,871 RKM; now world's top locomotive producer.
- Operational airports: 74 (2014) → 160 (2025); target: 300 by 2047.

4. Clean Energy Leadership

- Solar capacity: 2.82 GW → 105.65 GW; total clean energy: 228.28 GW.
- India is 3rd-largest solar and 4th-largest wind energy producer globally.

5. Digital Public Infrastructure (DPI)

- Platforms like UPI, Aadhaar, Jan Dhan transformed financial inclusion.
- DPI replicated in over 12 countries; projected to contribute 3–4% to GDP by 2030.

6. Urban Transformation

- Smart Cities Mission: 8,000 projects worth ₹1.64 lakh crore.
- Delhi Metro model expanded to 15 cities.

7. Strategic Reforms and Global Integration

- Major reforms: GST, deregulation, and legal simplification.
- Need to boost ease of doing business, compliance reduction, global supply chain linkages.

8. Forward Outlook

- Focus: agile policy, sustainability, skilling, and manufacturing.
- India aims for long-term global impact by its 100th independence year.

How drones are the new face of warfare-The Hindu Text and Context

Internal security

Easy Explanation:

Drones have become central to modern warfare, offering low-cost, flexible, and powerful capabilities that are reshaping military strategies worldwide. India's Operation Sindoor, using drones alongside standoff weapons, signals a major shift in doctrine. Globally, countries like Ukraine, Azerbaijan, and Myanmar have shown how drones—both military-grade and commercial—can be used to strike deep

and level the battlefield. These unmanned systems, when combined with AI, modular engineering, and even 3D printing, are difficult to detect and can overwhelm air defences. India faces threats from China and Pakistan, both of which possess large, advanced drone fleets. To keep up, India must strengthen its drone ecosystem by mass-producing affordable, modular drones and enhancing its defence industrial base. The threat of weaponised commercial drones also requires vigilance beyond the military, involving internal security forces. Ultimately, India must scale production and adopt innovation rapidly to be prepared for high-intensity future conflicts.

Key Takeaways:

1. Drones as Strategic Tools

- Drones now play a frontline combat role; they serve as force multipliers and enable strategic strikes.
- Used in India's Operation Sindoor, Ukraine's Operation Spider Web, and the Nagorno-Karabakh war.

2. Military-Commercial Technology Overlap

- Commercial drones are increasingly modified for military use.
- Low-cost, accessible, and adaptable — these drones challenge conventional distinctions in defence tech.

3. Drone Innovation and Manufacturing Shifts

- AI, machine vision, 3D printing, and modular engineering enable rapid, scalable drone production.
- Non-state actors using improvised drones offer lessons in asymmetric warfare.

4. Counter-Drone Challenges

- Drones evade defences using low-altitude flight, terrain mapping, and jamming countermeasures.
- India's IACCS and indigenous hard/soft-kill UAV systems showed effectiveness against Pakistani drones.

5. India's Evolving Security Needs

- China's large, advanced drone arsenal and its exports to Pakistan increase India's threat landscape.
- Drones help India fill capability gaps in an asymmetric posture, but mass production and innovation are vital.

6. Civil-Military Implications

- Internal security must prepare for drone threats to infrastructure by terrorists or rogue groups.

- A whole-of-nation counter-drone policy is essential.

7. Industrial Base and Procurement Reform

- India's defence industry needs policy certainty and procurement clarity to scale up production.

- Surge capacity, rapid replacement, and resilient supply chains are essential for drone warfare readiness.

How extracting and producing nickel can be made more sustainable-The Hindu Text and Context

Geography

Easy Explanation:

Nickel is vital for green technologies like electric vehicles (EVs), but its traditional extraction process is highly polluting—producing over 20 tonnes of CO_2 per tonne of nickel. A new method developed by Germany's Max Planck Institute uses **hydrogen plasma** instead of carbon to extract nickel from low-grade laterite ores in a **single-step, carbon-free process**. This approach is up to 18% more energy-efficient and cuts CO_2 emissions by 84%. The byproduct is only water. It is especially suited for laterite ores, abundant in India's Sukinda region, which are typically ignored due to processing challenges. This method allows sustainable extraction from domestic resources, aligning with India's net-zero targets by 2070. While the technology faces challenges like high setup costs and scalability issues, it offers a promising alternative for greener nickel production—essential for decarbonising both transport and battery manufacturing sectors without shifting the pollution burden elsewhere.

Key Takeaways:

1. The Problem with Current Nickel Production

- One tonne of nickel = over 20 tonnes of CO_2 emissions.

- EVs are green in use but sourcing nickel is carbon-intensive.

2. The New Hydrogen Plasma Method

- Developed by Max Planck Institute.

- Uses **hydrogen plasma** to reduce nickel oxides in a **single, carbon-free step**.

- Results in **water** as the only byproduct, not CO_2.

3. Environmental and Efficiency Gains

- Reduces emissions by **up to 84%**.
- Increases energy efficiency by **around 18%**.
- Produces high-purity ferronickel used in stainless steel.

4. Importance for India

- India has low-grade **nickel laterite reserves**, especially in **Odisha's Sukinda**.
- New method enables sustainable extraction from these underutilised resources.
- Reduces import dependency and supports India's **net-zero 2070** target.

5. Industrial and Strategic Relevance

- Meets growing global demand (expected 6 million tonnes/year by 2040).
- Supports green industries like EVs, solar panels, and energy storage.

6. Challenges to Scale-Up

- High initial infrastructure and renewable energy needs.
- Requires further thermodynamic and kinetic studies for mass adoption.
- Needs continuous supply of reactive oxygen at the arc-melt interface.

7. Broader Impact

- Prevents merely shifting pollution from transport to mining.
- Ensures the *entire supply chain* of green tech remains environmentally friendly.

The story of how asafoetida came to be successfully cultivated in India-The Hindu Science

Economy

Easy Explanation (within 150 words):

Heeng (asafoetida), long used in Indian cooking and traditional medicine, was historically imported from Iran, Afghanistan, and Central Asia due to its inability to grow in Indian conditions. This changed with the efforts of the **CSIR-Institute of Himalayan Bioresource Technology (IHBT)**, which started cultivating heeng in Himachal Pradesh in 2020. After years of research, trials, and farmer engagement, the **first flowering and seed formation** occurred at Palampur on **May 28, 2025**, confirming successful

acclimatisation. The team overcame seed dormancy and germination issues, and identified suitable high-altitude zones like Lahaul-Spiti, Mandi, and Kinnaur. With institutional support from CSIR, ICAR-NBPGR, and state agencies, and innovations like tissue culture and ecological niche modelling, India now stands ready to cultivate heeng domestically. This achievement can reduce import dependence, support farmers, and open new agro-ecological possibilities for high-value spice cultivation.

Key Takeaways:

1. Importance of Heeng (Asafoetida)

- A staple in Indian cooking and Ayurveda; mentioned in **Mahabharata** and **Charaka Samhita**.
- Derived from **oleo-gum resin** from the plant's root system.

2. Why It Wasn't Grown in India Before

- Heeng thrives in **cold, arid zones** with low moisture — similar to **Afghanistan and Iran**, not typical Indian climates.
- India, despite being the largest consumer, imported all its heeng until recently.

3. The Breakthrough Initiative

- CSIR-IHBT initiated heeng cultivation in 2020 using **seeds imported** from Iran and Afghanistan.
- Overcame dormancy issues, developed germination protocols, and conducted altitude-specific field trials.

4. Successful Cultivation Milestone

- On **May 28, 2025**, the first **flowering and seed setting** occurred in Palampur, confirming **plant acclimatisation**.
- Proved reproductive viability — critical for future seed production and self-sufficiency.

5. Cultivation Zones in India

- Heeng is now grown in **Lahaul-Spiti, Mandi, Kinnaur, Kullu, and Chamba**.
- Palampur's success at **1,300m altitude** expands its ecological adaptability.

6. Institutional Support & Farmer Involvement

- Collaboration among **CSIR-IHBT**, **ICAR-NBPGR**, **Himachal govt**, and **local farmers**.

- Training, demonstration plots, and a **Germplasm Centre** established.

7. Strategic Benefits

- Reduces **import dependence** and boosts **farmer income**.

- Establishes India's capability for **self-reliant spice production**.

Empowering women in agriculture for food security-The Hindu Editorial

Sociology

Easy Explanation:

The UN has declared 2026 as the *International Year of the Woman Farmer*, recognizing women's critical role in agriculture and food security. In India, women form 80% of the agricultural workforce but own only 14% of land, limiting access to credit and technology. This inequality affects their ability to invest in and improve their livelihoods. Climate change has worsened their challenges, increasing workload and risk. Projects like **ENACT** in Assam, run by the WFP and supported by Norway and the Indian government, empower women by providing climate-resilient seeds, digital advisories, and access to decision-making tools. Government schemes like the **Mahila Kisan Sashaktikaran Pariyojana** and machinery subsidies support women, but more targeted policies and data-driven planning are needed. Strengthening women's self-help groups, access to finance, and market linkages can help build resilient, inclusive agricultural systems that are crucial for food security and sustainability.

Key Takeaways:

1. UN Recognition of Women in Agriculture

- 2026 declared *International Year of the Woman Farmer*.

- Aims to promote gender equality and resilient agriculture.

2. Women's Crucial Role Yet Limited Access

- Women do 60–80% of food production in developing countries.

- In India, they are 80% of the agri-workforce but own only 14% of land.

3. Challenges Faced

- Limited land ownership restricts credit and input access.

- Low access to mobile phones and tech hinders growth and decision-making.

4. Government Support Measures

- **Mahila Kisan Sashaktikaran Pariyojana** for training and skill enhancement.

- **50–80% machinery subsidies** and **30% NFSM budget** allocated for women.

5. ENACT Project Highlights

- Implemented in Assam by WFP with Norway's support.

- Provides digital climate advisories, promotes flood-resistant crops, and strengthens seed systems.

6. Climate Resilience and Community Models

- Women farmers are vulnerable to climate change but can lead adaptation.

- Community-level models foster sustainability and empowerment.

7. Way Forward

- Need for gender-disaggregated data, finance access, and tailored tools.

- Strengthen women's role in agri-value chains and collective decision-making.

11th June 2025

How astronauts reach International Space Station-Indian Express Explained

Science and technology

Easy Explanation:
Indian astronaut Shubhanshu Shukla is part of the Axiom-4 mission to the International Space Station (ISS). He will travel in a SpaceX **Dragon spacecraft**, which is launched by the **Falcon 9 rocket** from Florida. The journey will take around **28 hours**.

Since the ISS is always moving very fast in space (about **28,000 km/hour**), the spacecraft cannot just go straight to it. Instead, it **orbits Earth several times**, slowly adjusting its path using small engines called **Draco thrusters**. This helps it reach the same orbit as the ISS.

After reaching near the ISS, the Dragon uses **sensors and cameras** to carefully dock (attach) itself to the station, mostly **automatically**. Once connected, safety checks are done, and then the astronauts move into the ISS.

Key Takeaways:

1. Launch Setup

- Launched from Kennedy Space Centre, Florida

- Rocket used: Falcon 9

- Spacecraft: Dragon, carrying 4 astronauts including Indian Shubhanshu Shukla

2. Time to Reach ISS

- Takes about 28 hours due to careful path adjustments in space

3. Space Travel Path

- The Dragon doesn't fly straight; it orbits Earth to match ISS's path
- Uses small engines (Draco thrusters) to adjust position

4. Docking Process

- The Dragon carefully approaches the ISS
- Uses GPS, cameras, and laser sensors (Lidar) to dock
- Mostly automatic but can be controlled by astronauts if needed

5. Final Steps

- After docking, systems are checked
- Then astronauts safely enter the ISS

[Voyage of Rakesh Sharma: The last time an Indian travelled to space-Indian Express Explained]

Science

Easy Explanation:
Rakesh Sharma was the **first Indian to travel to space**. He flew aboard the **Soviet spacecraft Soyuz T-11** on April 3, 1984, as part of the **Interkosmos program**, which aimed to build space partnerships with countries like India. The mission marked a **high point in Indo-Soviet cooperation**. Sharma, an Indian Air Force test pilot, trained for 18 months in Russia with another pilot, Ravish Malhotra (his backup).

Once in space, Sharma and his Soviet crewmates spent a **week aboard the Salyut 7 space station**, conducting experiments in Earth observation, materials science, and medicine. Notably, Sharma also **practiced yoga in space** to see if it helped with microgravity effects.

Though the mission had limited scientific benefit for India, it was a **deeply symbolic moment**. Sharma famously told PM Indira Gandhi that India looked **"Sare Jahan Se Achha"** (better than the entire world) from space. He returned to Earth on April 11, 1984.

Key Takeaways:

1. Historical Milestone

- Rakesh Sharma flew to space on **April 3, 1984**, aboard **Soyuz T-11**.

- He became the **first Indian** and **138th person** in the world to go to space.

2. Indo-Soviet Cooperation

- Mission was part of the Soviet **Interkosmos program**.

- Symbolized deep ties and space cooperation between India and the USSR.

3. Training and Background

- Sharma and Ravish Malhotra were chosen as IAF test pilots.

- Trained in **Star City near Moscow**; learned Russian for the mission.

4. Experiments in Space

- Earth observation (India's terrain, oceans, Himalayas)

- Material science and microgravity research

- Medical studies, including use of **yoga to reduce space sickness**

5. National Symbolism

- Sharma took Indian soil, portraits of leaders, and Indian food to space.

- His famous reply to PM Gandhi on how India looked from space: **"Sare Jahan Se Achha"**

- Returned to Earth on **April 11, 1984**, and was awarded the **Ashoka Chakra**.

WHY KERALA WANTS WILDLIFE ACT AMENDED TO KILL SOME ANIMALS-Indian Express Explained

Environment

Easy Explanation:
Kerala has asked the central government to **amend the Wildlife (Protection) Act, 1972** so it can **kill certain wild animals** that frequently enter human areas and **harm people or damage crops**. Animals like **wild boars, elephants, leopards, monkeys, and peafowl** are causing serious trouble in villages. Some like wild boars and bonnet macaques damage farms so badly that many farmers are giving up agriculture.

From 2016 to early 2024, **919 people died and nearly 9,000 were injured** in wildlife attacks in Kerala. Due to **deforestation and habitat loss**, wild animals are coming closer to human areas. Laws currently make it hard to kill even dangerous animals without many formalities. Kerala says **existing fencing and preventive methods have failed** and asks for **temporary permission to cull harmful animals**.

Key Takeaways:

1. The Problem

- Wildlife attacks rising in Kerala: 919 deaths, 8,967 injuries since 2016
- Wild animals like wild boars, elephants, and monkeys entering farmlands

2. Causes

- Habitat loss due to deforestation and construction
- Overgrazing and shrinking forest areas force animals into villages

3. Legal Barriers

- Wildlife Act protects animals, especially Schedule I species
- Killing is allowed only if capturing or relocating is impossible
- Legal and procedural delays worsen human-wildlife conflict

4. Kerala's Demands

- Temporarily declare **wild boars as vermin** under Section 62
- Remove **bonnet macaque** from Schedule I (added in 2022)
- Make rules more **practical**, as current methods (like checking if a boar is pregnant) are unworkable

5. Government's Stand

- Kerala says it doesn't want blanket killing rights
- Seeks limited, period-based permission to protect people and crops

Old continent rising-Indian Express Editorial

International relations

Easy Explanation:
India is now paying greater attention to **Europe** in global politics. With **External Affairs Minister S. Jaishankar's visit to Europe** and **PM Modi attending the G7 summit in Canada**, India is engaging with a **Western world that's no longer unified**—mainly because of Donald Trump's return to power and his questioning of old alliances like NATO.

Europe is trying to **reduce its dependence on the US** by becoming more **strategically autonomous**—strengthening defence, making new trade ties, and building deeper links with countries like **India**.

Countries like **France, Germany, and the UK** are reforming their defence policies and cooperating more closely in response to the **Russia-Ukraine war** and Trump's unpredictable stance.

India and Europe are now working together on a **Free Trade Agreement**, green technology, **AI**, and **space cooperation**. Europe sees India as a **partner for diversification**, while India sees Europe as a **balancer** amid rising US-China tensions. Together, they could help shape a **multipolar world order**.

Key Takeaways:

1. New Importance of Europe in Indian Foreign Policy

- India sees Europe as a "swing state" in the evolving global balance
- PM Modi and EAM Jaishankar's visits show a focused outreach

2. Internal Division in the West

- Trump's return has shaken traditional Western unity (NATO, G7)
- Canada and Europe are distancing from US security dependence

3. Strategic Shifts in Europe

- France, Germany, UK, and Poland are pushing for **European defence autonomy**
- Europe wants deeper ties with **India, Japan, ASEAN, and Australia**

4. India-Europe Partnership Expanding

- India-EU **Free Trade Agreement** now seems possible
- India-Middle East-Europe Economic Corridor (IMEC) could reshape supply chains
- EU-India **Trade & Technology Council (TTC)** promotes AI, space, green tech

5. Defence and Security Collaboration

- Europe's €800 billion **ReArmPlan** opens doors for co-development with India
- Shift from arms-buying to **joint defence manufacturing and research**

6. Strategic Alignment

- Europe's desire for **strategic autonomy** aligns with India's own multipolar vision
- Together, they could offer an alternative to a world dominated only by **US and China**

Erdogan's neo-Ottoman foreign policy-The Hindu Text and Context

International relations

Easy Explanation:
President **Recep Tayyip Erdogan** of Türkiye has shaped a foreign policy called **"neo-Ottomanism"**, which mixes **Islamist ideology** with **pragmatism**. He wants Türkiye to be a powerful leader in the Muslim world, while still remaining a part of **NATO** and cooperating with the **West**.

Erdogan supports Islamist groups and governments across West Asia and North Africa (like the **Muslim Brotherhood in Egypt** and anti-Assad forces in **Syria**) to revive Türkiye's historic influence. He has also backed **Azerbaijan in its war against Armenia**, and sells drones to both **Ukraine and other allies**. But he avoids full breakups with the West — balancing diplomacy carefully.

At home, Erdogan has become more **authoritarian**, changed the Constitution to strengthen his power, and cracked down on opposition. Türkiye also suffers from **economic problems** like inflation and falling currency.

While Erdogan has made short-term gains in foreign policy, it's unclear if they will last in the long run.

Key Takeaways:

1. Neo-Ottoman Foreign Policy Vision

- Erdogan aims to restore Türkiye's influence in former Ottoman regions (West Asia, North Africa, Caucasus).
- Focus on leading the Muslim world while staying in NATO and engaging with the West.

2. Roots in Islamist Thought

- Inspired by old Ottoman ideology *Ittihad-i Islam* (unity of Muslims).
- Revives ideas of Necmettin Erbakan, who wanted stronger ties with Muslim nations.

3. Practical Application

- Supported Islamist groups during Arab Spring (e.g. Egypt's Muslim Brotherhood).
- Backed anti-Assad rebels in Syria, intervened in Libya and Azerbaijan-Armenia conflicts.
- Avoided full rupture with NATO despite buying Russian S-400 missiles.

4. Strategic Balancing Act

- Sells drones to Ukraine but doesn't sanction Russia.

- Helped Sweden and Finland join NATO to regain US support.

- Maintains bases in Qatar and improves ties with Gulf states, despite mistrust.

5. Domestic Challenges

- Türkiye faces **economic crisis** (high inflation, weak currency).

- Erdogan has **centralized power**, jailed opponents, and weakened democracy.

6. Future Uncertain

- Gains in Syria and West Asia may not be stable.

- Türkiye risks turning into an **authoritarian, unstable regime** unless it reforms internally.

Sensitive German experiment sets new limit on maximum neutrino mass-The Hindu Science

Science

Easy Explanation:
The **KATRIN experiment in Germany** has taken a big step in understanding one of the universe's most mysterious particles — the **neutrino**. Neutrinos are **very light, invisible particles** that rarely interact with anything, making them very hard to detect. Scientists know they have some mass, but **how much** has remained a puzzle.

KATRIN works by closely watching **tritium atoms decay** and measuring the **energy of the electrons** released. This energy gives clues about the mass of neutrinos. After studying **36 million electrons** over 259 days, KATRIN scientists have now shown that the **combined mass of all three neutrino types is less than 0.00000088 times the mass of an electron** — a new world record in precision.

This is important because it uses **no untested assumptions** (unlike cosmology-based methods), making it one of the most **reliable results** so far in the quest to pin down the neutrino's mass.

Key Takeaways:

1. What is KATRIN?

- A German experiment to measure **neutrino mass**

- Uses **tritium decay** to detect electron energy shifts

2. New Record Set

- KATRIN found the total mass of all 3 neutrino types to be **< 0.00000088 times the electron's mass**

- This is **twice as precise** as previous best limits

3. Why Are Neutrinos Hard to Measure?

- They are **extremely light** and **don't interact** easily with matter

- Even a light-year of solid metal might not stop one!

4. Why Does It Matter?

- Standard Model of physics says neutrinos should be massless — but they're not

- Understanding their mass could reveal **new physics beyond known theories**

5. Other Experiments

- **Cosmologists** use galaxy data to guess tighter neutrino mass limits

- But such methods rely on **early universe assumptions**, unlike KATRIN's direct approach

6. Big Question Still Open

- Are neutrinos their own antiparticles?

- Another type of experiment (neutrinoless double beta decay) is needed to find that out

7. Overall Importance

- KATRIN's result is a **milestone in fundamental physics**

- It's a **model of precision** in one of the toughest areas of particle science

Maximum Mumbai-The Hindu Editorial

Sociology

Easy Explanation:
Mumbai's overcrowded local trains, though essential for daily commuters, are becoming increasingly unsafe. A recent tragedy in Mumbra, where four people died, has pushed authorities to consider installing **automatic sliding doors** and **coach connections (vestibules)** to stop dangerous practices like **footboard travel** and jumping off moving trains.

However, these safety fixes don't address the root cause: **overcrowding** due to **lack of cheap, alternative transport**. Trains are the **cheapest option** for many, and with limited public buses, expensive Metro fares, and poor planning, the burden remains on the railways.

Long-term solutions include **improving bus services**, making **ferries** more accessible, and **restructuring the city** to reduce heavy north-south commuter flow. The larger issue is that **urban infrastructure isn't keeping up with India's rapid urbanisation**, especially as people move away from farming into cities ill-prepared to support them.

Key Takeaways:

1. Immediate Safety Fixes Proposed

- Automatic sliding doors to stop unsafe boarding
- Vestibules to distribute crowd inside coaches

2. Root Problem: Overcrowding

- Trains are overcrowded due to lack of affordable alternatives
- Footboard travel and track crossing are symptoms, not causes

3. Broader Urban Crisis

- Mumbai's train network has remained outdated despite rising population
- Metro is costly for poorer sections; buses and ferries underused or inadequate

4. Needed Long-Term Measures

- Expand bus networks for short-distance connectivity
- Promote ferries as cheap, eco-friendly options
- Replan city movement patterns, not just transit infrastructure

5. Wider Message

- Incidents like stampedes and train accidents show **India's weak urban planning** amid growing migration from agriculture to cities.

12 June 2025

Drone warfare & India-Indian Express Explained

Internal security

Easy Explanation

Modern wars are changing. Instead of only using tanks or fighter jets, countries are now using *drones*, especially cheap ones, in large groups called *swarms*. These drone swarms are like flying robot teams—

they work together, fly fast, and attack at once. Ukraine recently used 100+ small FPV drones to bomb Russian airbases deep inside Russia, damaging expensive aircraft. Pakistan also used swarms of cheap drones against India during Operation Sindoor to test and overwhelm air defences.

The problem? These drones are very cheap to make, but very expensive to stop. Countries like India now need new methods to protect themselves—like jamming their signals, shooting lasers, or using interceptor drones. India has already developed special systems like DRDO's anti-drone setup and Indrajaal (an AI-powered defence grid). Experts say future wars may not involve just soldiers—but machines fighting other machines.

Key Takeaways

1. What Are Drone Swarms?

- Groups of small drones flying together like a flock of birds.
- They can think and adjust using AI.
- Used for spying, attacking, or confusing defences.

2. Why Are They Dangerous?

- Very cheap to build.
- Very costly to defend against.
- Can destroy high-value targets (airfields, radars, tanks).

3. Real-World Examples

- **Ukraine** used FPV drones in "Operation Spider's Web" to bomb Russian airbases.
- **Pakistan** used drone swarms during May 2025 against India's military bases.

4. How to Stop Drone Swarms?

- **Jammers**: Block their signals.
- **Lasers**: Burn their electronics.
- **Missiles or Guns**: Shoot them down (but expensive).
- **Nets & Interceptor Drones**: Physically trap or crash them.

5. India's Key Systems

- **DRDO Anti-Drone**: Tracks and destroys using jammers and lasers.
- **Indrajaal**: AI-based system covering large areas.
- **Akashteer & Bhargavastra**: Help spot and shoot drone swarms.

6. Future of War

- Wars may soon be *machine vs. machine*.
- India is building its tech fast—with 550+ drone startups.
- Defence must evolve: cheaper, smarter, and faster systems.

Why the Census 2027 is critical for India's economic growth & development-Indian Express Explained

Economy

Easy Explanation

India will finally conduct its long-delayed Census in 2026–27, 16 years after the last one in 2011. A Census isn't just about counting people—it also gathers detailed information like age, income, jobs, education, migration, and disabilities. This data is very important because it helps set policies, design welfare programs, and even decide interest rates and inflation numbers. Right now, India uses outdated 2011 Census data as the base for all economic surveys. This can lead to wrong estimates—like over- or under-measuring inflation or growth. Also, big changes like migration patterns can't be understood without fresh data. While many departments collect separate statistics, only a nationwide Census can give a complete and comparable picture. Without it, India risks making policies based on outdated or incorrect assumptions. The 2027 Census will help fix this and provide a clearer view of today's India.

Key Takeaways

1. Census Is Not Just Population Count

- It collects wide data: age, gender, migration, education, employment, disability, etc.
- Helps update the true socio-economic picture of India.

2. Basis for Economic Policy

- CPI inflation, interest rates, consumption surveys, and monetary policies rely on Census-based weights.
- Using outdated 2011 Census data may lead to incorrect policy decisions.

3. Example of Impact

- If food consumption has dropped from 46% to 30%, inflation is being overestimated, leading to unnecessarily tight monetary policy that may slow growth.

4. Internal Migration Patterns Are Changing

- Most migration is *rural-to-rural* and *urban-to-urban*, not interstate.

- Only an updated Census can accurately track these trends for planning infrastructure, housing, and welfare schemes.

5. Administrative Data Can't Replace Census

- Department data varies across states and lacks consistency or neutrality.

- Perverse incentives may lead to overreporting of policy "success."

6. Delay's Consequences

- A six-year delay (since 2021) has widened the gap between perception and reality.

- Private and public surveys become unreliable if based on outdated baseline data.

7. Why Census 2027 Is Critical

- Provides a much-needed "reset" for India's economic planning.

- Essential for accurate budgeting, inflation control, and welfare distribution.

- Enables better comparisons and smarter governance decisions.

PEOPLE'S SENSITIVITY TO ENVIRONMENT MAY BE GENETICALLY INFLUENCED:STUDY-Indian Express Explained

Science

Easy Explanation

A new study has found that some people may be **genetically more sensitive** to their surroundings—both good and bad. This means our **genes can influence how we react to stress, trauma, or even positive experiences**, and this sensitivity can affect mental health. The research, led by King's College London, studied nearly 10,900 pairs of **identical twins** to understand the connection between **genes and mental conditions** like **ADHD, autism, depression, anxiety, and psychosis**.

They found that genes linked to **stress-response hormones** like **dopamine and adrenaline** may increase the risk of symptoms related to **depression or psychosis**. Genes related to brain development and the

immune system were linked with **autistic traits**. So, two people may experience the same event—like a job loss—but respond very differently depending on their **genetic sensitivity**.

Key Takeaways

1. Genetic Sensitivity to Environment

- Some people are born with genes that make them more or less sensitive to what happens around them.

2. Twin-Based Study

- Analysed data from 10,900 **identical twin pairs** across 11 studies to explore mental health symptoms and environmental sensitivity.

3. Mental Health Links

- Sensitivity influenced the risk of **ADHD, autism, depression, anxiety, psychosis**, and **neuroticism**.

4. Role of Stress Hormones

- Genes that regulate **dopamine and adrenaline** (stress-response hormones) are linked to **depression and psychotic-like experiences**.

5. Neurodevelopmental Connection

- Genes involved in **brain and immune development** were associated with **autistic traits**.

6. Why This Matters

- Two people can have very different mental reactions to the same experience due to their genes.

- Helps explain **why mental health impacts vary from person to person**.

Fuel for a green Viksit Bharat-Indian Express Editorial

Economy

Easy Explanation

India wants to become a *developed country (Viksit Bharat)* by 2047 and reach *net-zero carbon emissions by 2070*. To do this, it needs a huge amount of clean energy—especially **nuclear power**, which can reliably produce energy without carbon emissions. Currently, most of India's energy comes from fossil fuels. But by 2070, around **70% of India's clean energy** must come from nuclear sources.

India already has a strong base in **Pressurised Heavy Water Reactors (PHWRs)** and is aiming for a **100 GWe (gigawatt electric) nuclear mission**, but this is still far short of the actual future need. To meet its goals, India must:

- **Use more domestic uranium**, even if it's low-grade.

- **Accelerate the use of thorium**, of which India has the world's largest reserves.
- **Develop fast breeder and molten salt reactors** to recycle fuel and boost efficiency.
- **Move toward HALEU fuel** and **thorium-based small reactors** for better safety and performance.

India must treat nuclear power as a *national priority*, with multiple agencies involved beyond just NPCIL, and push faster innovation and deployment.

Key Takeaways

1. Nuclear Energy Is Key to Viksit Bharat Goals

- India aims to achieve high human development and net-zero emissions by 2070.
- Nuclear power must contribute ~20,000 TWh/year—over 70% of the required clean energy.

2. India's Current Nuclear Status

- Only 9,800 TWh energy used today; most from fossil fuels.
- Existing PHWRs are world-class and scalable.
- 100 GWe target is a start but far below what's needed long-term.

3. Three-Stage Nuclear Plan

- Stage 1: Uranium in PHWRs.
- Stage 2: Fast breeder reactors (still delayed).
- Stage 3: Thorium reactors—India has the world's largest thorium reserves.

4. Need to Accelerate Deployment

- Encourage multiple agencies to deploy PHWRs fast.
- Share technology and adopt a "Make in India" approach for cost-saving.
- Shift quickly from mined uranium to recycled uranium and thorium.

5. Thorium's Critical Role

- Can be irradiated in PHWRs now.

- Spent fuel to be reused in Molten Salt Reactors (MSRs).

- Enables leap to Stage 3 despite delays in Stage 2.

6. Focus on HALEU and MSRs

- HALEU (High Assay Low Enriched Uranium) improves safety, economics, and waste management.

- Thorium-based Small Modular Reactors (SMRs) should be the focus instead of uranium-based SMRs, which are still 20 years away.

7. Energy Security Implications

- India may need 20,000 tons of uranium/year—15% of global supply.

- Securing uranium and promoting recycling is vital for long-term independence.

8. Way Forward

- Nuclear power should be a cornerstone of India's development.

- The 100 GWe plan must be seen as a beginning—not the end—of India's larger nuclear journey.

SLOWING DOWN-Indian Express Editorial

Economy

Easy Explanation

The **World Bank's latest report** shows that the **global economy is slowing down sharply**, with growth expected to be just **2.3% in 2025**—the weakest performance (outside of recessions) in 17 years. This slowdown is due to multiple shocks like **Covid-19**, the **Russia-Ukraine war**, and now **increased trade barriers and policy uncertainty**. It's especially bad for **developing countries**, whose growth has dropped from 5.9% in the 2000s to just 3.7% in the 2020s so far.

Global trade is also shrinking. The **World Bank now expects trade to grow only 1.8%** in 2025, down from earlier estimates. Amid this gloom, **India is doing relatively better**, with projected growth at **6.3% in 2025–26**—close to RBI's estimate of 6.5%. India also hopes to finalize a trade deal with the US before July, which could improve its outlook. But globally, a long period of **slow growth and uncertainty** seems likely.

Key Takeaways

1. Global Economic Outlook is Weakening

- World Bank projects **2.3% global growth in 2025**, lowest in 17 years outside a recession.

- Average growth from 2020–2027 to be just **2.5%**, slowest since the 1960s.

2. Main Reasons for Slowdown

- Past shocks: **Covid-19**, **Russia-Ukraine conflict**.

- Ongoing challenges: **Trade restrictions**, **policy uncertainty**, and slow investment.

3. Trade is Also Falling

- Global trade volume expected to rise only **1.8% in 2025**, revised down from earlier projections.

- Many trade deals (e.g., US-China) are still incomplete.

4. Developing Economies Hit Hardest

- Growth in developing countries fell from **5.9% (2000s)** to **3.7% (2020s)**.

5. India's Position

- India expected to grow at **6.3% in 2025–26**, slightly below RBI's 6.5% forecast.

- Exports and investment to remain **subdued**.

- Hopes for a **trade deal with the US** by July to avoid tariff hikes.

6. Longer-Term View

- India's growth to **average 6.6%** over the next two years.

- Global economic momentum is expected to stay **slow and uncertain**.

MISPLACED KINDNESS-Indian Express Editorial

Environment

Easy Explanation

In Ranthambore National Park, Rajasthan, **three people—including a forest officer—have been killed by tigers** in the past 2.5 months. This unusual human-animal conflict has raised serious concerns. The main reason: **park officials gave live animals as food to a sick tigress**, which made her cubs lose their natural fear of humans. This violates basic wildlife conservation principles.

The **National Tiger Conservation Authority** discourages feeding wild tigers, as it weakens their survival skills and disrupts natural behavior. Yet, wildlife managers across India sometimes **medically treat or feed old/injured tigers**, hoping to extend their lives—what the article calls **"misplaced kindness."** Such

acts increase tiger numbers in small areas, which worsens **tiger-on-tiger conflict** and increases the risk of **tigers straying into human settlements**.

India has done well to increase tiger numbers, but conservation shouldn't focus only on numbers. Authorities must now think about **how many tigers each reserve can support** and build **natural, self-sustaining ecosystems** that don't endanger human lives.

Key Takeaways

1. Human-Tiger Conflict in Ranthambore

- Three people, including a forest officer, were killed by tigers in recent months.
- Cubs were exposed to live bait fed to their ailing mother, altering their behavior.

2. Why Feeding Tigers Is Problematic

- Live-baiting is not banned, but **"not advisable"** per official SOPs.
- Artificial feeding disrupts natural instincts and survival behavior.
- Weakens natural control mechanisms like starvation or territorial fights.

3. Misplaced Kindness in Wildlife Management

- Officials sometimes over-care for old or injured tigers.
- May raise tiger numbers artificially, causing **more in-fighting and human conflict**.

4. Core Issue: Conservation vs. Sentiment

- Conservation must respect nature's balance, not emotions.
- Saving one tiger unnaturally could endanger many others—including humans.

5. Bigger Picture for India

- Forest staff deserve credit for tiger revival post-2005 crisis.
- But now the focus must shift to **quality, not just quantity**:
    - Assessing **carrying capacity** of parks.

- Ensuring tigers thrive **naturally** in secure, spread-out ecosystems.

- Managing tiger populations **outside protected areas** as well.

Human oversight key to safe use of AI in healthcare, say experts-The Hindu Science

Science

Easy Explanation

Artificial Intelligence (AI) is making major changes in Indian healthcare—from **tracking foetal growth** and managing **high-risk pregnancies** to conducting **virtual autopsies** and aiding **doctors through chatbots**. Tools like **Garbhini-GA2** developed by IIT-Madras can predict a baby's age more accurately than foreign-based formulas. NGOs like ARMMAN are using AI chatbots to help rural health workers manage complex pregnancy cases. And virtual autopsies are offering quicker, less invasive ways to determine causes of death.

But while AI improves speed and access, it brings risks like **automation bias** (over-trusting AI), **data privacy issues**, and **language limitations**. For instance, voice-based AI tools struggle with regional Indian accents. Experts stress that AI should assist—not replace—human judgment. Doctors, nurses, and health workers must be trained on AI's limits. For AI to truly help patients, **human oversight, strong data laws, and accountability systems** are essential.

Key Takeaways

1. Real-World Uses of AI in Indian Healthcare

- **Garbhini-GA2**: Predicts foetal age better than existing methods.

- **Chatbots for High-Risk Pregnancies**: Help ANMs with queries and guidance in rural India.

- **Virtual Autopsies (Virtopsies)**: Quicker and less invasive postmortem using CT/MRI scans.

2. Advantages

- **High accuracy**: Some models match or outperform human doctors.

- **Speed**: Virtopsies and AI-chat-based consultations are faster.

- **Access**: Helps health workers in rural and underserved areas.

3. Risks and Challenges

- **Automation Bias**: Over-reliance on AI may reduce doctors' accuracy.

- **Data Privacy**: Indian laws don't yet clearly regulate AI tools.
- **Language Limitations**: Speech recognition still weak in many regional accents.
- **Limited Accountability**: Who is responsible if AI gives wrong advice?

4. Need for Human Oversight

- AI must act as a **support**, not a replacement.
- Experts must regularly **test, train, and reassess** AI tools.
- Strong **data masking** and **access controls** are vital to protect patient information.

5. Policy Implications

- India needs updated, **AI-specific healthcare regulations**.
- **Doctors and health workers** should be trained to use AI responsibly.
- Continuous monitoring is required to keep AI tools ethical and effective.

In UAE, Indian expats longing for monsoon find rain-The Hindu Science

Geography

Easy Explanation

Many Indians living in the UAE, like **Muhammed Sajjad** from Kerala, deeply miss the **monsoon rains** of home. To relive that feeling, Sajjad became a self-taught "rain chaser"—using **satellite maps, weather data, and cloud forecasts** to track rare desert rainfalls. He leads convoys of people into the UAE desert to experience these short-lived showers. His Instagram page "**UAE Weatherman**" has 130,000 followers who share this nostalgia for rain.

Despite **cloud-seeding technology**, the UAE gets only **50–100 mm of rain per year**, mostly during short winter storms. Summers bring less than **5 mm**, often away from cities. But global warming is increasing **extreme weather**. For example, April 2024 saw the **heaviest rainfall in 75 years** in the UAE, while **April 2025 was the hottest on record**.

For the Indian expats, chasing rain is not just about weather—it's an emotional connection to home and memories of monsoon joy.

Key Takeaways

1. Rain Chasing in the UAE

- Muhammed Sajjad, an Indian expat from Kerala, tracks desert rain using satellite and weather tools.

- Leads weekend convoys of Indian expats who miss the Indian monsoon.

2. UAE's Harsh Climate

- Receives only **50–100 mm of annual rainfall**.

- Summer rainfall is rare—**<5 mm**, mostly in remote desert areas.

3. Social Media Community

- "UAE Weatherman" Instagram page connects **130,000 rain lovers**, especially nostalgic Indians.

4. Climate Change Impact

- **April 2024**: UAE's **heaviest rains in 75 years** (259.5 mm in a day).

- **April 2025**: **Hottest month on record**.

- Experts link extreme events to **global warming**.

5. Emotional and Cultural Value of Rain

- For expats, rain is more than weather—it's a **reminder of home**, **identity**, and **comfort**.

- These rain-chasing trips offer **shared joy** and **community bonding**.

Recounting Velpur's story in ending child labour-The Hindu Editorial

Polity

Easy Explanation

Every year on **June 12**, the world observes the **World Day Against Child Labour**, but child labour still affects **160 million children globally**. India, too, has a significant number of working children, especially in sectors like **beedi-making, fireworks, and carpet weaving**. Despite laws like the **Child Labour (Prohibition and Regulation) Act** and the **Right to Education**, enforcement has often been weak.

One exceptional success story is **Velpur Mandal** in Nizamabad (now in Telangana). In 2001, officials launched a **100-day drive** to send every child to school. Despite early resistance and rumours, the community eventually embraced the mission. **Former employers forgave debts** that forced children to work, and **villagers signed agreements** to send every child aged 5–14 to school. By October 2001, Velpur was declared **child labour free**, a status still proudly maintained.

This **community-driven effort**, recognized by national bodies and even **former President A.P.J. Abdul Kalam**, shows how local commitment and government support can eliminate child labour for good.

Key Takeaways

1. The Bigger Problem

- 160 million children globally are in child labour.
- In India, 43.5 lakh children (age 5–14) were reported as child labourers in Census 2011.
- Covid-19 worsened the situation by pushing children out of schools.

2. India's Legal Response

- **CLPRA 1986** and its **2016 Amendment** prohibit child labour under 14 and restrict hazardous work for 14–18 age group.
- **Right to Education Act** ensures free education for ages 6–14.

3. The Velpur Model

- **Location**: Velpur Mandal, Nizamabad district (now in Telangana).
- **Campaign**: 100-day community drive starting June 2001.
- Declared **child labour free** on **October 2, 2001**.
- Continuous school retention and **zero child labour even after 24 years**.

4. Community Participation Was Key

- Former employers forgave hand loans taken by families.
- Villagers displayed boards stating, **"There is no child labour in our village."**
- **Sarpanchs signed MOUs** with the government to enforce compulsory schooling.

5. Recognition and Impact

- Celebrated by **ILO**, **VVGNLI**, and **National Human Rights Commission**.
- Former President **Dr. A.P.J. Abdul Kalam** appreciated the model.
- Cited in Parliament as a **model for eliminating child labour**.

6. Lesson from Velpur

- **Real change needs community ownership**.

- Laws and enforcement alone won't work unless **people make it their mission**.

13 June 2025

War clouds over Middle East-Indian Express Explained

International relations

Easy Explanation:
Tensions are rising again in the Middle East. A U.S. report says Israel is ready to attack Iran's nuclear sites. This comes just as Iran and the U.S. are negotiating a nuclear deal. The International Atomic Energy Agency (IAEA) has accused Iran of secretly working on nuclear activities and not following its agreement. In response, Iran is threatening to leave the Nuclear Non-Proliferation Treaty (NPT) and has announced a new uranium enrichment facility.

Israel opposes the nuclear deal and believes Iran's nuclear program must be stopped with force. But the U.S., while also concerned, prefers diplomatic talks. Iran warns that if Israel attacks, it will strike back at both Israel and U.S. bases in the region. Meanwhile, Israeli Prime Minister Netanyahu faces domestic pressure and might be using the Iran issue to delay elections. If any side makes a wrong move, it could lead to a serious war in the region.

Key Takeaways:

1. Israel Ready for Military Action

- U.S. report says Israel may attack Iran's nuclear sites.

- Comes despite President Trump urging Israel to avoid conflict.

2. Iran Accused of Secret Nuclear Work

- IAEA says Iran isn't following rules and is enriching uranium in secret.

- This could lead to new European sanctions.

3. Iran's Response

- Threatens to leave the NPT treaty.

- Plans to increase uranium enrichment at a secure new site.

4. Nuclear Talks in Danger

- Iran and the U.S. are in their sixth round of talks.

- Main issue: Iran wants full control of uranium enrichment, the U.S. disagrees.

5. Political Drama in Israel

- Netanyahu narrowly avoided losing power.

- Using tension with Iran to justify delaying elections.

6. Risk of Wider Conflict

- Iran warns of "devastating" response if attacked.

- Talks may fail if Israel strikes or Iran quits the NPT.

WHY ANDHRA PRADESH & KARNATAKA ARE FIGHTING OVER MANGOES-Indian Express Explained

Polity

Easy Explanation:
Andhra Pradesh and Karnataka are currently in a dispute over a popular mango variety called *Totapuri*, which is used in juice and pulp products. On June 7, Andhra's Chittoor district banned the entry of Totapuri mangoes from other states, mainly Karnataka. The reason: Karnataka's Totapuri mangoes are cheaper (Rs 5–6/kg), while Andhra's farmers are being paid more (Rs 8 + Rs 4/kg support). Andhra fears that if cheaper mangoes enter its market, processors will prefer them, harming local farmers.

Karnataka strongly opposed the move, saying its mango farmers depend on selling to Chittoor-based processing factories. Karnataka leaders warned that this could lead to post-harvest losses and even possible retaliation like blocking vegetable supplies to Andhra. The issue has also taken a political tone since different parties rule the two states.

Key Takeaways:

1. What is Totapuri Mango?

- A popular mango used in pulp and juice processing.

- Grown in Andhra, Karnataka, and Tamil Nadu.

2. Why the Ban?

- Andhra banned mangoes from Karnataka to protect local farmers.

- Karnataka mangoes are cheaper, risking Andhra sales.

3. Andhra's Price Support Plan

- Andhra is paying Rs 8/kg plus Rs 4/kg support.

- Karnataka mangoes sell for Rs 5–6/kg, undercutting Andhra's rate.

4. Karnataka's Objection

- Says ban hurts its farmers, especially near the border.

- Disruption of long-standing supply chains with Chittoor-based factories.

5. Risk of Retaliation

- Karnataka may block vegetable and agri-supply to Andhra.

- Could raise inter-state tensions.

6. Political Angle

- Congress rules Karnataka, TDP rules Andhra (NDA ally).

- No official response yet from Andhra to Karnataka's letters.

Why a majority of aviation accidents occur during takeoff&landing-Indian Express Explained

Science

Easy Explanation:
Most airplane crashes happen during takeoff and landing — not while flying at high altitudes. This is because planes are flying **low and slow** during these phases, giving pilots very little time to react if something goes wrong. During takeoff, engines are under maximum stress, and planes are more likely to stall. During landing, pilots must deal with complex factors like wind, weight, and speed, increasing the chance of mistakes. Also, birds, bad weather, or sudden changes are more likely at low altitudes.

Data from Boeing shows that while takeoff and landing make up only a small part of flight time, they account for most fatal crashes and deaths. On the other hand, cruising (flying at a stable height) takes the most time but has the fewest accidents.

Despite these risks, flying is still the **safest mode of transport**, and accidents have dropped sharply over the years.

Key Takeaways:

1. Most Accidents Happen During Takeoff or Landing

- These two phases account for nearly **half of all fatal accidents**.

- Yet, they make up only **6% of total flight time**.

2. Low Altitude = Less Reaction Time

- Pilots have less time to correct problems when flying low and slow.

- A stall or engine failure during takeoff can be fatal quickly.

3. Landing is Highly Technical

- Pilots must constantly adjust speed, angle, and respond to wind and weight.

- Most landing crashes are due to **pilot error**.

4. Cruise Phase is the Safest

- It takes up 57% of flight time but causes less than **1% of fatalities**.

5. Bird Strikes and Bad Weather Happen Near Ground

- Lower altitudes are more vulnerable to sudden threats like birds or turbulence.

6. Flying Is Getting Safer

- Global accidents per million flights dropped from 4.9 (2005) to 1.9 (2023).

- Planes are stronger, pilots better trained, and safety systems more advanced.

Justice Yashwant Varma case has sparked concerns about judicial accountability and independence. Thequestionis:Whojudgesthejudges?-In-house inquiry is not immunity-Indian Express Editorial

Polity

Easy Explanation:
The case involving Justice Yashwant Varma, where burnt currency was found at his home, has raised big questions about **judicial accountability** and **who holds judges responsible**. Normally, judges of the Supreme Court or High Courts cannot be prosecuted without the Chief Justice of India's (CJI) permission—this is based on the Supreme Court's **Veeraswami judgment** (1991), meant to protect judges from false cases.

However, critics say that this cannot be an excuse to avoid criminal action. Burnt currency notes could involve serious crimes like money laundering and corruption. Though an internal committee of judges was formed, and it submitted a report to the CJI and President recommending the judge's removal, **no FIR has been registered yet**.

Many legal experts argue that while judicial independence must be protected, it should not be a shield against criminal prosecution. The case exposes the **need for a clearer, transparent, and constitutionally sound system to investigate judges** when serious misconduct occurs.

Key Takeaways:

1. What Happened?

- Burnt currency was found at Justice Yashwant Varma's residence in March.

- An internal committee of judges was formed and recommended impeachment.

2. Why No FIR Yet?

- As per the *Veeraswami* ruling, a sitting judge cannot be prosecuted without the CJI's permission.

- Home Minister Amit Shah said no FIR can be filed without CJI's approval.

3. Legal Debate

- Critics say *Veeraswami* is being wrongly used to **block even basic criminal procedures**.

- Experts stress that **police should have preserved evidence** and begun investigation, even if the judge was not directly named at first.

4. Laws Potentially Violated

- Multiple laws may apply:
    - **Bharatiya Nyaya Sanhita (2023)**
    - **Prevention of Corruption Act (1988)**
    - **Money Laundering Act (2002)**
    - **Income Tax Act**, etc.

5. Why Judicial Accountability Matters

- Internal inquiries lack legal power to assign criminal responsibility.

- The Constitution gives Parliament and the President the final say on judge removal, but **criminal law must also apply where crimes exist**.

6. Bigger Constitutional Question: Who Judges the Judges?

- In-house committees serve disciplinary roles, not criminal justice.

- A **peer-review model with safeguards** is needed to ensure independence *and* accountability.

7. Public Trust at Risk

- Mishandling of the scene and delay in legal action undermines faith in the justice system.

- Transparency and adherence to law are essential to maintain credibility of the judiciary.

Justice Yashwant Varma case has sparked concerns about judicial accountability and independence. The Question is:Who judges the judges?-Peer review is the proper channel-Indian Express Editorial

Easy Explanation:
The Justice Yashwant Varma case—where burnt currency was found at a sitting judge's home—has reignited the debate on **judicial accountability vs independence**. The big question is: *Who judges the judges?*

According to India's legal framework, serious allegations against High Court and Supreme Court judges must go through a **defined process**, mainly the *Judges (Inquiry) Act, 1968*. This involves a **Parliament-backed investigation**, followed by possible impeachment. An **internal committee (peer review)** can be formed by the Chief Justice to look into the matter, but it does **not replace criminal investigation** if the act amounts to a crime.

Legal experts argue that while judicial independence is vital, it cannot mean immunity from prosecution. There are also calls to revisit the 1991 *Veeraswami judgment*, which requires the Chief Justice's approval before even filing an FIR against a judge. Experts recommend **institutional peer review**, like forming a **National Judicial Council**, to maintain both fairness and transparency.

Key Takeaways:

1. The Issue at Hand

- Cash was found at Justice Yashwant Varma's residence.

- An internal inquiry was done, but **no FIR was registered**.

2. What the Law Says

- *Veeraswami judgment (1991)*: No FIR or criminal action against a judge without CJI's approval.

- *Judges (Inquiry) Act, 1968*: Sets procedure for investigating judicial misconduct through Parliament.

3. Peer Review Is a Constitutional Tool

- In-house committees uphold **judicial independence** while addressing misconduct.

- Courts and Law Commission have supported **peer-led inquiries**, not executive-led probes.

4. Why Criminal Action is Still Needed

- Burnt currency could involve multiple serious offences: corruption, money laundering, etc.

- Internal inquiry ≠ criminal prosecution; both must proceed if crimes are suspected.

5. Concerns Raised

- Vice President Dhankhar and others question why there are **no punitive outcomes**.

- Parliament's role is essential, but **law enforcement cannot ignore criminal aspects**.

6. Suggested Reform

- Judicial accountability must be handled **within the judiciary** but follow **clear procedures**.

- Law Commission proposed a **National Judicial Council** to handle such cases independently.

7. Bottom Line

- The judiciary must be independent *and* accountable.

- Rule of law demands **no one is above the law**, including judges.

MOVING A MOUNTAIN-Indian Express Editorial

Sociology

Easy Explanation:
The **Deonar landfill in Mumbai**, active since 1927, is one of India's biggest and most polluted dumping sites. It has **over 20 million tonnes** of waste and produces large amounts of methane gas, toxic leachate (wastewater), and noxious fumes, which have been linked to **health problems and reduced life expectancy** in nearby areas like Govandi and Mankhurd. A recent study found pollution levels there are **four times the legal limit**.

Despite this, the Maharashtra government plans to **resettle people from Dharavi** at this hazardous site as part of a redevelopment project. Experts warn this is dangerous and irresponsible. For example, even the much smaller Mulund landfill, which started cleanup in 2018, has seen limited progress after 7 years.

Reclaiming Deonar is a massive task that cannot be rushed. The government must prioritize **health and environmental safety** over quick redevelopment.

Key Takeaways:

1. What is Deonar Landfill?

- Mumbai's oldest and largest dump, active since 1927.

- Holds over **20 million tonnes** of waste.

2. Toxicity Levels Alarmingly High

- Pollutants like **BOD, COD, and TDS** exceed safe limits by 4x.
- Site emits **6,202 kg of methane per hour**—a major health and climate concern.

3. Health Crisis for Locals

- Frequent fires and toxic fumes have **lowered life expectancy** in nearby areas.

4. Government's Controversial Plan

- Maharashtra plans to **rehabilitate Dharavi residents** on this hazardous site.
- Raises serious safety, ethical, and environmental concerns.

5. Cleanup Effort Unrealistic

- BMC claims it can clear Deonar in 3 years, but:
  - Mulund (4x smaller) took 7 years and still incomplete.
  - Only 67% cleared in 25 of 60 acres since 2018.

6. Call to Action

- The state must **rethink the relocation plan**.
- Cleanup should be **slow, safe, and scientifically managed**.

Moody's downgrade and U.S. fiscal reality -The Hindu Text and Context

Economy

Easy Explanation:
Moody's recent downgrade of the **U.S. credit rating** didn't trigger panic but signaled a deeper, long-brewing issue: America's growing debt and declining fiscal discipline. The downgrade is symbolic of eroding global confidence in the U.S.'s ability to manage its finances responsibly. This shift matters globally, as many countries, including **India**, rely on U.S. economic stability.

For India, the lesson is urgent. With its own debt at **around 80% of GDP**, rising global interest rates could increase borrowing costs and pressure the Indian economy, especially if investor confidence falters. India's fiscal culture—marked by **populist spending**, **low tax compliance**, and **weak institutional efficiency**—makes it more vulnerable to global shocks.

This isn't a moment for panic, but for serious **financial discipline**, long-term **planning**, and **reform**. India must shift from headline-grabbing freebies to investments in jobs, infrastructure, and skills—before market forces compel painful corrections.

Key Takeaways:

1. Moody's Downgrade: A Quiet Red Flag

- U.S. debt now exceeds **120% of GDP**.
- Markets didn't crash, but global trust in U.S. fiscal stability is eroding.

2. Why It Matters for the World

- Treasuries once seen as "sacred" are now under scrutiny.
- Central banks are diversifying away from the U.S. dollar.

3. India's Fiscal Mirror

- India's debt is around **80% of GDP**.
- A global shift in sentiment could pressure India's currency and borrowing costs.

4. The Deeper Problem: Fiscal Populism

- Pre-election promises like **loan waivers and free power** weaken fiscal health.
- Structural inefficiencies (tax, judiciary, education) limit long-term growth.

5. The Need for Reforms and Discipline

- Fiscal credibility must be **earned**, not assumed.
- India should focus on **job creation**, **infrastructure**, and **strategic trade**.

6. Global Message: Prestige ≠ Protection

- Even powerful economies like the U.S. are under watch.
- India must lead reform **on its own terms**, not wait for crisis-triggered reforms.

7. Final Insight

- In an age of mobile capital, **credibility is currency**.
- Fiscal caution isn't just a crisis tool—it's **a growth strategy** for modern India.

Urbanisation and the challenge of ideal transit solutions-The Hindu Editorial

Sociology

Easy Explanation:
As India urbanizes rapidly in its journey toward *Viksit Bharat 2047*, moving people efficiently within cities will be a huge challenge. Most of India's population will shift to cities by the 2060s, making **urban mobility** critical. However, our public transport infrastructure, especially **buses and metros**, remains underdeveloped. For example, India needs 2 lakh urban buses but has only 35,000.

Efforts like the **PM e-Bus Sewa** and **metro projects** are steps forward, but many metro systems aren't profitable and suffer from low ridership. High fares and poor last-mile connectivity discourage use. Moreover, India's cities lack the money to provide heavy subsidies like developed countries do.

Experts now suggest rethinking urban transport by considering **trams and trolleybuses**, which are more cost-effective and profitable in the long run than e-buses. The revival of trams, starting with Kochi, could offer a sustainable and financially viable transit future for India.

Key Takeaways:

1. Urban Boom Needs Transit Focus

- Over 60% of India's population will live in cities by the 2060s.
- Urban mobility will define the success of India's development plans.

2. Gaps in Public Transport

- India needs **2 lakh buses**, but only **35,000** run currently.
- Only **37%** of urban residents have easy access to public transport (vs 50%+ in China, Brazil).

3. Metro: High Cost, Low Returns

- Metros are **costly**, and most have not met expected ridership.
- Fares are a barrier; last-mile connectivity remains a problem.

4. Policy Push: E-buses and Road-based Transit

- The Budget supports 14,000 new **e-buses**, but they are expensive and not profitable over time.
- Focus on electric/CNG/hydrogen vehicles is increasing, but lacks private investment.

5. Trams: An Overlooked Solution

- Trams show **45% profit** over 70 years vs **82% loss** for e-buses.

- They're scalable, sustainable, and align with climate goals.

6. Time for Smarter Choices

- India must invest in **financially viable and sustainable modes** like trams and trolleybuses.

- The planned tram system in **Kochi** could be a model for other cities.

14 June 2025

Israel's biggest ever attack at the heart of Iran-N-facility hit, top military brass killed: HowIsrael struck Iran-Indian Express Explained

International relations

Easy Explanation:

Israel carried out a massive and surprise military attack on Iran, targeting its nuclear sites, missile bases, and top military officials. This comes after the UN's atomic agency (IAEA) said Iran was secretly working on nuclear weapons, violating global agreements. Israel considers a nuclear-armed Iran a major threat and acted before Iran could build a bomb. The Natanz nuclear plant—central to Iran's uranium enrichment—was heavily damaged, while explosions were reported near the Fordow facility.

In this strike, key Iranian leaders like the heads of Iran's military and nuclear programme were killed. This is a big blow to Iran's power structure. Though Iran sent over 100 drones in retaliation, there was little to no damage. Many experts say Iran may struggle to respond strongly because its own military has been weakened.

With US support, Israel holds the upper hand, while Iran is left with fewer options and serious questions over its defense strength.

Key Takeaways:

1. Trigger Event:
The IAEA accused Iran of secretly enriching uranium. This international censure prompted Israel's military action.

2. Biggest Israeli Strike:
Israel used around 200 jets to hit 100+ Iranian targets, making it its largest-ever military operation against Iran.

3. Natanz Hit Hard:
Natanz, the heart of Iran's nuclear program, was badly damaged. Fordow (another major facility) may also have been struck.

4. Military Leaders Killed:
Iran's top military officials and nuclear scientists were killed, shaking Iran's leadership and defense planning.

5. Blow to Diplomacy:
Ali Shamkhani, Iran's chief negotiator in talks with the US, was killed—damaging chances for any peaceful nuclear deal.

6. Weak Iranian Response:
Iran launched drones at Israel but caused no damage. Experts say Iran's ability to strike back has been severely hurt.

7. Power Imbalance:
With US backing, Israel's military edge over Iran has widened. Iran now faces a difficult choice: retaliate weakly or risk full-scale conflict.

Israel's biggest ever attack at the heart of Iran-Why strike on Natanzmay not cause radiation leak-Indian Express Explained

International relations

Easy Explanation:

After Israel's recent airstrikes on Iran's Natanz nuclear facility, many feared a possible nuclear explosion or radiation leak. But experts say such a disaster is unlikely. Natanz mainly stores uranium in the form of uranium hexafluoride (UF6) and uses centrifuges to enrich uranium for energy or, potentially, weapons. However, simply bombing such a site won't trigger a nuclear explosion. That's because enriched uranium isn't like a regular explosive—it needs a very precise mechanism to start a chain reaction.

Even if there's damage, at most there could be a local radiation leak within the facility. The uranium might get dispersed into the immediate area, causing health risks to workers nearby, but not a full-blown nuclear catastrophe. This is similar to fears during the Russia-Ukraine war at Zaporizhzhia nuclear plant, where major accidents were also avoided.

Key Takeaways:

1. Natanz Function:
Natanz is Iran's main uranium enrichment facility. It uses uranium hexafluoride (UF6) and centrifuges to enrich uranium, mainly for energy use.

2. No Risk of Nuclear Explosion:
Enriched uranium cannot explode like a bomb unless a very precise nuclear trigger is used, which airstrikes cannot achieve.

3. Radiation Leak Possible, but Limited:
A direct strike may cause local dispersal of radioactive material, but not widespread contamination or fallout.

4. Nuclear Weapons Not Involved:
No confirmed nuclear weapons were present at Natanz. Even if they were, they wouldn't explode without a specific detonation process.

5. Safety Mechanisms Exist:
All nuclear materials and weapons have built-in safety systems to prevent accidental detonation—even during conflict.

6. Comparison with Ukraine:
Similar concerns existed during fighting around Ukraine's nuclear plants, but major disasters were avoided there too.

CHANGE THE ANGLE-Indian Express Editorial

Geography

Easy Explanation:

A new set of images from the **Solar Orbiter** — a mission by ESA and NASA — has captured the **first-ever pictures of the Sun's South Pole**. This is a major scientific breakthrough. Until now, most photos of the Sun were taken from the flat plane in which all planets orbit (called the **ecliptic plane**). But by **tilting its orbit by 17 degrees**, the probe got a fresh view from "above" the Sun. This allowed scientists to study the Sun's **polar magnetic activity** — a key factor in understanding solar storms and space weather.

This might seem like a small shift, but it's extremely meaningful. It shows that even in science, **changing your angle or viewpoint** can lead to big discoveries. This also opens up new directions in solar research, especially as more tilted views are expected in the coming years. It's a reminder that **sometimes, a small shift in how you look at something can reveal a lot.**

Key Takeaways

1. Tilted Orbit Unlocks Polar Views
By tilting 17° out of the solar system's flat plane, Solar Orbiter captured the first images of the Sun's South Pole, revealing structures invisible from the ecliptic.

2. Magnetic Dynamo Under the Spotlight
Polar magnetic activity drives the Sun's global cycle. Direct observations will help refine models of how magnetic fields generate sunspots and storms.

3. Space Weather Forecasting Boost
Improved understanding of polar magnetic fields enhances our ability to predict solar flares and coronal mass ejections that can affect Earth's technology.

4. Technological and Collaborative Feat
Unlike earlier missions, Solar Orbiter carries both imaging and in-situ instruments, reflecting decades of ESA–NASA cooperation and advanced spacecraft design.

5. Ongoing Mission Potential
With further orbital tilts planned through 2026, Solar Orbiter will build a time-lapse of polar magnetic evolution, deepening our grasp of stellar physics and informing future solar missions.

THE PAST IS AN INSPIRATION-Indian Express Editorial

History

Easy Explanation:

The article argues that India must remember and honour the brave rulers and empires who resisted foreign invasions, especially between the 8th and 16th centuries. These invaders not only looted but also destroyed thousands of temples, burned scriptures, and tried to erase India's spiritual and cultural identity. However, Indian rulers like those of the **Vijayanagara Empire** and **Shivaji Maharaj** fought to protect dharma, temples, and people's rights. Shivaji, in particular, wasn't just a warrior—he was a

civilisational leader who stood for justice, religious tolerance, and cultural pride. Later, **Swami Vivekananda** revived this spirit during British rule by telling Indians to take pride in their roots and identity. The article says India's development must go hand in hand with remembering its civilisational legacy. This is not about hatred or rewriting history, but about giving rightful respect to those who preserved India's soul through difficult times.

Key Takeaways

1. Historical Imbalance
Invaders like Ghori and Aurangzeb are more prominent in school textbooks than Hindu rulers like Lalitaditya, Krishnadevaraya, and Shivaji who resisted invasions and protected Indian culture.

2. Medieval Destruction
Over 12,000 temples and many libraries were destroyed between the 8th and 16th centuries, aiming to break India's sacred and intellectual heritage.

3. Vijayanagara Empire
This empire stood as a southern fortress of dharma, temple building, and learning. Its fall at the Battle of Talikota in 1565 marked a major civilisational blow.

4. Shivaji Maharaj's Swaraj
Shivaji was not just a warrior but a visionary ruler who rebuilt temples, ensured justice, protected all communities, and re-established civilisational pride.

5. Swami Vivekananda's Message
At Chicago in 1893, he reminded the world—and India—of its spiritual greatness. He urged Indians to draw inspiration from their own culture and serve the motherland with pride.

6. Cultural Revival, Not Chauvinism
Celebrating civilisational heroes is not about hatred but about restoring forgotten truths and drawing strength from history.

7. Progress with Roots
As India builds a modern economy and reaches for the Moon, it must also remember the values, wisdom, and resilience that shaped its past.

Aspiration, choice, demography-Indian Express Editorial

Society

Easy Explanation

The UNFPA's 2025 report argues that the real global fertility crisis is **not about fewer births**, but about **women not being able to make free choices** about when or whether to have children. Many women and couples either have **more children than they want** or **struggle to have children when they want to**. In India, around **36% of people have had unintended pregnancies**, while **30% couldn't have children when they wanted**.

Barriers include **economic problems**, lack of childcare, **social pressure**, poor support for working women, and limited access to safe, affordable infertility treatment. Many women still face stigma and unequal relationships, while the family planning system is overly dependent on **female sterilisation**, not reversible contraception. The report stresses the need to focus on **reproductive rights**, informed choice, and policy support rather than blaming women or fearing demographic shifts.

Key Takeaways

1. Reproductive Autonomy Over Population Control
The real global issue is not low fertility, but the **denial of reproductive choice**—women and couples are often unable to plan if, when, and how many children to have.

2. India's Dual Fertility Gap
India faces both **underachieved fertility** (not enough children when desired) and **overachieved fertility** (unintended pregnancies), highlighting unmet reproductive needs.

3. Economic and Social Barriers
Financial insecurity, lack of childcare, **workplace discrimination**, and rigid gender roles discourage people from having children on their own terms.

4. Overdependence on Sterilisation
India still relies heavily on **female sterilisation**, limiting choices. There's an urgent need to expand access to **modern, reversible contraception**.

5. Infertility Remains Stigmatised
Despite medical advances, **infertility treatment is costly, poorly regulated**, and socially stigmatised, especially for women, creating a major access barrier.

6. Delayed and Poorly Spaced Childbearing
While urban, educated women delay childbirth, **spacing between children remains poor**, risking health outcomes due to lack of awareness and persistent son preference.

7. Policy Must Be Rights-Based, Not Fear-Based
Demographic anxiety over declining fertility ignores people's aspirations. Policies should support **reproductive dignity, equity, and informed choices**—not control.

The rot starts at the top of the aviation ladder-The Hindu Editorial

Governance

Easy Explanation

The Air India crash at Ahmedabad on June 12, 2025, has exposed serious problems in India's aviation system. The article argues that the core issue is not just pilot error but a deep **failure at the highest levels**—in the Ministry of Civil Aviation (MoCA), the Directorate General of Civil Aviation (DGCA), and airport authorities. Despite multiple past accidents, there is **little accountability**, and top officials continue in their roles without reforming safety systems.

The article criticises how pilots are always blamed, even when poor infrastructure, safety violations, or political interference play a role. In the Ahmedabad case, video footage shows grass near the runway (which can attract birds), possibly leading to bird strikes and engine failure. Investigators must also check for foreign object damage or faulty training procedures. International agencies are now involved in the investigation. But unless **India addresses its aviation leadership failures**, such accidents may keep recurring.

Key Takeaways

1. Systemic Rot at the Top
The article argues that corruption, bureaucratic incompetence, and political interference have crippled aviation oversight in India. Leadership failures are a recurring issue.

2. Lack of Accountability
In almost every past crash, only pilots are blamed. Senior officials, regulatory heads, and policy-makers continue unpunished despite clear evidence of lapses.

3. Pattern of Negligence
Major past crashes (1990 Bangalore, 2000 Patna, 2010 Mangaluru, 2020 Kozhikode) have not led to systemic improvements. The Ahmedabad crash continues this pattern.

4. ICAO Norm Violations
DGCA violated international norms by publicly naming pilots. Accident investigators are often chosen based on their willingness to deflect blame from higher authorities.

5. Bird Strike and Grass Mismanagement
Untrimmed grass around the runway may have attracted birds, causing engine failure during take-off—a sign of poor airport maintenance ahead of monsoon.

6. Possible Technical Causes
Bird ingestion into both engines or foreign object damage (similar to the 2000 Concorde crash) are likely causes. The aircraft's landing gear was never retracted, worsening drag.

7. Questions About Crew and Training
It's unclear if a trainee co-pilot was flying at the time. Sudden thrust loss, missed gear retraction, and inexperience may have led to poor climb and eventual stall.

8. Unsafe Construction Near Runway
The plane crashed into a tall building near the take-off path. This raises questions about how construction permits were granted near active air corridors.

9. Weak Legal System
The judiciary has failed to uphold safety petitions. A Supreme Court bench once dismissed a case against MoCA by simply forwarding it to the same ministry for review.

10. Urgent Need for Reform
The article concludes with a warning: unless deep structural reforms are made, and professionals—not bureaucrats—run aviation safety bodies, tragedies like this will continue.

15th June 2025

Why has the Axiom-4 mission been delayed?: TH FAQ

Science Tech

EASY EXPLANATION

India's astronaut-designate **Shubhanshu Shukla** was set to make history by flying to the International Space Station (ISS) on the **Axiom-4 mission**, becoming the **first Indian in Earth orbit in 40 years** and the **first Indian to visit the ISS**. But the mission has been **postponed indefinitely**.

The Axiom-4 mission is a **private space mission** to the ISS by **Axiom Space**, a U.S.-based company. The crew includes astronauts from different countries, and the mission uses **SpaceX's Falcon 9 rocket and Dragon capsule** to launch the team and cargo into space. India spent over ₹500 crore to secure Shukla's seat on this flight, showing strong India-U.S. space cooperation.

The mission was delayed multiple times due to bad weather and technical issues. Finally, SpaceX found a **leak of liquid oxygen (LOX)** in one of the rocket engines. LOX is super cold and necessary to burn fuel in the rocket — a leak here is dangerous and means the rocket can't be safely launched.

The ISS is close to Earth, so **launch opportunities come up often**, unlike Moon or Mars missions. Still, timing must be just right to save fuel and ensure docking at the ISS. NASA, Russia's Roscosmos, and other space agencies also send missions, so the **ISS schedule has to be carefully managed**.

Fixing a LOX leak is **tricky and slow**. LOX turns to vapor quickly, especially in warm conditions, and the leak can be hidden in difficult-to-reach areas. It also behaves differently when cold, meaning tests must be done in extreme temperatures to be sure the problem is fixed. Engineers use **special tools like bubble tests, helium detection, thermal imaging**, etc., to find and fix the leak.

As of June 14, Axiom has now rescheduled the launch for **June 19**, hoping all issues will be resolved by then.

KEY TAKEAWAYS

Axiom-4 Mission Overview

- Planned by **Axiom Space**, a private U.S. company.
- Crew includes **Shubhanshu Shukla** (India), Peggy Whitson, Sławosz Uznanski-Wiśniewski, and Tibor Kapu.
- Mission uses **SpaceX's Falcon 9 rocket and Dragon capsule**.
- Not a NASA supply mission; it's a **commercial human spaceflight**.

India's Involvement

- ISRO spent over **₹500 crore** to support Shukla's seat.
- Shukla is also part of ISRO's **Gaganyaan astronaut group**.
- Would have been **first Indian on the ISS** and first in orbit after Rakesh Sharma (1984).

Reason for Postponement

- A **LOX (liquid oxygen) leak** was detected in the rocket engine.
- LOX is crucial for rocket thrust and must stay extremely cold to function.
- Earlier delays were due to **weather and launch vehicle issues**.
- NASA and Roscosmos were also tracking a **pressure issue on the ISS**.

Why No Immediate New Date

- Fixing LOX leaks is **unpredictable** — takes time to find and fix.
- Launch **"windows"** must align with ISS orbit to minimize energy use.
- Launches to the ISS are **frequent** but must be carefully timed to avoid docking conflicts.

Fixing a LOX Leak

- LOX turns into gas quickly and is hard to detect.
- Leaks can be hidden inside foam or tight spaces.

- Materials behave differently at **cryogenic temperatures**; holes may open only when cold.
- Tests include:
    - **Visual checks**
    - **Bubble and flow-meter tests**
    - **Helium leak detection**
    - **Ultrasound and thermal imaging**

Current Status

- **Next launch attempt scheduled for June 19**.
- Engineers are working to ensure safety before the new date.

How should sexual abuse survivors be treated?: TH FAQ

Sociology

EASY EXPLANATION

The Delhi High Court recently issued **strict guidelines** to prevent delays and confusion in cases where **rape survivors, especially minors, need an abortion**.

The case involved a **17-year-old girl** who became pregnant due to rape. Though she was taken to **AIIMS Delhi** with a police officer and an FIR, the hospital **refused basic procedures** like ultrasound because she didn't have ID proof. The hospital kept delaying, even though the **Child Welfare Committee (CWC)** told them to proceed. By the time the ultrasound happened, she was found to be over **25 weeks pregnant** — or so the hospital claimed.

Later, when the court intervened and got a **medical board** to examine her, the foetus was found to be only **23 weeks and 4 days**. This meant she could have had the abortion **within legal limits**, and the court scolded the hospital for the delay and the inconsistent reports.

To prevent such incidents in the future, the court has **ordered hospitals, doctors, and police to follow clear procedures** without unnecessary hurdles. Hospitals **can't demand ID proof** when the police bring a rape survivor. If the pregnancy seems more than 24 weeks, they must **form a medical board immediately** and not wait for court orders. Hospitals must also **train doctors regularly** and keep guidelines visible in emergency and gynecology departments.

Police too must be **trained every 6 months** on how to deal with such sensitive cases, and must bring the survivor with **all documents as soon as possible**.

Earlier, the court had said **every survivor must be given a urine pregnancy test**, and if the person is pregnant and wants abortion, the matter must reach a medical board the **same day**.

KEY TAKEAWAYS

What Was the Case?

- A **17-year-old rape survivor** went to AIIMS for abortion.
- Despite a police escort and FIR, AIIMS **refused ultrasound** due to missing ID.
- CWC intervened, but delays continued.
- Hospital claimed pregnancy was **over 25 weeks** (above legal abortion limit).
- Later, a medical board found it was **actually 23 weeks and 4 days**.

- The court criticized AIIMS for **delays and errors**.

Directions Issued to Hospitals

- If police bring a survivor **with case file and FIR**, **no separate ID check** is needed.
- **Medical exam must be done immediately**, including ultrasound.
- If pregnancy is over 24 weeks, **form medical board right away** — don't wait for court order.
- Hospitals must display **legal procedures** in emergency/gynecology departments.
- **Doctors and staff to be trained quarterly** with legal aid bodies.
- A **nodal officer** in each hospital will handle all MTP cases and legal processes.
- Consent for abortion must be taken in **clear language (like Hindi or English)**.

What the Police Must Do

- **Mandatory 6-month training** for officers handling POCSO/sexual assault cases.
- Officers must bring survivors to hospital/board **quickly with case files**.
- Training records to be **added to police service files**.

Guidelines Issued Earlier

- **CWCs must inform** Delhi High Court Legal Services Committee (DHCLSC) if minor survivor is over 24 weeks pregnant.
- **DHCLSC must act fast** to get court approval for abortion if needed.
- Since January 2023:
    - All survivors must get **urine pregnancy tests**.
    - If pregnant and adult, survivor must be sent to **medical board same day**.
    - **State governments must ensure** hospitals have medical boards ready.

Psychology shows signs of recovery from replication crisis: TH Science

Science

EASY EXPLANATION

Around the 2010s, the scientific world realized something alarming — **many research findings could not be repeated** when tested again. This was especially true in **psychology and medicine**, and it led to what's called the **replication crisis**. If a result cannot be replicated, it means we can't trust it fully — and this **shook people's faith in science**.

But now, new research says **psychology as a field has improved**.

A researcher named **Paul Bogdan** from **Duke University** looked at **2.4 lakh psychology papers from 2004 to 2024**. He focused on whether the papers used strong or weak statistical evidence. Specifically, he studied "**p-values**", which are a way scientists judge if a result is significant or not. If a p-value is just barely under the accepted limit (between 0.01 to 0.05), it's considered **fragile** or weak evidence.

In 2004, **32% of psychology papers had such fragile p-values**. But by 2024, this number dropped to **26%**. That means psychology papers now have **stronger evidence and better methods**.

Why the improvement?

- **Sample sizes increased**, meaning more people were studied, which gives better results.

- **Effect sizes (strength of results) decreased slightly**, which is good — because exaggerated effects are a sign of small, weak studies.
- **Top journals and frequently cited papers now show fewer fragile results**, unlike earlier.

One strange finding: **top-ranked universities** still showed slightly more fragile results. That's because their studies often involve **complex biological or clinical work**, which is **expensive and hard to do on large groups**, so their sample sizes stay small.

To keep this progress going, scientists suggest:

- **Making data public (open-data)**
- **Pre-registering studies**, so that even negative or boring results are published
- **Getting more government support** for expensive, large-sample studies

KEY TAKEAWAYS

What Was the Problem?

- In the 2010s, many scientific studies **couldn't be replicated**.
- This was called the **replication crisis**, especially in **psychology and medicine**.
- Weak studies misled future research and shook public trust.

What Did the New Study Find?

- Researcher **Paul Bogdan** analyzed **2.4 lakh psychology papers (2004–2024)**.
- He looked at how often papers had **"fragile" p-values** (between 0.01 and 0.05).
- Fragile results fell from **32% (2004)** to **26% (2024)** — showing improvement.

Why Has Psychology Improved?

- **Larger sample sizes** became common after 2015.
- **Effect sizes shrank** — meaning more realistic, less exaggerated findings.
- **Stronger statistical power** across research papers.
- **High-impact journals and highly cited papers** now have fewer weak results.

What About Top Universities?

- Surprisingly, they had **slightly weaker results**.
- Reason: their studies are often **biological or clinical**, which are:
  - Expensive
  - Time-consuming
  - Ethically limited (can't always use large samples)

What More Can Be Done?

- **Open-data policies** — make research data public.
- **Pre-registering studies** — so even failed results are shared.
- **More funding** — for expensive, large-scale research to get solid evidence.

[Arc therapy beats tricky cancer while sparing nearby tissue: TH Science]

Science

EASY EXPLANATION

A medical team in the U.S. has used a **new radiation therapy technique called SPArc** (Step-and-Shoot Spot-Scanning Proton Arc Therapy) to treat a woman with **a rare head and neck cancer**. This is the **first time** this technique has been used on a patient.

SPArc is a form of **proton therapy**, where beams of protons are directed at a tumour to kill cancer cells. What makes SPArc special is that it **minimizes damage to nearby healthy organs**, which is very important for sensitive areas like the **brain, eyes, mouth, and spinal cord**.

The study compared three techniques:

1. **SFO-IMPT** – the current standard method.
2. **Step-and-Shoot SPArc** – the one actually used on the patient.
3. **Dynamic SPArc** – still being tested using computer simulations.

Results showed that **SPArc techniques reduced the radiation exposure** to important organs much more than SFO-IMPT. For example:

- Radiation to the spinal cord dropped by 90%
- Oral cavity: 72% less
- Brainstem: 10% less
- Optical chiasm (part of the eye): 56% less

Although **Dynamic SPArc** was slightly better, **Step-and-Shoot SPArc** still performed very well and was actually used on a patient for treatment.

The patient was a **46-year-old woman** with cancer in her **parotid gland** (near the jaw) that had spread close to her skull. She underwent **33 sessions** of treatment and experienced only **mild skin irritation**, without serious side effects like difficulty eating or working.

Here's how SPArc works:

- The machine delivers radiation in **layers** — like slices — by changing the energy of proton beams.

- It moves in steps along a 180° arc around the patient, delivering radiation from different angles.

- A **machine learning model** helped track the exact location of the tumour during treatment.

- When doctors noticed that the tumour shape changed as the woman lost weight, they **adjusted the plan mid-treatment**.

Experts say this is a big step forward because:

- It helps treat cancers in **complex areas like the skull base**, where precision is key.

- But, there are challenges — such treatments are **very expensive** and may not be affordable or needed for every cancer case.

- There's also a risk of **missing small tumours**, because tumours may move or shrink during treatment.

KEY TAKEAWAYS

What is SPArc?

- **SPArc** stands for **Step-and-Shoot Spot-Scanning Proton Arc Therapy**.
- It's a **high-precision form of proton therapy** that delivers radiation while **sparing nearby healthy tissues**.
- Used successfully on a patient with **head and neck cancer** for the **first time** in the world.

Why Is It Important?

- SPArc significantly **reduced radiation to critical organs** compared to standard therapy (SFO-IMPT):
  - **Spinal cord**: 90% less
  - **Oral cavity**: 72% less
  - **Optical chiasm**: 56% less
  - **Brainstem**: 10% less

Step-and-Shoot vs Dynamic SPArc

- **Step-and-Shoot SPArc**: Follows a fixed pattern to deliver radiation.
- **Dynamic SPArc**: Adjusts the beam continuously during treatment (still in testing).
- **Dynamic performed better**, but the difference was small.

Case Study: The First Patient

- A 46-year-old woman with cancer near her skull base.
- Treated in **33 sessions** with **minor side effects**.

- Adjustments made during therapy as the tumour and body changed shape.

How SPArc Works

- **Proton beams** are delivered in **energy layers** to target the entire tumour.
- A **computer scans and selects** the right energy and spot to deliver each dose.
- A **machine learning model** helped track changes in tumour size and patient anatomy.

Benefits

- **High precision**, ideal for tumours near critical organs.
- **Less damage** to healthy tissues.
- Can be **adjusted mid-way** if patient's condition changes.

Limitations and Concerns

- **Very high cost**; not suitable for all cancer patients.
- Risk of **"geographical miss"** – small tumours may be missed due to motion or shrinkage.
- Needs **regulatory approvals** and integration with hospital systems for wider use.

16th June 2025

Centre's rationale behind MGNREGS spending cap,the concerns with it-Indian Express Explained

Governance

Easy Explanation

For the first time, the Union Finance Ministry has told the Rural Development Ministry to spend no more than 60 % of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) budget during April–September 2025. Officials say the cap, imposed through the Monthly/Quarterly Expenditure Plan (MEP/QEP), should stop the scheme from running out of money early and needing mid-year top-ups. Critics counter that MGNREGS is a legal, demand-driven safety net. A hard ceiling could leave drought-hit villages without work or force states to delay wages once the limit is reached, potentially violating statutory guarantees upheld by the Supreme Court. With roughly half of the ₹86,000-crore outlay already earmarked for clearing last year's unpaid bills, observers fear the cap will squeeze new job creation just when rural distress peaks.

Key Takeaways

1. **Fiscal Control via MEP/QEP** – The Finance Ministry now meters out MGNREGS cash evenly through the year to curb overspending early on.

2. **Budget Front-Loading Problem** – Historically, 50–70 % of funds are spent by September, forcing supplementary grants and leaving large unpaid dues every March.

3. **Second-Half Cushion** – The 60 % cap is intended to save money for October–March so extra allocations are unnecessary later.

4. **Demand-Driven Nature Threatened** – A fixed ceiling undermines the scheme's role as an elastic safety valve during harvest failures or rural job losses.

5. **Weather-Linked Volatility Ignored** – Events like delayed monsoons can spike job demand mid-season, but the cap leaves no room for such contingencies.

6. **Legal Vulnerability** – Employment and timely wages are statutory rights; courts have ruled that lack of money cannot override them, making the cap challenge-prone.

7. **Workers' Two-fold Risk** – States may either deny job cards after the ceiling or let people work but delay wages, breaching the 15-day payment rule.

8. **Half the Budget Already in Arrears** – Clearing last year's liabilities could swallow almost half of the ₹86,000-crore FY-26 allocation, tightening funds even before the cap bites.

WHY PUNJAB IS STRUGGLING TO DIVERSIFY FROM PADDY FARMING-Indian Express Explained

Economy

Easy Explanation

Punjab grows paddy on more than nine-tenths of its kharif land and that share is set to stay near last year's record despite the state's push for crop diversification. Paddy's dominance began with decades of policies built for rice—assured Minimum Support Price (MSP) procurement, free electricity for groundwater pumps, and fertiliser subsidies. Farmers find the crop convenient, profitable, and low-risk compared with maize, pulses, or oilseeds, whose markets are weaker and prices uncertain. Pilot schemes—such as shifting 12,000 hectares to maize—are too small to dent a paddy area of 32 lakh hectares. Meanwhile, continuous paddy cultivation is eroding soil health and pulling groundwater down by about half a metre each year, while delayed transplanting rules have added stubble-burning and air-pollution problems. Until policy incentives move decisively away from rice and create reliable markets for alternatives, Punjab's fields will keep returning to paddy.

Key Takeaways

1. **Paddy Still Dominates Land Use** – About 91–92 % of Punjab's kharif acreage remains under paddy, leaving little space for other crops.

2. **Diversification Pilots Too Small** – Redirecting 12,000 hectares to maize barely scratches a 32-lakh-hectare rice landscape.

3. **MSP Assures Risk-Free Returns** – Guaranteed government procurement makes paddy financially safer than maize, pulses, or oilseeds.

4. **Subsidies Encourage Rice Culture** – Free power for irrigation pumps and cheap fertilisers tilt farmer economics toward water-hungry paddy.

5. **Water Table Falling Fast** – Groundwater levels drop roughly 0.5 m each year, largely because rice needs heavy irrigation.

6. **Soil & Pest Pressures Rising** – Monoculture weakens soil nutrients and heightens pest and disease risks, pushing fertiliser and pesticide use up.

7. **Stubble-Burning Link** – A law delaying paddy transplanting shortened the gap before wheat sowing, prompting farmers to burn residue and worsening air pollution.

8. **Policy Realignment Essential** – Without stronger price support, processing infrastructure, and assured markets for alternative crops, farmers have little incentive to leave paddy.

INFRASTRUCTURE OF DIGNITY-Indian Express Editorial

Governance

Easy Explanation

As the UPSC reforms debate intensifies, voices of disabled aspirants are often ignored. Many Persons with Benchmark Disabilities (PwBDs) face systemic barriers even before they sit for the exam. For instance, earlier rules didn't allow scribes for those with locomotor disabilities, and many exam centres still lack basic facilities like accessible toilets. Time-bound aptitude tests and inaccessible infrastructure—like metro stations without working elevators—further stack the odds against them. Despite possessing degrees and merit, many disabled candidates remain unemployed due to age limits, lack of work experience, and rigid policies in state and central recruitment. UPSC is often their only ladder to dignity and opportunity, but it too is fraught with obstacles. True civil service reform must go beyond syllabus and age tweaks; it must centre disability-inclusive policies. Without this, any talk of meritocracy is hollow, as the system continues to favour the privileged and able-bodied by design.

Key Takeaways

1. **Disabled Aspirants Are Often Left Out**
   Reform conversations rarely consider the struggles of candidates with disabilities, who face deeper, structural barriers.

2. **Scribes & Basic Facilities Still Inaccessible**
   Until recently, locomotor-disabled candidates weren't allowed scribes; even now, many exam centres lack accessible toilets.

3. **CSAT Disadvantages Disabled Candidates**
   Time-bound reasoning and numeracy tests hurt those with chronic illnesses or limited access to quality schooling.

4. **Rehabilitation Eats Into Youth**
   Aspirants with late-onset disabilities often spend their 20s in recovery, not internships, which harms their competitiveness.

5. **Public Sector Is Rigid, Private Sector Unwelcoming**
   Many PSCs deny the existence of some disabilities; private employers reject candidates due to age, lack of experience, or disability.

6. **Infrastructural Neglect Is Widespread**
   Daily commutes to classes are grueling due to poor urban infrastructure like broken lifts or inaccessible transport.

7. **Merit Must Be Redefined**
   If the system privileges health, wealth, and mobility, then the exam doesn't truly measure equal merit.

8. **UPSC Is Not a Fall-Back — It's the Only Hope**
   For many disabled aspirants, UPSC is the only viable route to dignity and employment.

9. **Disability-Inclusive Reform Must Be Central**
   Inclusion should not be an afterthought but the foundation of any meaningful civil service reform.

10. **Dignity Shouldn't Be Reserved for the Able-Bodied**
    Hope, dignity, and opportunity must be accessible to all — not rationed based on ability.

TRACKING THE MONSOON-Indian Express Editorial

Geography

Easy Explanation

India's southwest monsoon burst in eight-to-sixteen days early this year, reaching Kerala on May 24 and Mumbai on May 26. But after that first surge the rains stalled; since May 29 the monsoon's northern limit has not moved, leaving June rainfall 31 % below normal in most regions. The India Meteorological Department still predicts an "above-normal" season because no El Niño is forming and Indian-Ocean conditions look favourable, yet May's unusually cool, wet weather prevented the normal heating of the land that helps pull the monsoon northward. A quick revival is vital for timely kharif sowing. Luckily, food-price inflation is at a 43-month low thanks to bumper rabi harvests, record wheat stocks (38 million tonnes) and strong global grain prospects. Even so, recent climate and geopolitical shocks have shown policymakers that they cannot take cheap commodities for granted; keeping import options open remains prudent.

Key Takeaways

1. **Early Burst, Sudden Stall** – The monsoon hit Kerala and Mumbai well ahead of schedule but has barely advanced since May 29, leaving June rainfall 31 % below normal.

2. **Cool, Wet May Blunted Heat Lows** – Unseasonal showers kept May temperatures 1.5 °C below average, preventing the land heating that draws in moist winds.

3. **Ocean Signals Remain Favourable** – Neutral El Niño conditions and a weak negative Indian Ocean Dipole still point to an "above-normal" season, according to the IMD.

4. **Revival Crucial for Kharif Sowing** – The rains must reach Gujarat, Bengal, Jharkhand and Bihar soon to give farmers a viable window for rice, pulses, oilseeds and cotton.

5. **Food Inflation at Multi-Year Low** – Thanks to a bumper rabi harvest, consumer food-price inflation fell below 1 % in May; wheat stocks are at a four-year high.

6. **Global Harvest Outlook Strong** – The USDA projects record world grain and oilseed output for 2025-26, offering an external buffer against price spikes.

7. **Policy Vigilance Needed** – Climate and geopolitical shocks show commodity prices can turn quickly; keeping import channels open remains prudent.

What are flue gas desulphurisation units?-The Hindu text and Context

Science

Easy Explanation

Flue Gas Desulphurisation (FGD) units are add-on devices at coal-fired power plants that scrub sulphur dioxide (SO_2) from exhaust before it exits the smokestack. SO_2 is a key driver of acid rain, lung-damaging PM2.5 particles and crop losses. Three main FGD methods exist: dry sorbent injection (powdered lime/limestone blown into flue gas), wet limestone scrubbers (flue gas bubbled through a limestone-water slurry that converts SO_2 into useful gypsum) and seawater scrubbing (SO_2 absorbed into seawater, then neutralised before discharge). India's 2015 rule required every coal plant to add FGDs, yet only 39 of 537 units have complied because installation costs roughly ₹1.2 crore per MW and can raise power tariffs by about ₹0.7 per kWh. A recent expert panel urged rolling the mandate back to avoid large capital outlays as new coal capacity is built. Critics warn that without FGDs India risks missing clean-air goals—because there is no other proven way to strip SO_2 from coal flue gas.

Key Takeaways

1. **What FGDs Do** – They chemically remove SO_2 from flue gas, preventing its release into the air.

2. **Three Core Technologies** – Dry sorbent injection, wet limestone scrubbers (most common) and seawater scrubbing for coastal plants.

3. **Health & Environment Stakes** – SO_2 drives PM2.5 pollution, respiratory disease and acid rain, making mitigation essential.

4. **High Up-Front Cost** – Installing wet FGDs costs ~₹1.2 crore per MW and can add ~₹0.60–0.75 per kWh to tariffs.

5. **Compliance Lag** – Only 39 of 537 Indian coal units have FGDs a decade after the 2015 mandate; deadlines now stretch to 2027-29.

6. **Government Rethink** – An expert committee and the power ministry cite cost, grid-expansion needs and modest local air benefits as reasons to consider rollback.

7. **No True Substitute** – Low-sulphur coal or biomass blending can reduce SO_2 but cannot meet the 2015 emission norms; FGDs—or phasing down coal—remain the only reliable solutions.

Why have special economic zones rules been relaxed?-The Hindu text and Context

Economy

Easy Explanation

Semiconductors are the “brains” of every modern electronic device, from smartphones and cars to cloud servers and AI hardware. India still imports almost all the chips it consumes, so the government has been wooing manufacturers with the ₹76,000-crore Semicon India package (2022) and, most recently, by loosening Special Economic Zone (SEZ) rules. On June 9, three key tweaks took effect: (1) the minimum land requirement for a chip-only SEZ fell from 50 hectares to 10, letting investors start smaller campuses; (2) the Board of Approval may waive the strict “encumbrance-free” land clause, speeding projects in India’s messy land-title environment; and (3) chip SEZs may now sell into the domestic market after paying duties, shielding them from export downturns. Within days, Micron (₹13,000 crore, Sanand - Gujarat) and Aequs (₹100 crore, Dharwad - Karnataka) secured fresh SEZ approvals—early evidence that the relaxed rules are drawing investment.

Key Takeaways

1. **Land Rule Eased** – Chip-focused SEZs now need only 10 hectares, lowering entry barriers for mid-sized fabs and assembly plants.

2. **Faster Land Clearances** – The Board of Approval can overlook minor encumbrances, cutting long legal delays common in Indian land acquisition.

3. **Domestic Sales Allowed** – SEZ units may supply India’s market after paying duties, giving factories a steady outlet even if exports soften.

4. **First Movers In** – Micron's ₹13,000-crore memory-assembly plant (37.6 ha) and Aequs's ₹100-crore electronics cluster (11.55 ha) are the first to exploit the new rules.

5. **Part of Bigger Push** – The SEZ tweaks complement the Semicon India incentive scheme and state-level subsidies aimed at luring global chipmakers.

6. **Strategic Imperative** – Diversifying supply chains away from China and securing chip self-reliance protects India's digital, automotive and defence sectors.

7. **Early Days Yet** – While initial approvals look promising, long-term success will hinge on timely infrastructure, skilled talent, reliable power, and continued policy stability.

How a lung gene is linked to post-COVID symptoms as per genetics study-The Hindu text and Context

Science

Easy Explanation

A huge international genetics project compared the DNA of 6,450 people with long-COVID and nearly two million without it. The scan homed in on one tiny spelling change (variant rs9367106) near the **FOXP4** gene on chromosome 6. People who carry the "C" version of that variant were about 63 % more likely to keep suffering fatigue, breathlessness or brain-fog months after infection—even if their original bout of COVID wasn't severe. FOXP4 is most active in type-2 alveolar cells, the lung cells that keep air-sacs open and repair damage. The risk variant seems to dial FOXP4 activity up, perhaps altering how those cells respond to viral injury and inflammation, leaving some patients stuck in a slow-healing cycle. Because the variant is common in East Asians (≈ 36 %) but rare in Europeans (≈ 1.6 %), the study shows why diverse ancestry data matter. It also underlines that genes are only one piece; vaccination, co-illnesses and environment still shape who develops long-COVID.

Key Takeaways

1. **FOXP4 flagged as a risk gene** – A single variant near FOXP4 raised long-COVID odds by ~63 %.

2. **Acts through the lungs** – The risk region is "switched on" mainly in lung tissue, especially type-2 alveolar cells that repair airway damage.

3. **Risk independent of initial severity** – The association held even for people who were never hospitalised, hinting at biology beyond acute illness.

4. **Big ancestry differences** – The variant is common in East Asians but rare in Europeans, showing why multi-ethnic data improve discovery.

5. **Blood evidence backs it up** – People with higher FOXP4 gene activity months after infection were twice as likely to report persistent symptoms.

6. **Overall genetic effect is modest** – FOXP4 explains only a slice of risk; immunity, co-morbidities and environment still play major roles.

7. **Indian data still sparse** – South Asians were under-represented; GenomeIndia's new reference panel could enable a country-specific study.

8. **Study pre-vaccination/Omicron** – Most samples came before mass vaccination and newer variants, so findings may shift as the virus evolves.

How do black boxes work?-The Hindu Text and Context

Science

Easy Explanation

A modern "black box" isn't black at all—it's a bright-orange, crash-proof capsule that actually houses two digital recorders: a **Cockpit Voice Recorder (CVR)** and a **Flight Data Recorder (FDR)**. During every flight the FDR samples hundreds of parameters—altitude, speed, engine settings, control-surface positions, warnings—taken from the aircraft's flight-control computers and sensor buses, storing at least the last 25 hours. The CVR keeps a rolling two-hour loop of cockpit voices, radio calls and ambient sounds through shielded microphones.

Both recorders write to solid-state memory chips sealed inside a titanium or stainless-steel"Crash-Survivable Memory Unit" wrapped in layers of thermal insulation and impact-absorbing material. The capsule must survive 1 h at 1,100 °C, 3 tons of crush force, deep-sea pressure and high-velocity impact. Once submerged, an attached Underwater Locator Beacon pings at 37.5 kHz for roughly 30 days, guiding search teams. Investigators recover the unit, download the data with special interfaces, and use the synchronized voice and sensor timeline to reconstruct the aircraft's final minutes and identify what went wrong.

Key Takeaways

1. **Two Recorders in One Box** – CVR captures cockpit sound; FDR logs flight parameters—together they create a synchronized event timeline.

2. **Solid-State Memory** – Modern units use flash chips (no moving parts) for reliability, replacing earlier magnetic-tape designs.

3. **Rugged Construction** – Crash-survivable housing endures extreme heat, impact, water pressure and chemical exposure.

4. **Bright Orange for Visibility** – High-visibility paint plus reflective tape help search teams spot the unit at a debris site.

5. **Underwater Locator Beacon** – A battery-powered "pinger" emits acoustic signals for ~30 days, aiding deep-water recovery.

6. **Data Depth and Duration** – Regulations require at least 25 h of flight data and 2 h of cockpit audio; many record far more.

7. **Constant Evolution** – Concepts trace back to 1950s metal-foil recorders; today's research explores streaming real-time flight data via satellite to complement onboard black boxes.

AI and biomanufacturing: can the policies match our ambitions?-The Hindu Science

Science

Easy Explanation

India wants to marry its long-proven strength in low-cost drug production with the power of artificial intelligence. Policies such as the 2024 BioE3 roadmap and the IndiaAI Mission promise new biomanufacturing hubs, "Bio-AI" research centres and generous grants. In today's pilot plants, sensors stream live data while AI models tweak fermentation temperatures or predict vaccine yields; digital twins let engineers test changes without ruining real batches. Companies from Biocon to Tata CS are already cutting costs and speeding drug discovery this way. But India's rules were built for an earlier era. There is still no clear test to prove that an AI model trained on urban factory data will work in rural plants, no tiered safety categories like the EU's AI Act, and no guidance on who owns an algorithm-designed molecule. Unless India builds risk-based, adaptive regulations, its lofty AI-biotech ambitions could be tripped up by data gaps, legal disputes and loss of public trust.

Key Takeaways

1. **AI-Ready Factories** – Sensors, robots and digital twins are already improving yields and slashing wastage in Indian biotech plants.

2. **Flagship Policies** – The 2024 BioE3 Policy and IndiaAI Mission offer funding, biofoundries and standards for "explainable" AI.

3. **Regulatory Lag** – Drug and device rules don't yet address dataset quality, model validation or real-time algorithm updates.

4. **Global Benchmarks** – The EU's tiered AI Act and U.S. FDA's "predetermined change control plans" show how risk-based oversight can work.

5. **Data Governance Gaps** – India's Data Protection Act covers privacy but not the clean, diverse, bias-free datasets biomanufacturing AIs need.

6. **IP and Ownership Issues** – As AI starts inventing molecules, India must clarify who owns the resulting patents and training data.

7. **Action Agenda** – Adopt adaptive, context-specific rules; invest in nationwide talent and infrastructure; and build collaborative forums linking regulators, industry and academia.

Common molecule offers clue to making old muscles young again-The Hindu Science

Science

Easy Explanation

As we grow older, our muscle-repair crew—muscle stem cells (MuSCs)—becomes sluggish, so injuries and everyday strain heal more slowly. A new mouse study in *Cell Stem Cell* shows that this slowdown can be reversed with a familiar compound: prostaglandin E2 (PGE2), already used in hospitals to induce labour. Researchers gave aged mice five daily PGE2 shots. Within weeks, their MuSCs "woke up," began dividing again, and rebuilt muscle fibres nearly as well as those of young mice. Treated animals gained muscle mass and about 20 % more strength than untreated peers, and the benefits lasted at least two weeks after the injections stopped. Even MuSCs isolated from old mice regained youthful power after just 48 hours of PGE2 exposure in a dish, then formed robust new tissue when transplanted. Molecular tests revealed that PGE2 re-opened "closed" sections of the aged genome and calmed an overactive stress pathway, resetting the cells' internal programs toward youthfulness.

Key Takeaways

1. **PGE2 Jump-starts Old MuSCs**
   Five injections restored aged stem cells' ability to divide and repair muscle.

2. **Strength & Mass Rebounded**
   Treated elderly mice grew larger muscle fibres and gained ~20 % more strength.

3. **Lasting Effect**
   Improvements persisted for at least two weeks beyond the treatment window.

4. **Works Outside the Body Too**
   Old MuSCs pre-treated with PGE2 in vitro generated youthful muscle when transplanted.

5. **Genome "Re-opened"**
   PGE2 made age-shuttered DNA regions accessible and toned down an overactive AP-1 stress pathway.

6. **Shifts Ageing Paradigm**
   Findings show stem-cell ageing is partly reversible from within, not just dictated by the surrounding environment.

7. **Therapeutic Promise for Sarcopenia**
   Because PGE2 is already clinically used, brief courses could one day aid elderly patients' muscle recovery after injury or surgery.

Mind the gap-The Hindu Editorial

Sociology

Easy Explanation

India has slipped two places to rank 131 out of 148 countries in the World Economic Forum's 2025 Global Gender Gap Index, with an overall parity score of just 64.1 per cent. The index tracks four areas: economic participation, education, health, and political empowerment. India posted small gains in three of them—women's estimated earned income rose slightly (from 28.6 % to 29.9 %), and health-plus-education indicators inched up. But the country's already-low score for political empowerment fell further: women's share of Lok Sabha seats dropped to 13.8 %, and women ministers fell to 5.6 %. These setbacks outweighed the modest economic and social gains. The 2023 Women's Reservation Act now guarantees one-third of seats for women in Parliament and State legislatures, but it will not take effect until after the 2029 elections, pending census and delimitation. Until then, progress depends on political parties voluntarily fielding more female candidates and strengthening women's economic and social opportunities.

Key Takeaways

1. **Overall Rank 131/148** – India's parity score is 64.1 %, among the lowest in South Asia.

2. **Economic Parity Edges Up** – Women's estimated earnings share rose slightly and labour-force participation held at a record 45.9 %.

3. **Education & Health Stable** – Minor improvements keep these two pillars broadly steady.

4. **Political Parity Deteriorates** – Women's Lok Sabha representation fell from 14.7 % to 13.8 %; ministerial share slid to 5.6 %.

5. **Women's Reservation Act Delayed** – One-third seat quota will start only after census-linked delimitation, likely 2029.

6. **Parties Need Not Wait** – Nothing stops parties from nominating more women now, even before the law kicks in.

7. **Policy Focus Required** – Consolidate economic and social gains while tackling political under-representation through targeted reforms and strong political will.

Fire on waters-The Hindu Editorial

Science

Easy Explanation

The Indian coast faces three big peacetime dangers from merchant ships: vessels sinking (blocking sea-lanes and spilling cargo), onboard fires, and major oil spills. The recent blaze on container ship **MV Wan Hai 503** off Kerala tested India's readiness. Over 140 of its 1,754 containers held hazardous goods; exploding boxes sent plumes of grey, brown and black smoke sky-high. Rough monsoon seas made firefighting risky and the burning ship drifted toward shore. Coast Guard patrol boats and an Indian Navy helicopter teamed up: the chopper winched a salvage team onto the deck, passed a steel tow-line, and tugs hauled the vessel 45 nautical miles seaward into deep water. Hot spots remain, but immediate coastal danger is gone. Past incidents—such as the 2020 inferno on the VLCC *New Diamond*—show that India's growing maritime-firefighting toolkit, plus modern ship design, can avert catastrophic spills. Yet faster salvage capacity and robust oil-spill response still need strengthening.

Key Takeaways

1. **Three Core Risks** – Sinking ships, onboard fires, and oil spills are India's main peacetime maritime threats.

2. **Wan Hai 503 Incident** – Hazardous-cargo blaze was contained by Coast Guard and Navy under rough monsoon conditions.

3. **Air-Sea Coordination Matters** – A Navy helicopter insertion and steel tow-line prevented the drifting vessel from grounding.

4. **Workhorse Patrol Vessels** – Most Coast Guard cutters now carry advanced firefighting gear as part of their mandate.

5. **Oil & Gas Carriers = Higher Stakes** – VLCCs and LNG ships pose the gravest fire-and-explosion hazards at global choke points.

6. **2020 *New Diamond* Success** – India earlier doused a week-long VLCC fire near Colombo, proving growing capability.

7. **Gaps Remain** – Rapid salvage of sunken hulls and large-scale oil-spill control demand greater multi-agency coordination and investment.

17th June 2025

BONN CLIMATE CHANGE CONFERENCE BEGINS:EVERYTHING YOU NEED TO KNOW-Indian Express Explained

Environment

Easy Explanation

The UNFCCC's mid-year meeting (SB 62) opened in Bonn on 16 June 2025 and runs until 26 June. More than 5,000 delegates—governments, scientists, civil-society and Indigenous groups—are working on the technical details that will shape decisions at COP 30 in Belém this November. Core tasks include finalising indicators for the Global Goal on Adaptation, agreeing pathways to scale up climate finance and operationalise the loss-and-damage fund, and reviewing implementation of past pledges. The talks are steered by the Subsidiary Body for Implementation (SBI) and the Subsidiary Body for Scientific and Technological Advice (SBSTA), which connect IPCC science with policy text.

Key Takeaways

1. **Mid-Year Negotiation Hub** – Bonn sets the agenda for COP 30.

2. **Adaptation Metrics** – Parties aim to lock in measurable targets under the Global Goal on Adaptation.

3. **Finance Front-and-Centre** – Scaling public-private capital and activating the loss-and-damage fund top the agenda.

4. **Science–Policy Bridge** – SBSTA channels IPCC findings; SBI audits delivery gaps.

5. **Broad Stakeholder Voice** – NGOs, business and Indigenous leaders press for fair, urgent action.

6. **Eleven-Day Sprint** – Meetings run 16–26 June with a high-level stock-take on 24 June.

WARMER CLIMATE COULD WORSEN SLEEP APNOEA,STUDY FINDS-Indian Express Explained

Science

Easy Explanation

A large Nature Communications study that tracked more than 116,000 people across 41 countries found that hotter nights sharply raise the risk and severity of obstructive sleep apnoea (OSA). Using under-mattress sensors and local temperature records, the researchers showed that on unusually warm nights the likelihood of an apnoea event jumps 45 per cent. If global average temperatures rise 1.8 °C above pre-industrial levels—a scenario expected late this century—OSA cases and related health-care costs could roughly double. Under still-hotter scenarios the burden may climb two- to three-fold. Poorer nations, including India, are projected to feel the largest impact. Because OSA already heightens the danger of heart disease, diabetes, anxiety and workplace accidents, the authors warn that climate policy now needs to include sleep-health adaptation measures.

Key Takeaways

1. **Big Data, Clear Signal** – 500 nights of sleep data per person revealed a consistent temperature–apnoea link.

2. **45 % Spike on Hot Nights** – Warmer-than-average nights significantly increase breathing interruptions.

3. **Double Trouble by 2100** – Even a 1.8 °C rise could double global OSA prevalence and costs.

4. **Equity Gap** – Low- and middle-income countries face the steepest increases in cases and economic loss.

5. **Health Domino Effect** – More OSA means higher rates of cardiovascular disease, diabetes, and mental-health issues.

6. **Policy Implication** – Climate adaptation plans should address indoor cooling, sleep-friendly housing design, and OSA screening.

How India will conduct Census-Indian Express Explained

Sociology

Easy Explanation

India's delayed 16th Census will run in two steps. House-listing happens through most of 2026 (starting October 1 for snow-bound Himalayan states); population enumeration follows 1 March 2027 nationwide. Roughly three million mostly teacher-enumerators, backed by 1.2 lakh supervisors and 46 000 trainers, will carry out the country's first fully digital count. Using a mobile-app, they will geo-tag every dwelling, record amenities, and later collect person-level data such as age, education, occupation, caste, disability and migration history. Built-in drop-down codes replace free-text answers, speeding processing and cutting errors; households may also self-enumerate online. Results feed into constituency delimitation, welfare allocations and development planning, so accuracy is paramount. Challenges—digital literacy, patchy connectivity and privacy fears—are being met with intensive training, offline data capture that syncs when signal returns, and real-time quality checks. Provisional totals should appear within ten days of enumeration, with detailed tables six months later.

Key Takeaways

1. **Two-Phase Schedule** – House-listing happens across 2026 (starting 1 Oct 2026 in snow-bound states), followed by population enumeration nationwide from 1 Mar 2027.

2. **Digital-First Census** – Enumerators will collect data on a smartphone app with GPS tagging, geofencing, and real-time validity checks; paper forms are only a fallback.

3. **Massive Field Force & Training** – About 30 lakh enumerators, 1.2 lakh supervisors, and 46 000 trainers will be deployed, using the new Census Management & Monitoring System for oversight and troubleshooting.

4. **Expanded Questionnaire & Full Caste Count** – First all-India caste enumeration since 1931 plus new columns on internet use, gas type, cereal staple, vehicle ownership, climate-driven migration, and a "transgender" gender option.

5. **Standardised Coding & Faster Processing** – Drop-down directories for caste, language, occupation, etc., ensure uniform entries and speed up computer processing; alerts flag improbable ages or household sizes for instant correction.

6. **Self-Enumeration Option** – Households may submit details online or in-app, receive a unique ID, and simply verify data when the enumerator visits—saving time and reducing error.

7. **Policy, Political & Logistical Stakes** – Census data will redraw constituencies, guide fund and subsidy distribution, and shape development schemes ahead of the 2029 Lok Sabha poll; challenges such as low digital literacy, patchy connectivity, and respondent reluctance will be met with intensive training, offline app functionality, and on-site support.

THE LONG FIGHT-Indian Express Editorial

governance

Easy Explanation

Punjab's opioid crisis has defied a decade of political promises, from Captain Amarinder Singh's 2017 "four-weeks" vow to the Aam Aadmi Party's recent May-31 deadline. Yet glimpses of progress are emerging. Police have begun diverting small-quantity users to de-addiction centres rather than jail, registering over 10 000 people in rehab or OOAT clinics and freezing dealers' assets. Grass-roots vigilance committees—often led by mothers—now patrol village borders to keep smugglers out. Still, enforcement alone cannot succeed. Punjab remains a prime target of narco-terror networks that exploit porous borders and drones. Sociologists link surging drug demand to youth despair in an agriculture-heavy economy yielding fewer returns. Recent moves to cut red tape for industry and relax shop-act rules are positive, but bigger steps are needed—diversifying into manufacturing and services, nurturing start-ups, and making farming sustainable. Punjab can win its drug war only through a sustained, multi-pronged strategy that fights both supply and demand.

Key Takeaways

1. **Repeated Missed Deadlines**
   Successive governments (Congress 2017, AAP 2025) have set—then missed—ambitious dates to "wipe out" drugs, breeding public cynicism.

2. **Shift to Treatment Over Jail**
   More than a thousand users caught with small quantities are now sent to de-addiction centres; over 10 000 have enrolled in OOAT or rehab programmes.

3. **Asset Freezes and Demolitions**
   Authorities are freezing peddlers' property and, controversially, razing some structures—signalling tougher action on middlemen, not just users.

4. **Narco-Terror and Drone Routes**
   Smugglers linked to hostile actors exploit Punjab's border, increasingly using drones to ferry both drugs and weapons.

5. **Village and Mother-Led Vigilance**
   Local committees, often spearheaded by mothers of addicts, patrol village perimeters and alert police—showing grassroots ownership of the fight.

6. **Demand-Side Roots: Youth Despair**
   High unemployment and an agriculture-dependent economy with shrinking returns fuel addiction; hope dries up faster than enforcement can plug supply.

7. **Economic Diversification Is Crucial**
   Punjab's new industry-friendly measures, shop-act reforms and potential AI-age skilling must scale up—paired with sustainable farm reforms—to shrink the demand driving the drug trade.

Engaging a divided West-Indian Express Editorial

International relations

Easy Explanation

The 2025 G7 summit in Canada highlights widening rifts within the once-cohesive Western bloc. Donald Trump's return to the White House revives "America-first" tariffs, demands for defence-spending hikes, and a hard line on "woke" European norms. Europe, meanwhile, is split from Washington over Israeli policy, climate targets, and digital-regulation frameworks. Russia's war in Ukraine and Israel–Iran tensions deepen anxieties about the durability of U.S. commitments. Host Prime Minister Mark Carney has dropped the traditional joint communiqué, signalling that consensus is out of reach. For India—an invited guest—such fragmentation offers both risks and leverage. Prime Minister Narendra Modi can use the summit to strengthen bilateral ties, soothe strains with Canada, and position India as an indispensable partner in a fluid, multipolar order. Ignoring fringe Khalistani protests and Trump's Kashmir remarks, New Delhi must study Western contradictions and hedge against their fallout while pursuing strategic, economic, and technological gains.

Key Takeaways

1. **G7 Unity Frays**
   Trade, tech, climate, defence budgets, and Middle-East policy now divide the group once marketed as a unified "democratic" front.

2. **Trump's Unilateral Turn**
   New U.S. tariffs and a call for 5 %-of-GDP defence spending unsettle European and Canadian partners, reviving 2018-style tensions.

3. **No Joint Communiqué**
   Host Canada will issue only a summary note—an admission that the leaders cannot reach full consensus.

4. **Russia & Middle East Strains**
   Varied appetites for supporting Ukraine and differing responses to Israel–Iran flare-ups sharpen intra-Western disagreements.

5. **Europe's Liberal vs. MAGA Clash**
   Trump's anti-"woke" narrative and backing for Europe's far-right parties deepen ideological fissures across the Atlantic.

6. **Opportunity for India**
   As a regular invitee, India can exploit Western splits to widen issue-based coalitions, secure technology and investment, and elevate its global voice.

7. **Strategic Homework for Delhi**
   Modi must balance repairing Canada ties, engaging a maverick Trump, and ensuring that Bay-of-Bengal, Indo-Pacific, and Ukraine policies serve India's long-term interests amid a fractured West.

What is the significance of the Shipki La pass?-The Hindu text and Context

Geography

Easy Explanation

Shipki La (3,930 m) in Himachal Pradesh's Kinnaur district is one of only three motorable land routes between India and Tibet. For centuries it served as a barter trail linking the former Bushahr kingdom (Rampur) with Tibet's Guge region. Trade halted after the 1962 Sino-Indian War, and later security flare-ups (Doklam, Galwan) and the pandemic kept the pass closed to commerce. In June 2025 Himachal Pradesh scrapped the inner-line permit for Indian tourists, reviving hopes that New Delhi and Beijing might eventually reopen it for limited trade and pilgrim traffic to Kailash-Mansarovar.

Key Takeaways

1. **Historic Lifeline**

   - Documented since the 15th century—and rooted in older oral lore—Shipki La was the main trans-Himalayan artery for Bushahr-Guge commerce and cultural exchange.

2. **Trade Stoppage Drivers**

   - Traffic first froze after the 1962 war; subsequent border tensions (Doklam 2017, Galwan 2020) and COVID-19 restrictions kept both trade and tourism shut.

3. **Shared Culture & Spirituality**

    - Communities on both sides are Buddhist pastoralists who share surnames, festivals and devotion to Kailash-Mansarovar; folklore framed their trade pact as everlasting until "Kailash dries up or a crow turns white."

4. **Limited but Vital Commerce**

    - While volumes were tiny compared with seaborne India-China trade, the pass sustained local economies with a wool-for-grain exchange plus gold, turquoise, livestock, timber and handicrafts.

5. **Tourism Reboot**

    - Dropping the permit requirement lets Indians visit the pass with an Aadhaar card; locals aim to parlay this into full reopening, slicing the Delhi–Mansarovar journey by about two weeks and spurring pilgrim circuits.

6. **Economic Hopes for Kinnaur**

    - Reopening could revive handicrafts, hospitality and transport jobs for tribal youth, and justify better road, telecom and border-trade infrastructure.

7. **Soft-Power Corridor**

    - Even partial trade or pilgrim traffic would act as grassroots diplomacy, fostering trust where high-level talks stall—offering a template for development-led peace along the Himalayas.

What are the ambiguities in India's nuclear liability law?-The Hindu text and Context

Economy

Easy Explanation

India's Civil Liability for Nuclear Damage Act (CLNDA), 2010 was enacted to align domestic law with the global Convention on Supplementary Compensation (CSC) and to guarantee quick, adequate payouts after a nuclear accident. It fixes "strict-and-no-fault" liability on the plant operator (currently always NPCIL), capped at ₹1,500 crore, with any excess met by the Union Government up to ~₹2,200 crore (300 million SDR). Where the CSC channels all liability exclusively to the operator, India inserted an extra

layer: suppliers may also be sued if faulty equipment or wilful misconduct caused the accident. Sections 17(b) and 46, which create that potential exposure, have made U.S., French and Japanese vendors wary of building new reactors; mega-projects at Jaitapur and Kovvada remain stalled. New Delhi is reportedly considering tweaks—especially on supplier liability caps and insurance pools—to revive foreign interest without diluting victim compensation.

Key Takeaways

1. **Operator-Centric Liability Framework**
   NPCIL (or any future private operator) must carry strict, no-fault liability up to ₹1,500 crore and maintain insurance or other financial security for that sum.

2. **Government Back-Stop**
   If claims exceed ₹1,500 crore, the Union Government tops up to about ₹2,200 crore; victims then access international CSC funds.

3. **Supplier Liability Innovation**
   Section 17(b) allows the operator to recover damages from a supplier whose defective equipment or services contributed to an incident—unique among major nuclear-energy nations.

4. **Section 46 "Open Door"**
   This clause says the CLNDA does not bar additional civil actions under other Indian laws, potentially exposing suppliers (and even operators) to unlimited tort claims.

5. **Ambiguities Fuel Industry Anxiety**
   – No upper cap on supplier exposure if courts allow tort suits.
   – Unclear insurance products or pricing for that uncertain risk.
   – "Nuclear damage" has not been precisely defined by the government, widening litigation scope.

6. **Impact on Foreign Projects**
   EDF's six-reactor Jaitapur plan and Westinghouse's Kovvada project have stalled chiefly over liability concerns; only Russia's Kudankulam reactors (negotiated before 2010) are progressing.

7. **Proposed Easing Measures**
   India may clarify that the right of recourse must be contractually agreed, narrow Section 46 to exclude civil tort suits, and create a government-backed supplier insurance pool—steps aimed at unlocking long-delayed foreign investment while preserving victim-centric compensation.

Forbidding Arabian desert once had a lush and bountiful chapter-The Hindu Science

Geography

Easy Explanation

Scientists studying mineral "icicles" (speleothems) in seven Saudi caves found clear evidence that the Arabian Peninsula has gone through repeated wet phases over the last eight million years. During each humid interval, rainfall, rivers and lakes turned today's deserts into grasslands, allowing water-loving

animals—and early humans—safe passage between Africa and Eurasia. The most recent lush periods ended about 60 000 years ago as monsoon strength declined and Northern Hemisphere ice sheets grew. The discovery supports the “Green Arabia” hypothesis and helps explain multiple waves of prehistoric migration out of Africa.

Key Takeaways

1. **Speleothems as Climate Diaries**
   Cave formations grow only when enough rain, vegetation and soil CO_2 create mineral-rich drips, making them reliable markers of past humidity.

2. **Multiple Humid Windows**
   Wet phases occurred between 7.4–6.2 million years ago and sporadically from 530 000 to 60 000 years ago, each lasting a few to tens of thousands of years.

3. **Green Arabia Hypothesis Confirmed**
   Evidence overturns the idea of Arabia as perpetually barren, revealing a patchwork of lakes and rivers that once supported diverse wildlife.

4. **Route for Human and Animal Migration**
   Grassland corridors across Arabia likely enabled early hominins, hippos, crocodiles and horses to move between Africa, Europe and Asia.

5. **Monsoon Weakening Trend**
   Successive humid periods became shorter and less intense as Indian Ocean monsoon influence waned and polar ice expanded during the Pleistocene.

6. **Archaeological Riches**
   Buried lake-bed sites such as Jubbah Oasis show human occupation dating back at least 500 000 years, synchronising with high-rainfall intervals.

7. **Lessons for a Warming World**
   Past climate swings drove population shifts and extinctions; understanding this history offers insights into how future climate change could reshape human and ecological geography.

India’s uneasy balancing act in the Bay of Bengal-The Hindu Editorial

International relation

Easy Explanation

India’s port traffic on its east coast is booming and the new BIMSTEC Maritime Transport Cooperation Agreement should make Bay of Bengal shipping simpler and cheaper. Yet New Delhi has abruptly cancelled a trans-shipment privilege that let Bangladesh export via Indian ports, and has since limited seven Bangladeshi import categories to distant seaports. Dhaka views the moves as pressure for courting China and calling India’s Northeast “land-locked.” While India cites logistics and reciprocity,

the step blurs the line between economic facilitation and geopolitical signalling. If regional partners come to see Indian port access as conditional on political alignment, New Delhi's ambition to lead a seamless Bay-of-Bengal trade network could stall.

Key Takeaways

1. **Booming Eastern Ports**
   Visakhapatnam, Paradip and Haldia are handling record cargo, helped by Sagarmala investments, GST cuts on bunker fuel and coastal-shipping incentives.

2. **BIMSTEC Push for Integration**
   The 2024 BIMSTEC Maritime Transport Cooperation Agreement promises harmonised customs procedures and lower port costs, vital for smaller economies such as Bhutan, Nepal and Myanmar.

3. **Trans-shipment Shock**
   India's April withdrawal of Bangladeshi trans-shipment access—justified as congestion relief—was read in Dhaka as retaliation for its deepening China ties and "maritime lifeline" rhetoric.

4. **Escalating Trade Frictions**
   New Delhi has since routed seven Bangladeshi export categories only through distant Indian seaports, raising costs for Dhaka's garment-heavy economy; India cites Bangladesh's own curbs on yarn imports.

5. **Credibility vs. Capacity**
   India boasts the Bay's best port infrastructure, but leadership also requires predictable, rules-based access. Perceived politicisation could drive neighbours to hedge with China or ASEAN routes.

6. **Regional Ripple Effect**
   What happens to Dhaka is watched in Naypyidaw, Bangkok and Colombo: if Indian gateways look transactional, confidence in BIMSTEC corridors and the mooted free-trade pact will erode.

7. **Need for Clear Rules**
   Restoring or replacing the Bangladeshi facility with a transparent, rule-bound regime would reassure partners that economic cooperation in the Bay of Bengal remains insulated from day-to-day geopolitics.

18th June 2025

WHAT IS NEW 'TRUMPCARD', OFFERING PERMANENT RESIDENCY IN THE U.S.?-Indian Express Explained

International relations

Easy Explanation

The **Trump Card** is a proposed U.S. "golden-visa" that would let very wealthy foreigners live and work in America—and eventually become citizens—simply by paying **$5 million** straight to the U.S. Treasury. President Donald Trump unveiled the idea in February 2025 and a wait-list website (TrumpCard.gov) opened last week. Commerce Secretary Howard Lutnick says about **70,000 people** have already put their names down. The White House argues the scheme will raise cash to shrink the $36 trillion national debt and replace the current **EB-5 investor visa**, which costs less but requires applicants to create jobs. Immigration lawyers warn that the Trump Card is effectively a non-refundable donation, not an investment, and may need Congress's approval before any cards can actually be issued.

Key Takeaways

1. **What It Promises**
   Instant U.S. permanent residency, work rights, and a fast path to citizenship—for a $5 million payment with no job-creation requirement.

2. **Big Revenue Goal**
   Officials claim selling **200,000** cards could raise **$1 trillion**, helping trim federal debt; Trump has even spoken of selling one million cards.

3. **Early Demand Signal**
   The sign-up site has logged roughly **70,000 interested applicants** within days, mostly from Asia and the Middle East.

4. **Donation, Not Investment**
   Unlike EB-5, applicants do **not** invest in a job-creating project; they simply gift $5 million to the government—something many potential clients balk at.

5. **Legal Cloud**
   Critics argue a brand-new visa category needs **congressional approval**; selling green cards by executive action alone could face court challenges.

6. **Status Symbol Pitch**
   Marketing highlights a gold-colored card bearing Trump's image, aiming to attract ultra-rich entrepreneurs who value speed and prestige over cost.

7. **Skepticism Over Scale**
   Immigration experts doubt the program can meet Trump's million-card ambition, citing legal hurdles and the steep, non-recoverable price tag.

Warmer nights,more humidity:Why 57% of districts face extreme heat risk-Indian Express Explained

Geography

Easy Explanation

A new study by the Council on Energy, Environment and Water (CEEW) shows that more than half of India's districts—home to three-quarters of the population—are now at "high" or "very high" risk from extreme heat. Heat risk is broader than a heat-wave alert: it mixes the raw temperature, added humidity, how many people are exposed, and how vulnerable they are. Warmer nights, rising humidity in North India, and dense, fast-growing cities trap heat around the clock, leaving bodies no time to cool. With 2024 already India's hottest year on record and over 44,000 heat-stroke cases, the report warns that many local heat-action plans still lack detailed risk maps and long-term strategies, making future deaths more likely unless authorities act quickly.

Key Takeaways

1. **Scale of the Threat**
   57 % of districts—and 76 % of Indians—sit in the top two heat-risk categories identified by CEEW.

2. **States Most at Risk**
   Delhi, Maharashtra, Goa, Kerala, Gujarat, Rajasthan, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, and Uttar Pradesh rank highest.

3. **Why Heat Risk ≠ Heat-Wave**
   Risk blends intensity, exposure, and vulnerability; it looks at humidity, population density, age, health conditions, and land-use change.

4. **Hotter Nights Rising Faster**
   Over 70 % of districts recorded at least five extra "very warm" nights each summer between 2012-22, straining the body's overnight recovery.

5. **Humidity Adds to Danger**
   Relative humidity in the Indo-Gangetic Plain has climbed from 30-40 % to 40-50 %, making sweat evaporate less and boosting heat stress.

6. **Urban Heat-Island Effect**
   Dense metros such as Mumbai and Delhi, plus rapidly urbanising tier-II/III cities, absorb daytime heat and release it at night, amplifying risk.

7. **Policy Gaps**
   Most local heat-action plans lack detailed risk mapping and long-term measures; 95 % omit a full vulnerability assessment, limiting effective response.

Why war hasn't hit markets-Indian Express Explained

Economy

Easy Explanation

Even though Israel and Iran are trading blows and global oil prices have jumped about 10 %, India's stock market has barely moved. The Sensex is still near 81,600 because investors feel India's basic economic health is solid: inflation is low, growth is steady, and the country buys very little from Iran. Oil is India's weak spot, but Iran supplies only 4 % of world crude and sells most of it to China, so current fighting hasn't cut global supply. Traders would worry—and prices could surge past $100 a barrel—only if Israel strikes Iran's oil fields or export terminals. Until then, India's fuel buffers, OPEC's spare capacity, and government control over pump prices are cushioning the blow.

Key Takeaways

1. **Stable Domestic Economy**
   Low consumer inflation (~3 %) and near-zero wholesale inflation keep investor confidence high despite the war headlines.

2. **Minimal Iran Linkage**
   India now buys almost no oil from Iran; broader trade ties are tiny, so direct supply-chain disruption is limited.

3. **Oil Price Still Manageable**
   Brent's jump to the mid-$70s is noticeable but far below the $90–$100 zone that strains India's import bill and subsidies.

4. **Red-Line Scenario**
   Markets would only panic if Israel hits Iranian oil facilities, removing up to 1–1.5 mb/d from global supply and likely sending crude past $100.

5. **Policy Cushions in Place**
   OPEC spare capacity, India's 39-day strategic reserve, and room in the RBI's toolkit give authorities time to smooth any shock.

6. **Winners and Losers**
   Domestic refiners and upstream producers could gain from wider margins; fuel-intensive sectors like airlines and logistics would feel the squeeze first.

7. **Duration Dictates Damage**
   Analysts expect a short conflict given Iran's limited resources; a quick de-escalation would unwind the crude premium and keep Indian markets on an even keel.

A time to look outward-Indian Express Editorial

Economy

Easy Explanation

India grows fastest when it is well-connected to the world. During 2000-10, tariff cuts pulled India deeper into global trade networks, exports surged, and GDP soared. But protectionist moves in 2010-

20 reversed that progress: export share and growth both slipped. After COVID-19, integration is rising again—but mainly through finance (foreign money in stocks and bonds) rather than trade. That means high-income households and large firms benefit first, while workers in mass-employment "mid-tech" sectors—textiles, footwear, furniture, toys—see slower income gains. If a second Trump presidency pushes companies to shift supply chains away from China, India could win new manufacturing orders, provided it lowers its own import duties, signs trade deals quickly, and slashes domestic red tape. Deep reforms—not half-measures—are needed to spread the gains across the wider population.

Key Takeaways

1. **Openness Drives Growth** – Between 2000-10, lower tariffs and booming exports coincided with India's fastest GDP expansion; protectionism in 2010-20 did the opposite.

2. **Finance Outpaces Trade** – Post-pandemic, global money flows freely into Indian markets, but merchandise trade links remain shallow, limiting job creation.

3. **Mid-Tech Export Gap** – Labour-intensive sectors (textiles, footwear, furniture, toys) have stagnated for a decade, holding back broad-based wage growth.

4. **Uneven Consumption** – Discretionary spending tracks world growth because richer households profit from global finance, whereas the majority focus on essentials.

5. **Corporate vs Household Investment** – Big-company capex moves with global cycles; small-firm and household investment stay mostly domestic.

6. **Trump-Era Supply-Chain Chance** – Possible new U.S. tariffs on China could push multinationals to diversify production; India's low wages and scale make it a natural alternative—if it acts fast.

7. **Reforms Must Be Bold** – Deeper trade pacts, lower import duties, and aggressive ease-of-doing-business measures are essential to capture the opportunity and share the benefits more widely

LANGUAGE OF INCLUSION-Indian Express Editorial

Sociology

Easy Explanation

India's new education policy praises multilingual classrooms and learning in the mother tongue. In theory that makes sense—young children grasp ideas fastest in the language they already speak. But most government schools have neither books nor trained teachers for many local languages, and nearly nine lakh regular teaching posts are still vacant. Pushing "multilingualism" through circulars alone, especially in well-resourced CBSE schools, risks ignoring the far bigger network of under-funded municipal schools. History shows what happens when policy races ahead of reality: compulsory English, introduced after Independence without support for children's home languages, drove up drop-out rates. Before adding more languages, the author argues, India must first make schools functional—

hire qualified teachers, respect local cultures, and let children begin learning in the tongue they know best. Other languages can follow once solid foundations are in place.

Key Takeaways

1. **Mother-tongue learning works—but needs resources**
   Research and NEP 2020 back early education in home languages, yet many schools lack books, scripts, and trained staff for those languages.

2. **Teacher shortage is the real bottleneck**
   About nine lakh government-school posts remain vacant; without qualified, permanent teachers, multilingual ambitions stay on paper.

3. **Past mistakes offer a warning**
   Imposing compulsory English without linking it to children's spoken languages once fuelled drop-outs and failure—proof that policy must match classroom reality.

4. **Unequal focus on privileged boards**
   CBSE schools may implement multilingualism, but most children attend under-resourced state schools that are rarely part of the conversation.

5. **Quality of teacher training matters**
   A 2012 judicial review exposed thousands of B.Ed colleges "selling degrees," highlighting the need for genuine teacher competence before new language mandates.

6. **Multilingualism must start with inclusion**
   Children whose mother tongues lack scripts—or any presence in school—shouldn't be left out; policy must account for linguistic diversity beyond headline languages.

7. **First fix the basics, then broaden choices**
   Functional schools, adequate staffing, and a supportive learning environment come before adding extra language layers; once foundations are firm, pupils can choose additional languages without being overwhelmed.

Hydraulic systems: their functioning and myriad applications-The Hindu Text and Context

Science

Easy Explanation

Hydraulic systems use liquids (usually oil) to move or lift things. When you press on an enclosed liquid, the pressure spreads evenly in all directions (Pascal's law). That means a small push on a small piston can create a big push on a larger piston, letting machines lift heavy loads with little effort. A basic hydraulic circuit needs a pump to pressurise the oil, pipes to carry it, valves to steer it, and actuators (cylinders or motors) to do the work. Because the fluid flow can be controlled smoothly, hydraulics

give precise, powerful motion—ideal for cranes, excavators, aircraft landing gear, presses, and wind-turbine pitch control. Modern setups add sensors to monitor pressure, temperature, and contamination so that maintenance can be planned before anything fails. Efficiency is only about 30–40 %, but for heavy or complex tasks, hydraulics still beat purely mechanical or all-electric solutions.

Key Takeaways

1. **Pascal's Law at Work**
   Pressure applied to an incompressible fluid spreads equally, turning a small input force into a much larger output force.

2. **Core Components**
   Every system combines a pump, pipes, control valves, an oil reservoir with filters, actuators (linear cylinders or rotary motors), and safety/feedback sensors.

3. **Smooth, Precise Power**
   Hydraulics offer high power-to-weight ratios, fine speed control, and gentle starts/stops—advantages over gears or cables for heavy machinery.

4. **Linear vs Rotary Actuators**
   Cylinders provide straight-line push/pull; hydraulic motors turn fluid energy into rotational torque for winches, wheels, or mixers.

5. **Wide Application Range**
   Used in mobile equipment (cranes, excavators, aircraft systems) and stationary machines (hydraulic presses, moulding tools, wind turbines).

6. **Smart Monitoring**
   Added sensors track pressure, temperature, flow, and oil quality, enabling safer operation and predictive maintenance.

7. **Efficiency Challenge**
   Overall energy efficiency is only 30–40 %, so engineers are redesigning pumps, fluids, and circuits to save energy while meeting stricter environmental rules.

Rice reveals surprise ability to adapt to cold faster than evolution-The Hindu science

Science

Easy Explanation

Scientists exposed ordinary rice plants to chilly temperatures and discovered that some of them quickly "learned" to survive the cold. The trick wasn't a new DNA mutation but an **epigenetic switch**: a tiny chemical tag that decides whether a gene is turned on or off. In cold-trained plants, a key growth gene called **ACT1** stayed switched on because the usual "off" tag (a methyl group) never attached. Even more amazing, this on-state passed down **five generations**, giving descendants the same cold-

tolerance without any change to their DNA sequence. The finding echoes Jean-Baptiste Lamarck's 19th-century idea that traits acquired during life can sometimes be inherited—something long dismissed until modern epigenetics revealed how the environment can rewrite gene activity and occasionally hand those edits to offspring.

Key Takeaways

1. **Epigenetic, Not Genetic**
   Cold tolerance arose from chemical marks that control gene activity, not from mutations in the DNA code.

2. **The ACT1 Gene Is Central**
   Keeping ACT1 active lets rice continue normal growth in low temperatures; untreated plants silence this gene and suffer.

3. **Heritable Over Five Generations**
   The epigenetic "on" signal for ACT1 persisted through at least five rounds of seeds, proving true inheritance of an acquired trait.

4. **Environmental Trigger**
   Simply growing the first generation in cold conditions was enough to flip the epigenetic switch—no lab-engineered edits required.

5. **Lamarck Partly Vindicated**
   The study shows, in rare cases, traits gained during life can indeed be passed to offspring, aligning with Lamarck's once-rejected theory of acquired characters.

6. **Faster Than Classical Evolution**
   Because epigenetic changes don't need slow DNA mutations, plants (and potentially other organisms) can adapt to stress within a few generations.

7. **Practical Promise**
   Understanding and harnessing such epigenetic memory could help breeders develop climate-resilient crops without lengthy genetic engineering.

19th June 2025

HOW INDIA-ARMENIA ALLIANCE IS PAYING OFF AMID IRAN-ISRAEL CRISIS-Indian Express Explained

International relations

Easy Explanation

Due to the Iran-Israel conflict, Iran has closed its airspace, making it difficult for other countries—including India—to evacuate their citizens. Many Indian students were stranded in Iran. Most of Iran's neighboring borders are not safe or viable for India due to poor diplomatic ties or military activity.

However, Armenia, a reliable Indian ally, opened its land border (Nurduz-Agarak) to allow Indian students to exit Iran. A special flight from Yerevan, Armenia's capital, then flew them home. This was only possible because of India's growing strategic and military relationship with Armenia, which includes defense deals and diplomatic support in international matters.

Key Takeaways

1. India-Armenia Ties Bear Fruit

- Armenia allowed stranded Indians in Iran to exit via its border.
- A special flight from Yerevan helped evacuate them safely to India.

2. Evacuation Challenges

- Iran's airspace is shut.
- Land routes through Pakistan, Turkey, Azerbaijan, and Afghanistan are blocked or unsafe for Indians.

3. Why Armenia Route Worked

- Iran-Armenia border is safe and well-connected.
- Other land borders (like Turkmenistan and Iraq) are less feasible due to terrain or conflict.

4. Defense Diplomacy

- India became Armenia's top military supplier, with a $250 million deal (e.g., PINAKA rocket launchers, Akash air defense).

5. Geopolitical Balancing

- Armenia supports India's stand on Kashmir and its UN Security Council ambitions.
- Opposes Pakistan-Turkey-Azerbaijan bloc that backs Islamabad.

6. Strategic Connectivity

- Armenia lies on the International North-South Transport Corridor (INSTC).
- This corridor links India to Europe via Iran and Armenia.

7. India's Regional Role

- India's proactive diplomacy helps it navigate crises and strengthens its regional influence.

Revising the GDP base year-Indian Express Explained

Economy

Easy Explanation

India is updating the **base year for GDP calculation** from **2011–12 to 2022–23**, with the new data series set to be released on **February 27, 2026**. This change is also being applied to other key indicators like the **Index of Industrial Production (IIP)** and **Consumer Price Index (CPI)**.

Revising the base year helps reflect the **current economic structure**, including the emergence of new sectors and decline of old ones. The earlier plan to adopt **2017–18** as the base year was dropped due to unreliable data from the Consumer Expenditure Survey and disruptions caused by demonetisation and the GST rollout. The update aligns with the recommendation that base years be revised at least every five years.

Key Takeaways

1. What is a Base Year?

- The base year serves as a reference point for calculating GDP and other economic indicators.
- It helps adjust for inflation and structural changes in the economy.

2. Upcoming Revisions

- GDP base year: shifting from **2011–12 to 2022–23**.
- IIP base year: will also change to **2022–23**.
- CPI base year: to be updated to **2023–24**.

3. Release Date

- Revised GDP series will be published on **February 27, 2026**.

4. Why Revisions are Needed

- To better reflect **structural changes** in the economy, like the growth of the services sector.
- To include newer datasets and eliminate outdated sectors from calculations.

5. Why 2017–18 Was Skipped

- Data quality concerns in CES and PLFS.

- CES suggested rising poverty, and PLFS showed a spike in unemployment.

- 2017–18 was not considered a "normal year" due to disruptions from demonetisation and GST rollout.

6. Historical Context

- This will be the **eighth revision** of the GDP base year since India's first GDP estimates in 1951.

- Earlier base years included: 1948–49, 1960–61, 1970–71, 1980–81, 1993–94, 1999–2000, 2004–05, and 2011–12.

7. Recommended Frequency

- The **National Statistical Commission** recommends rebasing all economic indices at least once every **five years**.

8. Impact of COVID-19

- The pandemic disrupted normal economic activity post-2020, delaying the selection of a suitable base year until now.

LOVE,IN MANY COLOURS-Indian Express Editorial

Sociology

Easy Explanation

The **Kerala High Court** has made a **progressive decision** allowing a **transgender couple** to be officially recognised as "parents" on their child's birth certificate, without calling one "mother" and the other "father." This is because the parent who gave birth identifies as male (a transman), and the other as female (a transwoman). The court said what truly matters is love and care—not traditional gender roles.

The article reflects on how **families are changing** and no longer need to fit the old ideas of a man, a woman, and children. Single parents, queer couples, adoptive families, and others are equally real and valid. It asks us to move beyond the **gender binary** (just male or female roles) and see family as a **bond of love**, not based on fixed roles.

Key Takeaways

1. Legal Recognition of Non-Binary Families

- The Kerala High Court upheld the right of a transman and transwoman to be named simply as "parents" on their child's birth certificate.

- The court relied on a 2022 Supreme Court judgment recognising diverse family forms.

2. Beyond Traditional Family Structures

- Families may include queer couples, single parents, adoptive or foster caregivers.

- Guardianship and caregiving roles need not be confined to “mother” or “father”.

3. Gendered Expectations Persist

- Even in progressive households, gender roles persist—fathers often handle finances; mothers, nutrition and caregiving.

- These roles reflect inherited biases, not personal preferences.

4. Love, Not Labels, Defines Families

- The article argues that emotional support and love matter more than biology or traditional structures.

- Unconventional families are valid and deserving of legal and social recognition.

5. The Need to Break the Binary

- Moving away from black-and-white ideas of gender allows for a richer, more inclusive understanding of family.

- The writer emphasizes the emotional empowerment of recognising and living beyond binary norms.

6. The Moment for Social Change

- While legal judgments are important, broader social acceptance and empathy are crucial.

- The recognition of diverse family units is a step toward a more inclusive society.

NOT EITHER/OR-Indian Express Editorial

Environment

Easy Explanation

The **Green India Mission (GIM)**, launched in 2014, aims to increase forest cover and restore ecosystems. Now, the government has **updated the mission** to focus more on **vulnerable regions** like the **Western Ghats**, **Aravalli hills**, and the **Himalayas**—areas facing deforestation, unregulated tourism, and climate change impacts.

Earlier, the mission was **too focused on tree plantations**. The new plan aims for more **ecological restoration** and better **support for local communities** who depend on these ecosystems. However, success will depend on balancing **environmental conservation** with **livelihood needs**, and implementing the plan seriously—unlike past efforts that often remained on paper.

Key Takeaways

1. Focus on Ecological Hotspots
The revised GIM targets fragile areas like the Himalayas, Aravallis, and Western Ghats, which are facing degradation from development and climate change.

2. Shift from Plantation to Restoration
Unlike the earlier plantation-heavy approach, the new version emphasizes restoring the local ecology using **region-specific best practices**.

3. Livelihood Support Included
The mission now aims to create income opportunities for communities dependent on forests—something earlier plans mostly ignored.

4. Environmental-Development Balance Needed
Past efforts failed partly due to a perceived conflict between development and conservation. The new plan must overcome this divide.

5. Past Warnings Ignored
Panels like the **Gadgil** and **Kasturirangan Committees** made crucial recommendations for the Western Ghats, but political resistance stalled action.

6. Legal Orders Not Enforced
Despite Supreme Court orders, illegal activities like mining in the Aravallis continue unchecked, showing weak enforcement.

7. People-Centric Approach is Key
For long-term success, green policies must involve local people as partners, not just passive beneficiaries.

Why are oil prices rising amid Iran-Israel war?-The Hindu Text and Context

Economy

Easy Explanation

Tensions between **Iran and Israel** have caused global oil prices to rise. The main reason is Iran's threat to block the **Strait of Hormuz** — a narrow but vital sea route that transports about **20% of the world's oil**. If blocked, it could delay oil shipments, raise shipping and insurance costs, and push up global oil prices.

On **June 13**, global oil benchmark **Brent crude** jumped by **9%**, reaching a near five-month high. Although prices eased later, they remain elevated due to fears of supply disruption. While India doesn't import oil directly from Iran, it imports over **80% of its crude oil needs**, so any global price rise affects it.

India has **diversified its oil suppliers** and is prepared for short-term shocks, but prolonged high prices could hurt economic growth and delay investments.

Key Takeaways

1. Why Oil Prices Are Rising

- Due to escalating **Iran-Israel tensions** and Iran's threats to block the **Strait of Hormuz**.

- Fears of disruption in global oil supply routes have spooked markets.

2. How Much Has Oil Risen?

- **Brent crude** rose ~**9%** to **$75.65/barrel** on June 13.
- Reached an intraday high of **$78.50**, the highest in nearly five months.

3. Why Strait of Hormuz Matters

- Handles around **20 million barrels/day** of oil.
- About **84%** of crude passing through it goes to **Asia**.
- Blockage would disrupt global supply and raise costs.

4. Impact on India

- India imports **over 80%** of its oil needs.
- Doesn't import from Iran but is still impacted by **global price increases**.
- Prolonged high prices could **reduce corporate profits** and **slow down GDP growth**.

5. India's Preparedness

- India has **diversified** its oil import sources (e.g., Russia, Saudi Arabia, U.S.).
- Government says fuel supply is **secure** for now.

6. Economic Outlook

- ICRA maintains India's **GDP growth forecast at 6.2%**.
- Warns that a **sustained price rise** could force a **downward revision**.

7. Global Oil Outlook

- IEA says oil markets are "**well supplied**" if no major disruption occurs.
- But also warns of **geopolitical risks** to oil security.

What was decided at the UN Oceans Conference?-The Hindu Text and Context

International relations

Easy Explanation

The **United Nations Oceans Conference (UNOC)** recently concluded in France, focusing on marine conservation and sustainable ocean use. The biggest achievement was progress on the **BBNJ Agreement**, also called the **High Seas Treaty**, which is set to become legally binding once 60 countries ratify it (56 have done so so far).

The **BBNJ treaty** targets parts of the ocean that lie **beyond national borders**, known as the **high seas**, which make up nearly half of the Earth's surface. These areas are often unregulated and vulnerable to **overfishing, deep-sea mining**, and **biodiversity loss**.

The treaty aims to:

- Establish **marine protected areas** in international waters
- Ensure **fair sharing of marine resources**
- Mandate **environmental impact assessments**
- Support **developing countries** through funding and capacity-building

While India has not ratified the treaty yet, it has stated that it's in the process. The first global BBNJ COP (like climate COPs) is planned for **late 2026**.

Key Takeaways

1. Purpose of UNOC

- To push **global cooperation** on protecting oceans and marine biodiversity.
- Focus on implementing the **30x30** goal — conserving **30% of oceans by 2030**.

2. What is the BBNJ Agreement?

- A **UN treaty** to protect the **high seas** (areas beyond national jurisdiction).
- Requires **60 country ratifications** to become law (56 done so far).
- Will regulate marine genetic resources, create protected areas, and ensure fair benefit-sharing.

3. Importance of BBNJ

- The high seas host unique biodiversity but are **poorly protected**.
- The agreement helps **prevent exploitation** and supports **climate resilience**.

4. Challenges to Implementation

- **Sharing of commercial benefits** from deep-sea genetic resources is contentious.
- Lack of a ban on **extraction activities** like deep-sea mining raises concerns from environmentalists.

5. India's Position

- India has **signed** but not yet **ratified** the treaty.
- Has indicated it is **in the process** of doing so.

6. Major Commitments at UNOC

- **EU** pledged **€1 billion** for ocean conservation.
- **French Polynesia** announced the **world's largest marine protected area**.
- **New Zealand** committed **$52 million** for Pacific ocean governance.
- **Germany** launched a **€100 million cleanup** programme for legacy munitions.
- **Canada, Panama, and 35 others** launched a coalition against **ocean noise pollution**.
- **Spain** pledged to protect **25% of its marine area**.
- A **One Ocean Finance** initiative was launched to fund the **blue economy**.

Trade tariffs close borders but may open doors to invasive alien species-The Hindu Science

Environment

Easy Explanation

As global trade expands and new trade routes form, the risk of **invasive alien species** entering countries—intentionally or accidentally—also increases. These species can harm local ecosystems, agriculture, and even public health. A historical example is the **giant African snail**, which arrived in India in the 1800s and became a destructive pest.

Many such invasions happen through **trade in plants, animals, or even ship ballast water**. India is both a **major importer and exporter** of species like exotic fish or ornamental plants. However, the country's **infrastructure and regulations** are not strong enough to track and manage these species effectively.

The economic and ecological damage is already massive—India lost **$127.3 billion** over 60 years due to invasive species. To prevent future damage, experts call for a **'One Biosecurity'** approach, involving

stricter port checks, inter-agency collaboration, real-time tracking, and mandatory post-trade biological assessments.

Key Takeaways

1. What Are Invasive Alien Species?

- Non-native species that disrupt local ecosystems.
- Can spread via **intentional introductions** (biocontrol, trade) or **accidental means** (ballast water, contaminated imports).

2. Trade as a Gateway

- Global trade networks have increased drastically—**from 5,700 trade pairs in 1948 to 34,000+ in the 2000s**.
- Trade changes may reduce checks, allowing invasive species to slip through unnoticed.

3. Examples of Invasives in India

- **Giant African snail**, **Parthenium weed**, **Tilapia**, and **mosquito fish**.
- Many came via the **ornamental pet trade**, **food imports**, or **aid programs** (e.g., PL-480 wheat from the U.S.).

4. India's Economic Loss

- India lost **$127.3 billion** in 60 years due to 10 known invasive species.
- **Aquatic species** (e.g., yellow fever mosquito) pose a greater financial and public health threat than land species.

5. Biofouling & Ballast Water

- Ships carry water for stability, which may bring marine species to new coasts.
- **Asian paddle crab** spread like this, carrying viruses harmful to fisheries.

6. Policy Gaps

- India lacks **coordinated quarantine systems**, **early warning tools**, and **post-trade impact assessments**.
- There's limited data on the majority of 2,000+ known alien species in India.

7. Solution: One Biosecurity Approach

- Strengthen biosecurity checks at **ports, airports, and land borders**.
- **Real-time species monitoring** and **inter-agency coordination**.
- Mandate **post-import biological impact assessments**.
- Integrate with **climate change adaptation** and **trade policy**.

Honda conducts surprise reusable rocket test, aims for suborbital launch by 2029-The Hindu Science

Science

Easy Explanation

Honda, known globally for its cars, has quietly tested a small **reusable rocket** in Japan. This move marks Honda's entry into the space sector. The experimental rocket reached a height of 271 meters and landed successfully just 37 cm off its target—an impressive feat for a first test. The company is not yet planning to sell or commercialize the rocket, but it aims to **achieve suborbital flight by 2029**.

This kind of rocket doesn't go into orbit but reaches the edge of space. Honda hopes these rockets could eventually be used for launching satellites or environmental monitoring systems. It's joining a global race where companies like SpaceX, Blue Origin, and others are pushing for **reusable launch vehicles** to make space travel cheaper and more frequent.

Key Takeaways

1. Honda's Entry into Space

- Honda conducted its first successful **reusable rocket test** on June 17, 2025, in Hokkaido, Japan.
- The rocket reached 271 m altitude and landed just **37 cm** off target.

2. Goal: Suborbital Launch by 2029

- Honda plans to develop the technology needed for **suborbital launches**, which don't enter orbit but reach space's edge.

3. Reusable Rockets: The Future

- Reusable rockets lower spaceflight costs and are being pursued globally.
- **SpaceX's Falcon 9** has led this shift; Honda now joins companies in China, Europe, and the U.S. exploring similar tech.

4. India's Parallel Efforts

- **ISRO is also developing a Reusable Launch Vehicle (RLV)**, though it remains in the testing phase.

5. Applications and Vision

- Honda envisions using rockets for **satellite launches**, **data communication**, and **environmental monitoring**.

- The company will use its expertise in **automated systems and robotics** from its automobile business.

6. Japan's Expanding Space Scene

- **JAXA** (Japan's space agency) and startups like **Space One** and **Innovative Space Carrier** are also developing rockets, with varying success.

- Japan's state-owned rockets (like H3) are not reusable, giving Honda a unique edge if successful.

A fair share-The Hindu Editorial

Polity

Easy Explanation

The **16th Finance Commission**, which will decide how India shares its central tax revenue from 2026, is facing tough choices. Currently, **41%** of central tax revenue is shared with States. But now, **22 out of 28 States** are demanding a **higher share—up to 50%**, because their financial autonomy has reduced, especially after the **GST** came in.

The **Centre collects more through cesses and surcharges**, which don't have to be shared with States, reducing their effective share to **around 31%** in recent years. Southern and economically better-performing States also feel the current formula **punishes their progress**, as it gives more weight to poorer States.

The Centre, however, is **reluctant** to raise the share because of rising expenses like defence and infrastructure. But **ignoring the States' demand** would be a missed chance to strengthen **cooperative federalism**. A small increase in the share, along with **rules to control cesses**, could help create a **fairer and more balanced system**.

Key Takeaways

1. Demand for Higher Share
22 out of 28 States have demanded increasing their share in central taxes from **41% to 50%**.

2. Centre's Cess Collections Hurt States
The Centre collects more revenue via **cesses and surcharges**, which are **not shared** with States—bringing down their **actual share** to about **31%**.

3. GST Reduced States' Revenue Powers
Post-GST, States have **fewer ways** to raise revenue, making them **more dependent** on central transfers.

4. Inequity in Horizontal Sharing
The formula that decides how funds are distributed among States **favors poorer States**, causing richer, better-performing States to feel penalized.

5. Centre's Spending Concerns
Rising expenditure on **defence and infrastructure** makes the Centre hesitant to give up more revenue.

6. Need for Reform on Cesses
The Finance Commission should suggest **capping cesses and surcharges**, or including surplus from them in the divisible pool.

7. Strengthen Federalism
Increasing the share modestly and **improving the distribution formula** will support a stronger, more balanced federal structure.

20th June 2025

New Green India Mission road map in climate change battle-Indian Express Explained

Environment

Easy Explanation:

The **Green India Mission (GIM)** is part of India's big plan to fight climate change by growing more forests and restoring damaged land. It started in **2014** and has now been updated with a new plan until **2030**. The mission aims to increase and improve forest cover on **10 million hectares** of land, protect important regions like the **Aravallis**, **Western Ghats**, **Himalayas**, and **mangroves**, and support people who depend on forests for their livelihood.

A special project called the **Aravalli Green Wall** will restore forests across **8 lakh hectares** to stop dust storms and desert spread. The mission also supports India's climate promise to remove **2.5 to 3 billion tonnes of CO_2** by planting more trees and restoring forests.

Key Takeaways:

1.Green Growth Targets:

Increase forest/tree cover on **5 million hectares** and improve forest quality on another **5 million hectares** by 2030.

2.Focus on Critical Regions:

Emphasis on restoring the **Aravallis**, **Western Ghats**, **Himalayas**, and **mangrove ecosystems** using region-specific approaches.

3.Aravalli Green Wall Initiative:

Restoration planned across 29 districts in 4 states; **₹16,053 crore** allocated to create a 5 km buffer zone.

4.Western Ghats Restoration:

Aims to counter deforestation and mining damage through afforestation and groundwater recharge.

5.Desertification Control:

About **97.85 million hectares** of land degraded (ISRO data); India targets restoration of **26 million hectares** by 2030.

6.Climate Action Commitment:

India has already created a **2.29 billion tonnes CO_2** sink since 2005; aims to reach **3.39 billion tonnes** by 2030.

7.Forest Survey Projections:

Intensified afforestation and restoration of open forests could expand green cover to **24.7 million hectares**.

Cost of pulses,oil imports-Indian Express Explained

Economy

Easy Explanation:

India is facing a growing **dependence on imports** for pulses and edible oils, even though many Indian farmers, like Rao Gula Singh Lodhi from Madhya Pradesh, are cultivating these crops. Despite his efforts, Lodhi gets far less in the market than the **Minimum Support Price (MSP)**, especially for **moong, chana, masoor,** and **soyabean**. These crops are well-suited to his land, yet they are not purchased by the government at MSP like rice or wheat.

Due to **poor procurement, price drops, and a drought in 2023-24**, India had to import a **record 7.3 million tonnes of pulses**, reducing prices but hurting domestic farmers. Meanwhile, **vegetable oil imports have more than doubled** in 11 years. Although international prices have dropped, India still imported **16.4 million tonnes** of edible oils in 2024–25. The government cut duties to control inflation, but this move is **hurting oilseed farmers**, making their crops less profitable.

Key Takeaways:

1. Falling Farmer Returns:

- Farmers growing moong, chana, masoor, and soyabean are earning well below MSP. Government procurement is limited.

2. Record Pulses Imports:

- In 2024–25, India imported **7.3 million tonnes** of pulses worth **$5.5 billion**, the highest ever due to El Niño-related production drop.

3. Inflation-Driven Policy Shift:

- High prices in 2023 led to import duty cuts, easing **CPI inflation in pulses** to –8.2% by May 2025.

4. Import Composition:

- Pulses imports include yellow peas, chana, arhar, masoor, and urad from countries like **Canada, Russia, Australia, and Myanmar**.

5. Rising Oil Imports:

- Edible oil imports rose from **7.9 mt in 2013–14 to 16.4 mt in 2024–25**, costing India over **$20 billion** in some years.

6. Overdependence on Foreign Oil:

- Domestic oil output is just **10 mt**, leading to over **60% import dependence**, especially for palm, soyabean, and sunflower oils.

7. Recent Duty Cuts Impact Farmers:

- On May 30, 2025, duties on imported oils were slashed, which may lead to **cheaper imports flooding the market**, discouraging oilseed cultivation in India.

8. Global Trends:

- The USDA expects global vegetable oil output to hit **235 mt in 2025–26**, increasing competition for Indian farmers.

The government is contemplating a cap on air conditioner temperatures. Is this a durable way to conserve energy?-Cooling: Necessity and emergency-Indian Express Editorial

Economy

Easy Explanation:

India is experiencing a rapid surge in **air conditioner (AC) use**, driven by rising heatwaves, urbanisation, and economic growth. The government is considering setting a **temperature cap between 20°C and 28°C**, not as a major solution, but to start a larger conversation about responsible cooling. AC usage already consumes a large share of electricity, especially in cities like **Delhi**, where ACs contribute up to **60% of summer power use**, even though only **30% of households own one**.

ACs not only strain the power grid—forcing the use of coal—but also emit **hydrofluorocarbons (HFCs)**, which are powerful greenhouse gases. With the average AC causing **as much climate damage as a car**, India needs to rethink its cooling strategies. The solution lies in **energy-efficient ACs**, **greener building designs**, **district cooling systems**, and **inclusive access to cooling for the poor**, including public cooling shelters. Cooling is now a **basic necessity and a climate emergency**.

Key Takeaways:

1. AC Surge and Energy Demand:

- India sold **15 million ACs in 2023**, doubling from 2022, heavily straining the electricity grid, especially during summers.

2. High Climate Cost of Cooling:

- A typical AC emits up to **2.25 tonnes of CO_2-equivalent** annually—more than a car—due to both electricity use and refrigerant leaks.

3. Symbolic Temperature Cap:

- The proposed **20–28°C AC setting** cap won't change much directly, but it signals urgency and opens the door for sustainable cooling policy.

4. Grid and Emissions Crisis:

- Cooling is driving **peak electricity demand**, pushing India to add **coal-fired power plants**, undermining climate goals.

5. Greener Buildings & Cities Needed:

- Emphasise **natural cooling** through smart building design, reflective roofs, better insulation, cross-ventilation, and **urban greenery**.

6. District Cooling Systems (DCS):

- Large-scale DCS like the one in **Hyderabad Pharma City** can cut cooling demand by **30–40%** and reduce electricity bills by half.

7. Super-Efficient ACs:

- New ACs can be up to **5x more efficient** than current models. These must be **subsidised and regulated** to ensure mass adoption.

8. Cooling Equity for the Poor:

- ACs benefit the rich, but the **poor suffer the most** from heat without access to cooling. Public cooling shelters and shared spaces are needed.

9. Inclusive Cooling Policies Needed:

- Prioritise **street vendors, slum dwellers, elderly**, and vulnerable groups in cooling plans. Develop **low-energy tech** for public use.

10. Development vs. Environment:

- Cooling is now a **developmental necessity** and an **environmental emergency**—India must balance comfort with climate responsibility.

The government is contemplating a cap on air conditioner temperatures. Is this a durable way to conserve energy?-The cap is a quick fix-Indian Express Editorial

Economy

Easy Explanation:

Delhi's heat is getting worse, and the government wants to **limit AC temperatures between 20°C and 28°C**. This might help a little, but it won't fix the bigger problems. The real issue is that our **cities are built in a way that traps heat** — with too many buildings, not enough trees, and bad planning. Poor people suffer the most because they can't afford cooling, yet face the heat from others' ACs. To really solve this, we need to **redesign cities**: build cooler homes, plant more trees, improve public transport, and stop using materials that make cities hotter. Cooling should be for everyone, not just the rich.

Key takeaways

1.AC Temperature Cap is Symbolic, Not Sufficient
Limiting AC settings to 20–28°C may help signal concern but won't significantly reduce energy use or heat in cities.

2.Urban Heat Islands Are Man-Made
Cities become hotter due to poor planning, concrete surfaces, glass façades, and lack of green cover—trapping heat and worsening discomfort.

3.Cooling Tech Creates a Vicious Cycle
ACs cool indoor spaces but release heat outside, making streets and public areas even hotter, especially affecting street vendors and pedestrians.

4.ACs Have High Climate Cost
Most ACs use hydrofluorocarbons (HFCs), potent greenhouse gases, and consume large amounts of coal-based electricity—worsening emissions.

5.Sustainable Alternatives Exist
Solutions include reflective roofing, shaded buildings, cross-ventilation, and District Cooling Systems (DCS), which use less energy and refrigerants.

6.Green Spaces Must Be Restored
Parks, trees, and water bodies help cool cities naturally and should not be sacrificed for real estate or malls.

7.**Cooling Must Be Inclusive**
Poor communities need affordable, low-energy cooling options like shared cooling shelters and improved public housing design.

8.Urban Design Over Gadgets
Systemic solutions—better building codes, urban planning, and efficient public transport—are needed, not just gadget-level fixes.

9.Government Approach Still Piecemeal
Instead of integrated urban cooling strategies, authorities often rely on short-term measures like AC caps or blame-shifting.

10.Policy Must Enable Choice
People should be supported to make climate-smart decisions through incentives, infrastructure, and inclusive city planning—not penalized for seeking relief from heat.

THE MISSING MINING DRIVE-Indian Express Editorial

Geography

Easy Explanation:

Human civilization evolved significantly due to the use of metals, moving through ages named after metals like Bronze and Iron. In modern times, economic progress has depended on resources like coal and oil. Now, we are entering the **21st century's critical minerals age** — a time when minerals like lithium, cobalt, nickel, copper, and rare earth elements are vital for new technologies such as electric vehicles (EVs), renewable energy, and advanced electronics like AI and robotics.

Countries like China dominate the mining and especially the processing of these critical minerals. This dominance creates global risks, as supply restrictions (like China limiting rare earth exports) can disrupt entire industries, especially EV manufacturing. The U.S. and India are pushing to explore and develop their own mineral resources quickly to reduce dependency on China.

India, rich in mineral resources but underexplored, must urgently expand domestic mining and processing if it wants to compete in global manufacturing and tech sectors.

Key Takeaways:

1. **Critical Minerals Define the 21st Century**
   Just as coal and oil powered past industrial revolutions, minerals like lithium, cobalt, and rare earths are central to current and future tech revolutions.

2. **Technological Demand is Mineral-Intensive**
   Electric vehicles, renewable energy infrastructure, AI, robotics, and digital connectivity all require large amounts of critical minerals.

3. **China's Dominance is a Strategic Vulnerability**
   China controls two-thirds of rare earth mining and more than 90% of processing, giving it the power to disrupt global supply chains, especially for EVs.

4. **Concentration Risks in Mineral Supply**
   Critical minerals are often sourced from a few countries: cobalt from Congo, nickel from Indonesia, lithium from Australia, Chile, and China.

5. **U.S. and India Need to Prioritize Domestic Mining**
   The U.S. is fast-tracking mineral exploration by opening federal lands; India must follow suit and exploit its rich but underdeveloped mineral resources.

6. **Supply Chain Security is Key for Future Manufacturing**
   Dependence on China or other single sources risks supply disruptions, making local mining and processing critical for economic and technological sovereignty.

7. **Critical Minerals Are Also Climate-Change Allies**
   These minerals enable technologies that reduce fossil fuel use, making them essential for climate goals, despite their own environmental impact.

The unregulated drink: rethinking alcohol control in India-The Hindu science

Governance

Easy Explanation:

Alcohol use in India poses serious health and social challenges. It contributes to **mental illness, cancer, injuries, and non-communicable diseases**, while also being linked to **violence, suicides, and risky**

behaviour. Yet, alcohol consumption is growing rapidly, with **per capita use increasing by 240%** in the last 20 years. Much of this rise is due to **easy availability, aggressive marketing, cheap pricing, and lack of strict regulation**.

India has **no unified national alcohol control policy**, as regulation is handled by individual states. This leads to **inconsistent policies**—some states ban alcohol, while others promote it. Despite alcohol being a major health risk, it is **excluded from national narcotics policies**, and fragmented efforts across ministries have had limited impact.

Experts now call for a **National Alcohol Control Policy** focusing on **reducing access, improving public awareness, regulating online promotion, and earmarking alcohol tax revenues for public health**. The goal is to protect public health over short-term state revenue interests.

Key Takeaways:

1. Health Impact:

- Alcohol contributed to **2.6 million Disability-Adjusted Life Years (DALYs)** in 2021. Linked to cancer, mental illness, injuries, and suicides.

2. Rising Consumption:

- Alcohol consumption in India rose by **240% in two decades**; half of it remains unrecorded, making actual usage higher.

3. Societal Cost:

- Alcohol-related health costs estimated at **₹6.24 trillion**.

4. Commercial Influence:

- Alcohol companies use **surrogate ads, social media influencers, product placements**, and appealing packaging to attract consumers, especially youth.

5. Policy Gaps:

- Alcohol regulation is a **state subject**, leading to varied laws. No comprehensive **national-level alcohol policy** currently exists.

6. Contradictory State Actions:

- Some states ban alcohol (e.g., Bihar, Gujarat); others promote cheap liquor (e.g., Andhra Pradesh ₹99 policy), or allow **online alcohol delivery**.

7. Inconsistent Pricing and Access:

- Legal drinking age varies (18–25), and alcohol pricing policies differ widely. Alcohol remains **excluded from GST**, with vague excise rules.

8. Proposed Reforms ("6 A's + AI"):

- **Affordability**: Price controls to reduce excessive use.

- **Allocation**: Use alcohol tax revenue for health.
- **Accessibility**: Reduce availability in urban areas.
- **Advertisement**: Regulate digital and surrogate advertising.
- **Attractiveness**: Plain packaging, warning labels.
- **Awareness**: Launch mass awareness campaigns.
- **Artificial Intelligence**: Use AI to flag and curb harmful alcohol-related content online.

9. Call for National Policy:

- A **unified, evidence-based, health-first approach** is essential to reduce harm, avoid contradictory policies, and protect future generations.

Capital charter-The Hindu Editorial

Sociology

Easy Explanation:

Delhi's new Chief Minister **Rekha Gupta** now has the political alignment and resources needed to tackle the city's serious infrastructure and housing issues. Unlike the previous AAP government, which clashed frequently with the Centre, Gupta's BJP-led administration enjoys **coordination across the NCT, Centre, and municipal bodies**, giving her a clear mandate.

Delhi faces problems in **waterlogging, sewage, electricity, education, housing, and transport**. Gupta has started with steps like appointing nodal officers for flood-prone zones. However, the bigger tasks include fixing outdated land use policies, streamlining the **long-delayed land pooling policy**, and freeing up agricultural land for planned development. There's also an urgent need to bring **standardisation in schooling** to prevent long-term social inequality.

Gupta now has the opportunity to **rebuild Delhi as a livable, investable, and equitable city**. But success will depend on actual delivery, not blaming past governments.

Key Takeaways:

1. New Political Advantage:

- Rekha Gupta enjoys unified BJP control in the Centre, NCT, and municipal bodies, unlike the earlier AAP regime.

2. Infrastructure Gaps:

- Delhi suffers from flooding, traffic, poor sewage treatment, and irregular water supply.

3. Flood Mitigation Measures:

- Nodal officers assigned to all water-logging zones, with accountability stressed.

4. Housing Crisis and Land Policy:

- The **land pooling policy** needs urgent implementation to revive stalled housing projects and office spaces.

5. Education Reform Needs:

- Strong need for **uniform regulation across private and public schools** to curb deepening inequalities.

6. Unlocking Land for Growth:

- Releasing agricultural land for **planned urban development** is essential to accommodate future demand.

7. Master Plan on the Anvil:

- A new **Delhi Master Plan** is being developed to integrate solutions across infrastructure, housing, and education.

8. Responsibility Lies with Current Govt:

- While past governments may have failed, the current leadership is **accountable for progress going forward**.

21st June 2025

MP CM's unfeasible wish: counting snakes, rearing king cobras-Indian Express Explained

Environment

Easy Explanation

The Chief Minister of Madhya Pradesh (MP), Mohan Yadav, proposed a plan to reduce the high number of snakebite deaths in the state. The idea is to release king cobras into the wild, with the belief that they will control the population of other venomous snakes by preying on them. An initial step involved bringing a king cobra from Karnataka to a zoo in Bhopal, though the snake later died.

This plan, however, faces several major problems:

1. **Wrong Snake, Wrong Place:** What was once considered a single king cobra species is now known to be four distinct genetic types. The variety from Karnataka's Western Ghats is a unique species (*Ophiophagus kaalinga*) that thrives in cool, wet, dense forests. This is a stark contrast to the hot, dry forests of Madhya Pradesh, making it an unsuitable environment for that specific snake.

2. **Risk of Mixing Species:** Introducing this different type of king cobra into central India is problematic for conservation. If any native king cobras exist in the region, it could lead to

interbreeding between the different lineages (hybridization), an outcome that should be avoided.

3. **Unlikely Historical Presence:** There is no reliable evidence that king cobras ever lived naturally in the dry forests of central India. The species requires a wet, humid environment with consistent water sources, which Madhya Pradesh generally lacks.

4. **An Impossible Count:** The proposal to count all venomous snakes in the state is not practical. There is no established or feasible method anywhere in the world to accurately count wild snake populations.

5. **An Ineffective Strategy:** Even if the introduction were possible, the plan would likely fail. King cobras are difficult to breed in captivity and typically avoid human settlements. It would take decades to build a population large enough to impact snakebite incidents, which mostly occur where people live.

In summary, the plan is based on a concept that is contradicted by the known science of the snake's habitat requirements, genetics, and behavior.

Key Takeaways

- **The Plan:** The core idea is to use king cobras as a natural predator to reduce the population of other venomous snakes and lower the number of snakebite deaths in MP.
- **Genetic Differences:** All king cobras are not the same. The snake from Karnataka is a distinct species unsuited for MP's dry climate.
- **Habitat Mismatch:** The hot, dry forests of Madhya Pradesh are not the natural habitat for king cobras, which require cool, humid environments.
- **Conservation Risks:** Introducing a non-native species could lead to harmful genetic mixing (hybridization) if any local populations exist.
- **Practical Failings:** A "snake census" is considered impossible, and it would be extremely difficult and slow to breed and release enough king cobras to have any meaningful effect on public safety.

CITIZENS' FEEDBACK:WHY THE CENTRE WANTS QR CODES ON PMGSY ROADS-Indian Express Explained

Governance

Easy Explanation:

The **Ministry of Rural Development** has now asked all states to put **QR codes** on boards along roads built under the **Pradhan Mantri Gram Sadak Yojana (PMGSY)**. These QR codes will help **citizens give feedback** on road quality and maintenance.

PMGSY is a scheme started in 2000 to build roads in rural areas. It has gone through **four phases**, with the latest (Phase IV) starting in 2023 to connect more villages. After roads are built, the contractor must maintain them for five years. Officials inspect them using an app called **eMARG**. But so far, **public feedback wasn't part of the process**.

Now, with QR codes:

- Anyone can **scan the code**, see road details, **click pictures**, and **report issues**.

- These images will be analysed using **AI and machine learning** to evaluate contractor performance.

Key Takeaways:

1. **Public Feedback Enabled**
   QR codes will be added to PMGSY road display boards to allow citizens to give feedback on road quality and maintenance.

2. **Use of Technology**
   The system is integrated into the **eMARG** platform, which tracks road maintenance digitally using geo-tagged photos and routine inspections.

3. **AI-Based Analysis**
   Photos submitted by the public will be analyzed using **Artificial Intelligence and Machine Learning** to assess performance and guide improvements.

4. **Bridging a Monitoring Gap**
   Earlier, only official monitors could report on road condition. Now, **ordinary citizens can report issues** directly through a mobile interface.

5. **Multi-Language Instructions**
   QR display boards will include instructions in **English and local languages** to ensure wider participation.

6. **Part of a Long-Running Scheme**
   PMGSY, started in 2000, has built over 7.8 lakh km of rural roads. The QR code plan is part of its **Phase IV expansion (2024–2029)**.

7. **Enhanced Transparency**
   The initiative promotes **greater transparency and accountability** in the upkeep of rural roads by involving local communities.

What happens if Iran chooses to leave the Nuclear Non-Proliferation Treaty?-Indian Express Explained

International relations

Easy Explanation:

Iran is thinking about leaving the **NPT**, a global agreement that tries to stop the spread of nuclear weapons. Iran says this may be necessary due to rising tensions with Israel, especially after recent military attacks and claims that Iran is close to developing a nuclear weapon.

The **NPT** was signed in 1968 to prevent more countries from getting nuclear weapons, promote peaceful nuclear energy, and encourage disarmament. Countries that signed it allow **international inspectors (IAEA)** to check their nuclear facilities.

If Iran leaves:

- It **won't need to allow inspections** anymore.
- It could **develop nuclear weapons more freely**.
- Other countries might follow, weakening global efforts to control nuclear weapons.

Key Takeaways

1. Iran Threatens Exit Amid Military Tensions

Following Israel's June 13 attack on Iranian nuclear facilities, Iran is considering withdrawal from the NPT. Israel alleged that Iran was enriching uranium to weapons-grade levels, provoking military strikes and retaliation.

2. NPT – A Fragile but Foundational Regime

The NPT (1970) aims to curb nuclear weapons spread, facilitate peaceful nuclear energy use, and promote disarmament. It is based on a "grand bargain": non-nuclear states agree not to weaponize in exchange for civilian nuclear cooperation and inspections.

3. IAEA as the Monitoring Backbone

The International Atomic Energy Agency (IAEA) ensures compliance via intrusive inspections and reports. Iran has allowed over 1.4 site visits/day on average in 2023. These inspections would end if Iran exits the NPT.

4. What Happens if Iran Leaves the NPT

Article 10 allows withdrawal if a country cites "extraordinary events" threatening its security. Iran would no longer be under IAEA safeguards, losing legal cover for civilian nuclear activities and risking global isolation.

5. A Precedent with Global Fallout

North Korea also exited the NPT in 2003 and proceeded to develop nuclear weapons. Iran's withdrawal could encourage other countries to do the same, undermining decades of non-proliferation efforts.

6. Criticism of the NPT's Unequal Structure

The treaty recognizes only five nuclear-armed states (P5) as legitimate—based on a pre-1967 cutoff—excluding newer powers like India, Pakistan, and Israel. India has refused to sign, citing its discriminatory nature.

7. Scholarly Perspective: Imperfect but Effective

Experts like Joseph Nye argue that while imperfect, the NPT has constrained nuclear proliferation through normative and legal frameworks. Even partial compliance has a deterrent effect; total breakdown would mark a global security crisis.

Pak's Iran balancing act-Indian Express Explained

International relations

Easy Explanation

Pakistan has shown verbal support for Iran during the current Iran-Israel conflict but is being very careful not to take any real military steps. Iran recently claimed Pakistan had promised nuclear protection, but Pakistan denied it immediately. This shows Pakistan wants to support Iran diplomatically but doesn't want to upset the United States, which remains a key ally.

Pakistan and Iran have a complicated relationship. Though both are Muslim-majority countries and share a long border, they have often had tensions—like border clashes, opposing views on Afghanistan, and Iran's distrust of Pakistan's closeness to Saudi Arabia. Pakistan also worries about India's growing ties with Iran and wants to keep some influence there too.

By offering limited support to Iran and staying on good terms with the US, Pakistan is trying to maintain its strategic importance in the region without taking sides in a way that would harm its own interests.

Key Takeaways

1. Verbal support only, no military backing

Pakistan condemned Israel's actions in Gaza and Iran but denied Iran's claim that Islamabad offered nuclear deterrence. This shows Pakistan is giving only symbolic support to avoid deeper involvement.

2. Historical Pakistan-Iran tensions

Despite religious and regional links, Iran and Pakistan have clashed over border security, terrorism, and Afghanistan policy. Iran supports the anti-Taliban side, while Pakistan has often backed the Taliban.

3. Saudi Arabia's role in limiting Pak-Iran ties

Pakistan's close relationship with Saudi Arabia, Iran's rival, limits how far it can go in supporting Tehran. Sunni-Shia sectarian divides also affect Pakistan's internal and external politics.

4. America's influence on Pakistan's choices

Pakistan remains dependent on US military and financial help. It cannot afford to anger the US by supporting Iran too openly, especially given Iran's hostile relationship with the West.

5. Strategic goal: remain relevant

Pakistan wants to remain an important regional player. It is positioning itself as a possible mediator between Iran and the US, hoping this will restore its importance after US troop withdrawal from Afghanistan.

6. Countering India's influence in Iran

India's investment in Iran's Chabahar port threatens Pakistan's regional trade position. Islamabad sees supporting Iran as a way to reduce India's influence there.

7. Fear of nuclear site attacks being normalized

Pakistan is concerned that Israel's attack on Iranian nuclear sites could create a precedent. It fears India may use similar logic to justify strikes on Pakistani nuclear facilities in the future.

Quantum challenge-The Hindu Editorial

Science

Easy Explanation

Scientists at IIT-Delhi and DRDO have made an important breakthrough in quantum cybersecurity. They successfully tested a secure communication method—called **quantum key distribution (QKD)**—over a distance of 1 km in open air. This technology ensures that if someone tries to intercept the message, the communication will instantly detect the breach.

This development could lead to highly secure, hack-proof communication networks—even using satellites for long-distance security. However, India faces major challenges in turning such innovations into large-scale systems. The government's **National Quantum Mission**, launched in 2023 with ₹6,003 crore till 2031, is progressing slowly due to red tape, lack of timely funding, over-reliance on foreign tech, and low salaries for researchers. Countries like the US and China are investing far more in quantum tech. For India to keep pace, it must urgently fix its bureaucratic hurdles and support scientists with better systems, not just money.

Key Takeaways

1. IIT-Delhi and DRDO achieve a major quantum milestone

A team successfully demonstrated **quantum key distribution** (QKD) over 1 km of free space—an essential step toward secure, next-generation communication technology.

2. Why quantum cybersecurity matters

Traditional cybersecurity relies on complex math problems. But **quantum computers** could soon solve them easily, breaking existing encryption. QKD is resistant to such attacks and offers **unbreakable security** even against quantum-level threats.

3. National Quantum Mission: Big promise, slow progress

India launched the **National Quantum Mission (2023–2031)** with ₹6,003 crore, but only a small part of the funds has been released. Bureaucratic inefficiencies delay research instead of enabling it.

4. Persistent administrative barriers hinder innovation

Scientists face **fragmented funding**, lack of single-window approvals, and excessive documentation. These slow down projects and reduce efficiency in a fast-moving tech race.

5. Dependence on foreign technology and talent drain

India still imports critical materials like **cryostats and sensors**, and most software stacks are controlled by foreign companies. Government pay scales cannot compete globally, pushing talent to short-term contracts or abroad.

6. Funding lags behind global rivals

India's investment in quantum tech is **far lower** than global leaders—**5 times less than the US** and **20 times less than China**. This risks India falling behind in a high-stakes technological race.

7. Administrative reform is not optional—it's essential

Scientific talent and technology cannot succeed if **existing bureaucratic systems remain rigid**. For quantum research to scale, India must **restructure how it funds, manages, and supports research**.

22nd June 2025

How will Israel-Iran conflict impact India?: TH FAQ

International Relations

EASY EXPLANATION

A sudden military conflict has broken out between Israel and Iran. On June 13, Israel carried out a surprise attack on Iran's nuclear facilities, killed top Iranian generals, and bombed multiple cities. In response, Iran launched a large number of ballistic missiles at Israel's military and research sites. The situation has become extremely tense and could escalate further.

India is caught in a tricky position. While it has close ties with both Israel and Iran, it is trying hard to stay neutral. Prime Minister Modi spoke with Israel's PM, and India's External Affairs Minister Jaishankar spoke with both Israeli and Iranian officials. India has asked both sides to avoid further violence and solve issues through diplomacy. However, India did not criticize Israel for its actions and avoided joining a statement by the Shanghai Cooperation Organisation (which includes Iran, China, and Russia) that condemned Israel. This shows a shift from India's earlier, more balanced stance.

India also began evacuating its citizens through 'Operation Sindhu'. While not many Indians live in Iran and Israel compared to other parts of West Asia, thousands still had to be safely brought back. Iran helped by opening its airspace for Indian evacuation flights. However, once these people return, India will also need to support them with jobs and education, or else they may return to the unstable zones out of desperation.

Trade is another concern. India's trade with both Iran and Israel has fallen in recent years. Iran trade dropped sharply after U.S. sanctions, and trade with Israel declined too, although India's defence imports from Israel have gone up significantly. If the Strait of Hormuz — a key shipping route — gets blocked due to the war, oil prices will rise and India's economy could suffer. India relies heavily on this route for energy imports.

Geopolitically, this conflict puts India in a tough spot. The U.S. and its allies support Israel and blame Iran. But many developing countries (Global South) oppose Israel's actions, especially after its war in Gaza. India now risks upsetting either side depending on what position it takes. This will be especially important at the upcoming BRICS summit in Brazil in July, where Iran is now also a member.

India also has infrastructure and connectivity projects in the region, such as Chabahar Port in Iran and the India-Middle East-Europe corridor through Israel and the Arab world. A prolonged conflict could harm these investments. For India, the best outcome would be a quick return to peace.

KEY TAKEAWAYS

Conflict Overview

- On June 13, Israel attacked Iran's nuclear sites and killed senior Iranian generals.
- Iran responded by launching missile attacks on Israeli military and research sites.
- The conflict has rapidly intensified and risks regional escalation.

India's Diplomatic Response

- PM Modi and EAM Jaishankar spoke with Israeli and Iranian leaders.
- India expressed concern and called for peace and dialogue.
- India avoided criticizing Israel and did not join SCO's condemnation.
- India abstained from a UN resolution calling for a ceasefire in Gaza — signaling a pro-Israel shift.

Operation Sindhu – Evacuation Effort

- India launched Operation Sindhu to evacuate citizens from Iran and Israel.
- Around 10,000 Indians in Iran and 25,000 in Israel (many working as caregivers and construction workers).
- Iran cooperated by opening airspace for Indian flights.
- India is planning to support returnees to avoid them returning to conflict zones out of economic need.

Trade and Economic Impacts

- India-Iran trade dropped from $14B in 2017 to $1.4B due to U.S. sanctions.
- India-Israel trade dropped from $11B (2022) to $3.75B (2023).
- India's defence imports from Israel increased from $5.6M (2015) to $128M (2023).
- A major concern is the possible disruption of the Strait of Hormuz, which could:
    - Spike oil and LNG prices
    - Increase shipping and insurance costs
    - Raise inflation in India
    - Hurt exports and raise import costs

Geopolitical Challenges for India

- India needs to maintain a diplomatic balance between the West (which supports Israel) and the Global South (which supports Palestine and Iran).
- U.S. might involve Pakistan in future operations, complicating India's strategic position.
- India may face reputational challenges among Arab and Muslim nations due to its current stance.
- At the upcoming BRICS Summit, India will find it harder to stay neutral, as Iran is now a member.

Connectivity and Strategic Projects at Risk

- India's plans for the India-Middle East-Europe Economic Corridor are already stalled post-Oct 7, 2023 attacks.
- Projects like Chabahar Port and the International North-South Transport Corridor could also be affected by continued conflict.
- India's best outcome: A swift end to the Israel-Iran conflict to protect its interests in the region.

What's the biggest challenge in DNA analysis?: TH FAQ

Science

EASY EXPLANATION

A tragic plane crash occurred on June 12 involving Air India Flight 171 that was headed to London. The aircraft crashed within a minute of taking off from Ahmedabad, killing at least 270 people, most of whom were passengers. Because the crash was so severe, many bodies were damaged beyond recognition. To identify them, the government is using DNA fingerprinting.

DNA fingerprinting works because everyone (except identical twins) has unique DNA. Scientists focus on certain parts of the DNA called STRs (short tandem repeats), which vary from person to person. These parts help confirm someone's identity. In this case, DNA from the victims' remains is being compared with the DNA of close family members, like parents.

However, collecting and matching DNA after a disaster is challenging. The body parts might be burnt, decomposed, or contaminated. Samples need to be carefully collected, often from tissue, bone, or nails, and then frozen or preserved in alcohol. Special techniques like PCR (Polymerase Chain Reaction) are used to amplify the DNA, and computer software helps match the DNA to relatives.

This entire process requires trained experts and proper storage, because any mistake can lead to wrong identification. Contamination or degraded samples are a major issue. To improve accuracy, experts suggest using better collection methods, software tools, and strict guidelines.

DNA fingerprinting has played a key role in many past tragedies like the 2004 tsunami, the 9/11 attacks, and the MH17 plane crash. It remains one of the most reliable tools for identifying victims when other methods fail.

KEY TAKEAWAYS

The Crash

- Air India Flight 171 crashed on June 12, killing over 270 people.
- The crash happened just after take-off from Ahmedabad airport.
- Victim identification is being done using DNA fingerprinting.

How DNA Helps in Identification

- Human DNA is 99.9% identical, but 0.1% differs and is used for identification.
- STRs (short tandem repeats) are the main markers used to distinguish people.
- DNA from victims is matched with samples from close relatives (like parents).

Process of DNA Profiling in Disasters

- Samples can be collected from tissue, nails, bones, blood, etc.

- DNA is preserved by freezing or using 95% alcohol for soft tissues.
- PCR technique is used to amplify DNA, followed by gel electrophoresis for analysis.
- The resulting DNA profile is compared with known samples to find a match.

Challenges in DNA Identification

- Degraded or contaminated samples are hard to work with.
- Environmental damage can affect DNA quality.
- Mistakes in handling or analysis can lead to wrong identification.
- Ethical and privacy concerns are also relevant.
- Training, better software, and strict protocols are essential for accuracy.

Past Events Where DNA Fingerprinting Was Crucial

- 2004 Indian Ocean tsunami
- 2009 Australian bushfires
- 2014 MH17 plane crash in Ukraine
- 2001 9/11 terrorist attacks in the U.S.
- It's also commonly used in criminal investigations and paternity cases.

Importance of Expertise and Equipment

- Only trained forensic experts are allowed to collect samples.
- Automation and advanced tools help improve precision.
- Continued updates in technology and training are needed to handle large-scale disasters effectively.

What is IIT-D's feat in quantum communication?: TH FAQ

Science

EASY EXPLANATION

On June 16, IIT-Delhi and DRDO successfully tested a new kind of communication technology called **quantum communication**, sending secure signals over 1 km through open air. This is a major step in building super-secure communication networks for the future, especially useful in defence.

Quantum communication uses the science of particles like photons (tiny light particles) which can be "entangled." This means when something happens to one particle, the other is affected instantly—even if they're far apart. If someone tries to eavesdrop, the connection gets disturbed, and the sender/receiver know it's unsafe. That's why this method is almost impossible to hack.

One major technique in this field is **Quantum Key Distribution (QKD)**. Think of it like sending a secure password (key) from one person to another using photons. If they both get the same key safely, they can use it to lock/unlock secret messages. The message itself is encrypted using normal methods like AES, but QKD makes sure the password reaches safely.

In the IIT-Delhi experiment, the team sent such a key through open air between two points using entangled photons, rather than through wires. Their success shows that we may soon be able to send secure signals from satellites to anywhere in India.

The error rate in this experiment was less than 7%, which is quite acceptable. The government is supporting this kind of work under its **National Quantum Mission** with a ₹6,000 crore budget until 2031. In the future, this technology can also benefit banks, telecom, and secure online transactions.

KEY TAKEAWAYS

What is Quantum Communication?

- It uses quantum physics (especially **quantum entanglement**) to make communication ultra-secure.
- If someone tries to intercept, the system gets disturbed and the intrusion is detected.
- This makes it ideal for military, banking, and sensitive communications.

Quantum Key Distribution (QKD)

- Purpose: To securely send a **key** (like a password) between two people.
- Once both parties have the same secret key, they can encrypt/decrypt messages.
- QKD doesn't encrypt the message; it only sends the key securely.
- Two types:
    - **Prepare-and-measure:** Sender prepares photons; receiver measures them.
    - **Entanglement-based:** A pair of entangled photons is sent—one to each user.

What Did IIT-Delhi and DRDO Achieve?

- Successfully demonstrated **entanglement-based QKD** over 1 km in open air.
- Achieved a **secure key rate of 240 bits per second** with **<7% error rate**.
- This builds upon past achievements like:
    - QKD between Vindhyachal and Prayagraj (2022).
    - QKD through 100+ km optical fibre (2024).

Why This Matters

- It's a **step toward satellite-based quantum communication**, allowing secure data transmission across vast distances.
- Can protect military messages from being intercepted.
- Supports future goals of creating a **quantum communication network** with multiple nodes.

Future Plans and Government Support

- India's **National Quantum Mission** (2023–2031) has a budget of ₹6,000 crore.
- Aims to develop quantum technologies for defence and civilian use.
- Civilian sectors that could benefit: **banking**, **telecom**, **digital security**.

For the sake of peace, at the cost of war: TH PROFILES

International Relations

EASY EXPLANATION

Iran's journey with nuclear weapons can be divided into four main phases.

Phase 1: Model State (1968–1979)

Iran was one of the first countries to sign the **Nuclear Non-Proliferation Treaty (NPT)** in 1968, under its

then ruler Shah Reza Pahlavi. The goal was to develop peaceful nuclear energy. Until 1979, Iran was praised internationally for complying with the treaty.

Phase 2: Ambiguity and Suspicion (1979–2002)
After the Islamic Revolution in 1979, the new leadership under Ayatollah Khomeini became suspicious of the West. Iran's nuclear intentions became unclear. Even though Iran wasn't openly building nuclear weapons, it was quietly gathering the know-how. Iraq's use of chemical weapons during the Iran-Iraq war made Iran rethink its defence strategy.

Phase 3: Exposure and Sanctions (2002–2015)
In 2002, an Iranian opposition group revealed that Iran was secretly working on nuclear facilities not reported under the NPT. This violated the treaty, leading to **international distrust**. Despite an agreement with the IAEA in 2003 for more inspections, Iran stopped cooperating in 2006, frustrated that the West didn't ease pressure. The UN imposed **tough sanctions** between 2006–2014, especially under President Ahmadinejad who defended Iran's nuclear rights. Only in 2013, under President Rouhani, did Iran return to negotiations.

This led to the **2015 Joint Comprehensive Plan of Action (JCPOA)** between Iran and six major world powers. Iran accepted strict limits on its nuclear program in exchange for sanctions relief. Things seemed stable again.

Phase 4: Collapse of JCPOA and Renewed Tensions (2018–Present)
In 2018, President Trump withdrew the U.S. from the deal and reimposed sanctions. Iran gradually broke the limits of the agreement and has now enriched uranium to levels very close to what's needed for a bomb. Israel has responded with airstrikes, claiming Iran must never be allowed to build a nuclear weapon. Iran argues that it still follows the NPT and only wants nuclear energy for peaceful use. But the tension has made things volatile.

Now, if Iran officially builds a nuclear weapon or leaves the NPT, it could lead to a **nuclear arms race** in the Middle East. Countries like Saudi Arabia may follow. Talks with the U.S. to find a middle ground are currently stalled, especially after Israel's recent attacks. The future depends on whether diplomacy resumes or the world heads towards more conflict.

KEY TAKEAWAYS

Phase-wise Evolution of Iran's Nuclear Policy

- **Phase 1: 1968–1979**
  - Iran signed and ratified the **NPT**, promoting peaceful nuclear use.
  - Was considered a model state in compliance.
- **Phase 2: 1979–2002**
  - After the Islamic Revolution, Iran's nuclear program became secretive.
  - Iran began acquiring knowledge but did not openly pursue weapons.
  - Iraq's chemical attacks pushed Iran to reconsider its defence policy.
- **Phase 3: 2002–2015**
  - **2002:** Iranian dissidents revealed secret nuclear sites in Natanz and Arak.
  - Iran violated its obligations under the NPT by not declaring these.
  - **UN sanctions** followed from 2006 to 2014.
  - **2015 JCPOA Agreement:** Iran agreed to strict limits in return for sanctions relief.
- **Phase 4: 2018–Present**
  - **2018:** U.S. withdrew from JCPOA under President Trump.
  - Iran resumed high-level uranium enrichment.

- Israel conducted airstrikes on Iran's facilities in 2024.
- Tensions have stalled further diplomacy and raised risks of regional conflict.

JCPOA: What It Was and Why It Collapsed

- A deal between Iran and **P5+1 (U.S., U.K., France, Russia, China + Germany)**.
- Aimed to restrict Iran's nuclear activity far beyond NPT obligations.
- Collapsed after unilateral U.S. exit and renewed sanctions.
- Iran slowly breached safeguards, nearing weapon-grade uranium enrichment.

Current Concerns

- Iran has enriched uranium close to weapon-grade levels.
- Israel's attacks and Iran's response have pushed the crisis further.
- Iran hasn't exited the NPT yet, but **Article X** allows withdrawal if national interest is threatened — which Israel's actions could justify.
- A nuclear-armed Iran might trigger a **Middle Eastern arms race**.

Global Reactions

- **Israel & U.S. (under Trump):** Military action and pressure.
- **Russia & China:** Demand for sanctions but condemn Israel's strikes.
- **Europe:** Opposes unilateral action, fears breakdown of the NPT.
- **IAEA & UN:** Emphasize diplomacy and Iran's return to compliance.

Future Pathways

- **Diplomatic option:** U.S. suggested reactor fuel from a neutral third country.
- **Risk:** Further escalation could destroy the NPT regime.
- Iran continues to claim it seeks peaceful nuclear energy only.
- International monitors warn that without talks, the world faces a stark choice: **a nuclear Iran or war**.

A dire Strait: TH Profiles

International Relations

EASY EXPLANATION

The **Strait of Hormuz** is a narrow waterway between Iran and the Arabian Peninsula. Even though it is only about 55 to 95 km wide, it is extremely important for the global oil supply. Nearly **25% of the world's oil** passes through it every day — around **20 million barrels** in 2024 alone. This oil comes from countries like **Saudi Arabia, Iraq, Iran, Kuwait, Qatar, and the UAE**, and is transported to markets all over the world.

Iran and Israel are currently locked in a military conflict, with Israel bombing Iran's nuclear and military sites on June 13, 2025. Iran has responded with missile attacks. Because the Strait is right next to Iran, any military escalation could seriously affect global oil trade.

Historically, Iran has **threatened to block the Strait** during times of conflict. While it has never fully shut it down, incidents have occurred. For example, during the **Iran-Iraq War (1980–88)**, both sides attacked oil tankers, and the U.S. had to step in and protect them. In **2019**, Iran even captured a British oil tanker to retaliate after the U.K. seized one of Iran's vessels.

Due to the current conflict, **shipping companies are being cautious**, and some oil tankers are being rerouted or delayed. This has caused **temporary increases in global oil prices**, like a 3% jump after Israeli strikes. However, prices have since stabilized.

There are some **alternative routes**, like land-based pipelines in Saudi Arabia, UAE, and Iran itself, which can reduce pressure on the Strait. But these can't fully replace the volume that passes through it.

India is particularly affected. Around **40% of India's crude oil** and **over half of its liquefied natural gas** pass through the Strait. If shipping is disrupted, India might have to **look for alternatives like West Africa**. The Indian government is keeping a close watch.

KEY TAKEAWAYS

Importance of the Strait of Hormuz

- **Geographical Role**
  - Connects **Persian Gulf** to the **Gulf of Oman and Arabian Sea**.
  - Less than **100 km wide**, but strategically vital.
- **Oil Transport Hub**
  - Carries **~25% of global oil** (20 million barrels/day in 2024).
  - Major exporters: **Saudi Arabia, Iraq, Iran, Kuwait, UAE, Qatar**.
  - **Over 80% of oil exports through the Strait go to Asia.**

Historical Tensions & Threats

- **Past Conflicts**
  - **Iran-Iraq War (1980–1988):** Oil tankers were targeted; led to U.S. naval protection.
  - **2011–2012 & 2019:** Iran threatened closures after sanctions and captured a British tanker.
- **Current Conflict**
  - Triggered by Israel's bombing of Iranian sites (June 2025).
  - Iran retaliated with missiles; fears of disruption revived.

Economic and Strategic Consequences

- **Global Impact**
  - Shipping firms are avoiding Iranian coasts.
  - **Oil prices spiked** temporarily (e.g., Brent crude rose 3% post-strikes, now stabilized at $77.01/barrel).
- **Alternative Routes**
  - **Land pipelines** by Saudi ARAMCO, UAE, and Iran's Goreh–Jask pipeline offer limited relief.
  - Not sufficient to replace Strait's capacity.

India's Oil Dependency

- **Heavy Reliance**
  - **40% of India's crude oil** and **54% of its LNG** comes via the Strait.
  - **1.5 million barrels/day** of India's consumption linked to this route.
- **Government Response**
  - Petroleum Minister Hardeep Singh Puri acknowledged risks.
  - India is considering **alternative suppliers** like West Africa in case of disruptions.

Outlook

- A full shutdown is unlikely but **partial disruptions are probable**.
- Any escalation in West Asia could **affect energy security worldwide**.
- The Strait of Hormuz remains **critical to global oil trade** and **regional stability**.

23rd June 2025

When a nuclear site is attacked-Indian Express Explained

International relations

Easy Explanation

Recently, the U.S. and Israel attacked three major nuclear sites in Iran — **Fordow, Natanz, and Isfahan** — which are used for **uranium enrichment** (a process needed to make nuclear fuel or bombs). Many people feared a nuclear explosion or major radiation leak.

But experts and the IAEA (International Atomic Energy Agency) say there's **no danger of a nuclear blast**, because nuclear materials like uranium **don't explode like regular bombs** unless handled in a very specific way. However, **radiation leaks are a real risk**, especially if radioactive substances (like uranium dust or gas) escape due to the damage.

Fortunately, so far there's **no radiation leak** reported, and it's likely that the attackers carefully targeted areas with **less nuclear material** to avoid environmental damage.

Key Takeaways

1. Why no nuclear explosion?

- Nuclear materials (like uranium) can't explode from a missile strike.

- A nuclear explosion requires precise conditions that are not met during accidental or military attacks.

2. What's the real risk?

- Radiation leaks are the bigger concern.

- Facilities store dangerous materials like uranium hexafluoride (UF6) which can escape if containers are damaged.

3. Built-in protection

- Nuclear sites have strong safety systems with layers of containment to prevent leaks.

- Sites like Fordow are deep underground (260+ feet), which makes them hard to destroy completely.

4. Targeted precision

- The US and Israel may have targeted less sensitive areas of the sites to avoid leaks.

- IAEA said some attacked areas had little or no enriched uranium.

5. IAEA's response

- So far, the IAEA found no increase in off-site radiation levels.

- An emergency meeting was called to assess the situation further.

6. No historical precedent for military strike leaks

- Big leaks (like Chernobyl, Fukushima) happened due to accidents, not military attacks.

- Attacks like these are rare but carry risks if not extremely precise.

The 'bunkerbuster' bombs and the bombers that dropped them-Indian Express Explained

International relations

Easy Explanation

The United States recently used its most powerful non-nuclear bomb — the **GBU-57 Massive Ordnance Penetrator (MOP)** — to strike Iran's deep-buried nuclear facility at **Fordow**. This was the first time the MOP was used in actual combat. The bomb is designed to destroy bunkers located deep underground and was carried by the **B-2 Spirit stealth bomber**, which can evade enemy radar.

The Fordow site is located about **90 metres underground**, and only such a powerful bomb could reach it. The MOP weighs around **13.6 tonnes**, and the B-2 can carry **two such bombs**. It flies thousands of kilometers without being detected, making it ideal for such sensitive missions.

Although the **extent of the damage is still unclear**, this operation demonstrates the U.S.'s capability to precisely hit hardened underground targets while minimizing the risk of collateral radiation leakage.

Key Takeaways

1. GBU-57: The Massive Ordnance Penetrator (MOP)

- A **30,000-pound (13.6-tonne)** non-nuclear bomb.

- Designed to **destroy deep underground bunkers** and tunnels.

- Can **penetrate up to 60 metres** below ground before detonating.

- Made of a high-performance steel alloy to maintain structure on impact.

2. Fordow: The Target Site

- Located ~**90 metres underground** near Qom, Iran.
- Houses advanced **uranium enrichment centrifuges**.
- Attacked with MOP bombs specifically designed for such depth.

3. The Carrier: B-2 Spirit Stealth Bomber

- Only aircraft capable of carrying and delivering MOP bombs.
- Has a **stealth design**: evades radar, infrared, and acoustic detection.
- Operational range: **9,600 km without refueling**, over **19,000 km with refueling**.
- Can **strike from the U.S. and return** without being intercepted.

4. Operational History of B-2

- First flown in **1989**, operational since **1997**.
- Deployed in Kosovo (1999), Iraq, Afghanistan, Libya, Yemen.
- In Operation Iraqi Freedom, **released over 1.5 million pounds of bombs**.

5. Strategic Significance

- Demonstrates the U.S.'s ability to **target and destroy high-security nuclear infrastructure** without using nuclear weapons.
- B-2's stealth and long range allow **surprise precision strikes** deep in enemy territory.

What the US entry in Iran-Israel conflicts means for India,world-Indian Express Explained

International relations

Easy Explanation

The US has officially entered the Israel-Iran conflict by bombing Iran's nuclear sites using powerful weapons and stealth bombers. This shows stronger military alignment between the US and Israel, which believes Iran is building nuclear weapons.

The attack has raised global concerns. Iran sees it as a violation of international law, comparing it to the US invasion of Iraq in 2003. Iran is now weakened — several of its military officials are dead, missile capacity damaged, and its Supreme Leader is aging.

For India and the world, this conflict can increase risks. Oil prices may rise if the conflict expands into the Strait of Hormuz — a vital global oil trade route. India depends heavily on West Asia for energy and has already started evacuating its citizens. The war also threatens India's IMEEC project and regional stability.

Key Takeaways

1. Direct US Military Involvement

- The US bombed three Iranian nuclear facilities using B-2 stealth bombers and bunker-buster bombs.
- This marks a shift from indirect support to active military engagement in the Iran-Israel conflict.

2. Stronger US-Israel Strategic Bond

- The strike showcased "iron-clad" US support for Israel, which claims Iran is a nuclear threat.
- Israel lacked the weapons to destroy deeply buried sites like Fordow — the US filled that gap.

3. Parallels with Iraq War (2003)

- Critics compare the justification for the Iran strike to the false WMD claims during the US invasion of Iraq.
- Raises credibility concerns about US intervention in the region.

4. Impact on Iran

- Iran's missile launch capacity reportedly reduced by one-third.
- Over 600 Iranians killed in a week; Iran's military and political leadership faces heavy losses.
- Iran's regional influence is challenged — Hamas and Hezbollah have also been hit.
- With Ayatollah Khamenei aging and sick, Iran's regime appears vulnerable.

5. Potential Escalation

- Iran may retaliate directly or through proxies like the Houthis or Hezbollah.
- Blockade of the Strait of Hormuz could disrupt global oil supply and shipping.
- US troops and bases in West Asia may be targeted, expanding the war.

6. Implications for India

- Around **8–9 million Indians** live in the Middle East; over **1,400 students evacuated** from Iran.
- India is heavily dependent on this region for **about 60% of its oil imports**.
- Any regional instability may lead to higher oil prices and inflation.
- India's key strategic project, the **India-Middle East-Europe Economic Corridor (IMEEC)**, could be delayed or derailed.
- India's foreign policy prefers **strategic autonomy**, so it's watching the situation cautiously.

Steering the Indian economy amidst global troubles-The Hindu Editorial

Economy

Easy Explanation

The global economy is facing growing uncertainty due to renewed trade wars, shifting tariff regimes, and geopolitical tensions. Countries are reviewing tariffs and negotiating bilateral trade agreements, which disrupts trade and financial markets. India's exports—especially in sectors like marine products, apparel, gems and jewellery, pharmaceuticals, auto components, and electronics—are heavily dependent on the U.S., its largest buyer. Any U.S. tariff changes could erode exporter margins, particularly for MSMEs. However, India's strong services exports, rising remittances, ample forex reserves, and low current account deficit provide a cushion. To navigate these challenges, India must diversify markets, secure favourable trade deals, strengthen domestic resilience, and accelerate reforms.

Key Takeaways

1. Impact of U.S. Tariff Uncertainty

- The U.S. market accounts for about 20% of India's merchandise exports.
- Potential reciprocal U.S. tariffs could hit sectors with high dependence on the U.S., making exports unviable for many MSMEs.

- Ongoing U.S. trade negotiations (and court challenges) add unpredictability.

2. India's External Resilience

- Strong services exports, high remittances, adequate foreign exchange reserves, and a low current account deficit help absorb shocks.

- These buffers limit the direct macroeconomic impact of any new tariffs.

3. Market Diversification through FTAs

- Early conclusion of a U.S. bilateral trade agreement (BTA) could grant a first-mover advantage with zero tariffs on critical sectors.

- FTAs with the U.K., EU, Australia, and other partners will open alternative markets and reduce overreliance on any single destination.

4. Protecting Domestic Industry

- Enhanced import monitoring and swift deployment of trade remedial measures (anti-dumping, countervailing duties) can shield local producers from unfair competition.

- Addressing non-tariff barriers and exploring mutual recognition agreements are critical to ensuring market access.

5. Sustaining Domestic Growth Engines

- Continued public capital expenditure will underpin growth and crowd-in private investment despite global headwinds.

- An accommodative monetary policy with potential RBI rate cuts can further stimulate domestic demand.

6. Attracting Supply-Chain Investments

- Target global firms seeking alternatives to China or Vietnam for setting up in India via a focused investment-promotion approach.

- Production-Linked Incentive (PLI) schemes should be expanded to emerging sectors—IoT devices, wearables, battery materials—to boost manufacturing and self-reliance.

7. Expedited Structural Reforms

- Speed up next-generation regulatory reforms outlined in recent budgets to improve ease of doing business.

- Broaden PLI coverage and address land, labour, and logistics reforms to enhance competitiveness.

Expansionary policies in a slowing economy-The Hindu text and Context

Economy

Easy Explanation

India is currently pursuing both **expansionary fiscal** (like income tax cuts) and **monetary policies** (like interest rate cuts by the RBI) to stimulate a slowing economy. The RBI has reduced the repo rate to 5.5%, encouraged by low inflation and the hope of boosting investment and consumption. However, despite these steps, key indicators like **credit growth** and **employment** are weak, and consumer spending hasn't increased as expected after tax cuts.

This raises questions about whether the current policy mix is effective or coordinated. If both policies work fully, inflation could rise sharply. If they don't work, fiscal deficits may widen without real economic benefits. The risk is that government revenues may fall, forcing spending cuts that might hurt vulnerable groups. Therefore, thoughtful coordination and stronger government intervention to support the lower-income population may be necessary.

Key Takeaways

1. Expansionary Policy Mix

- RBI has cut the **repo rate** twice in 2025, bringing it down to **5.5%** to boost growth.

- The **government also cut income taxes** to spur consumption and demand.

- Both fiscal and monetary policies are expansionary at the same time.

2. Risk of Uncoordinated Policy

- Fiscal stimulus (tax cuts) and monetary stimulus (rate cuts) working together could **overheat the economy** and **cause inflation**.

- In countries like the **US and UK**, monetary policy resisted further easing when tax cuts were announced, to avoid inflation.

- If the fiscal push fails to stimulate growth, it could worsen the **fiscal deficit**.

3. Inflation Is Currently Low

- Inflation dropped to **3% in June 2025**, the **lowest in six years**, mainly due to early monsoon and a good harvest.

- This created space for RBI to cut interest rates, but external risks like **US tariff wars** and **Iran conflict** may create new challenges.

4. Weak Demand and Growth Concerns

- **Credit growth** has dropped to a **three-year low of 9%**, and **unemployment** rose to **5.6%** in May.

- These are signs of a **demand slowdown**, despite income tax cuts meant to boost spending.

- The expected **rise in household consumption hasn't materialised** yet.

5. Theoretical Dilemma: Forward-Looking Households

- Modern economic theory assumes people **spend today based on future income expectations**.

- But if households are **not responding** to tax cuts, either the theory is failing, or consumption will surge later, risking **future inflation**.

6. Fiscal Deficit Worries

- If **growth doesn't pick up**, **tax revenue will decline** while government spending stays high, widening the fiscal deficit.

- The government may be forced to **cut revenue expenditure**, affecting **vulnerable groups** (e.g., subsidies, welfare schemes).

7. Policy Recommendation

- In an era of **monopoly profits rising over wages**, simply relying on market forces may not work.

- **Government must intervene** with policies that **boost wages and purchasing power**, especially for the lower-income population.

Fighting antimicrobial resistance with insect-based livestock feed-The Hindu science

Environment

Easy Explanation

Traditional livestock farming has high environmental costs—it produces significant greenhouse gas emissions, uses lots of land and water, and contributes to the spread of antimicrobial resistance (AMR)

due to excessive antibiotic use. To tackle these issues, **insect-based feed** is being explored as a **sustainable and cost-effective alternative**.

Insects such as **black soldier flies** and **crickets** can be raised on organic waste and turned into protein-rich animal feed. They use fewer resources, are cheaper to raise, and produce less pollution. Studies show insects can effectively replace fishmeal or soybean meal, commonly used in animal feed.

In India, institutions like **ICAR-CIBA** and others have signed MoUs with private players to use insect-based feed in aquaculture and livestock. Globally, 40 countries have already accepted insect-based feed regulations. The method can help reduce AMR risks and improve sustainability in food systems.

Key Takeaways

1. Problems with Traditional Livestock Systems

- High **greenhouse gas emissions**, land and water use.
- Major contributor to **antibiotic use** (~50% of global antibiotic consumption).
- Leads to **antimicrobial resistance (AMR)**, a growing public health crisis.

2. AMR and Its Dangers

- Antibiotics used to promote animal growth and treat diseases.
- Misuse causes **bacteria to develop resistance**, which can spread via soil, water, and food chains.
- Projected **10 million deaths annually** by 2050 due to AMR (up from 700,000 in 2014).
- Overuse is particularly **unregulated in LMICs**, where harmful antibiotics are still in use.

3. Insect-Based Feed as a Solution

- Insects like **black soldier flies, crickets, grasshoppers, and mealworms** are rich in proteins, fats, and micronutrients.
- **40 countries** have approved regulations for insect-based animal feed.
- Insects can be raised on **organic waste**, converting low-grade material into high-quality proteins.
- Requires significantly **less land and water** compared to cattle or poultry.

- **Lower greenhouse gas emissions** during rearing.

4. Economic and Nutritional Benefits

- Insect protein has **better digestibility** and can partially or fully replace fishmeal and soybean meal.
- Example: 1 kg of fishmeal can be replaced by 0.76–0.95 kg of various insects.
- More **cost-effective** and **sustainable** feed option.
- Offers better **benefit-to-cost ratio** for small farmers and feed manufacturers.

5. Indian Context

- **ICAR** and its centres like **CIBA** and **CMFRI** have signed MoUs with private companies to explore insect-based feeds for **shrimp and seabass farming**.
- Research is ongoing, but adoption is expanding gradually.
- India is moving in line with global trends to tackle environmental and AMR-related concerns.

6. Policy and Future Outlook

- **FAO estimates** a 70% increase in food production needed by 2050 to meet global demand.
- Insect-based feed is a **climate-smart innovation**, reducing environmental footprint.
- Requires **awareness-building**, regulatory support, and **research investment** for mainstream adoption.

24th June 2025

Challenges before IAEA after attacks on Iran's nuclear sites-Indian Express Explained

International relations

Easy Explanation

The recent US-Israel attacks on Iran's nuclear sites (Natanz, Fordow, and Isfahan) are the **first-ever direct strikes on active nuclear facilities**. While no radiation leaks have been reported so far, **serious concerns have emerged**. These include the **safety of nuclear materials**, **potential radiation risks**, and the **loss of access for the IAEA**, which monitors Iran's nuclear activities. Since key parts of these sites

are underground, the **extent of damage is still unclear**. Iran claims that it moved its sensitive nuclear materials in advance, but the IAEA hasn't been able to **verify or inspect the sites** due to safety concerns. This raises fears of **unaccounted nuclear materials** and **possible nuclear proliferation**, especially because Iran has enriched uranium close to weapons-grade level. The IAEA is pressing for access to inspect the damage and confirm the location of all nuclear material.

Key Takeaways:

1. First-Ever Attacks on Active Nuclear Sites

- These are the first recorded military strikes on operational nuclear facilities (Natanz, Isfahan, Fordow).
- Raises global concerns over a dangerous precedent.

2. No Radiation Leaks – But Risk Remains

- No increase in radiation levels reported so far.
- Radiation is monitored in real time through sensors and IAEA equipment.
- Even large leaks can be detected from other countries or satellites.

3. Damage Still Unclear

- Most of Iran's nuclear infrastructure is underground, making it hard to assess damage.
- IAEA says fuel enrichment facilities and tunnel entrances appear to have been hit.
- Iran downplays the damage, but IAEA reports suggest it could be significant.

4. IAEA Access Blocked

- The IAEA currently **lacks access to the damaged sites**, hindering its ability to inspect or monitor.
- Safety of inspectors is also a concern due to the tense situation.

5. Uncertainty About Nuclear Material

- Iran claims it moved sensitive material beforehand; satellite images may support this.
- IAEA fears some nuclear material may now be **unaccounted for**, increasing **proliferation risk**.
- Iran holds 400 kg of uranium enriched to 60%, which is close to weapons-grade (90%).

6. NPT & IAEA Safeguards at Risk

- As a Non-Proliferation Treaty (NPT) signatory, Iran is under strict safeguards.
- Attacks may weaken the IAEA's role and effectiveness in tracking global nuclear activity.

Agri industry & India-US deal-Indian Express Explained

Economy

Easy Explanation

India and the US are negotiating a trade deal, but it's worrying two major Indian agri-industries: **sugar mills and soybean processors**. The US wants India to allow imports of **ethanol**, **genetically modified (GM) maize**, and **GM soybeans**—all major American exports.

India's **ethanol blending program**—which mixes ethanol with petrol—has grown fast, with sugarcane and maize as key raw materials. But if cheaper **US ethanol or GM maize** is allowed in, it could reduce demand for Indian sugarcane and maize.

Similarly, importing **GM soybeans** could hurt Indian farmers and local processors. Since most soybean processing units are inland, bringing in imported beans through ports would raise costs, making them unviable. Also, **falling soybean prices** are already affecting farmers.

A NITI Aayog paper suggests importing these products and exporting their by-products, but industry experts argue this would damage India's self-reliance and hurt rural livelihoods.

Key Takeaways

1. India–US Trade Deal in Final Stages

- A bilateral trade deal is being negotiated before the July 9 US tariff deadline.
- The US is pressuring India to open markets for ethanol, GM maize, and GM soybean.

2. Sugar Mills' Concerns

- India's ethanol blending in petrol has grown to 18.8%, mainly from sugarcane and maize.
- Mills fear US ethanol/maize imports would:
    - Lower demand for Indian sugarcane.
    - Harm future prospects of ethanol-based fuels (like aviation fuel).
    - Disrupt domestic maize supply needed for animal feed.

3. GM Maize Debate

- NITI Aayog recommends importing GM maize for ethanol, exporting its by-product (DDGS).
- Indian industry worries this will:
    - Hurt local maize farmers.
    - Create grain shortages for livestock feed.

4. Soybean Industry's Fears

- India processes 11–12 million tonnes of soybeans annually.
- SOPA says importing GM soybeans:
    - Will undercut prices and hurt 7 million farmers.
    - Isn't viable due to high transport and freight costs.
    - May force shutdown of small and inland processing units.

5. Tariff Cuts Worsen the Problem

- Government recently slashed import duties on edible oils like soybean oil from 27.5% to 16.5%.
- Domestic processors now face cheaper imported oils, cutting into their profits.

6. Risk to Farmer Livelihoods and Agri-Economy

- Cheaper imports may push farmers to abandon soybean and shift to other crops.
- Experts warn the trade deal could benefit large foreign firms while harming domestic rural economies.

'Jaws 'turns 50:How the film fuelled 'decimation of shark population'-Indian Express Explained

Environment

Easy Explanation

The movie *Jaws*, released in 1975, became a huge hit and terrified audiences by portraying sharks—especially great whites—as violent, human-hunting monsters. However, scientists say that this portrayal

is **scientifically inaccurate**. Real sharks **do not stalk or develop a taste for humans**; most shark bites are cases of mistaken identity. Yet, the film created **widespread fear**, which led to increased **shark hunting**, tournaments, and killings—especially in the US.

While humans were already fishing sharks for their meat and fins (a delicacy in parts of Asia), the **pop culture impact of Jaws accelerated their decline**. Today, sharks are also threatened by **overfishing, habitat destruction, pollution, and climate change**.

Sharks play a **vital role in ocean ecosystems**. They help regulate marine species, maintain the carbon cycle, and support biodiversity. Scientists now stress the importance of conserving them. Even Steven Spielberg has said he regrets the film's role in harming shark populations.

Key Takeaways

1. Misleading Image Created by *Jaws*

- The film portrayed sharks as **vicious, bloodthirsty killers**.
- This led to **public paranoia**, despite the fact that real sharks rarely attack humans.

2. Scientific Reality

- Sharks **don't hunt humans**; most attacks are **mistaken identity** cases.
- On average, only **5-6 people die from shark attacks globally each year**.
- In contrast, **more people are bitten by other people in New York City annually**.

3. Impact on Shark Populations

- The film sparked **shark hunting and tournaments**, especially in the US.
- Shark populations were already threatened by:
    - **Overfishing** for meat and fins.
    - **Climate change**, **pollution**, and **habitat loss**.
- A 2021 study reported a **71% decline** in oceanic shark and ray populations since 1970.

4. Ecological Importance of Sharks

- Sharks are **apex predators** and help maintain balance in marine ecosystems.
- They:
    - Regulate herbivore populations, protecting seagrass and kelp.
    - Disperse fish and reduce overgrazing.
    - Influence where marine animals move, maintaining biodiversity.
    - Mix ocean layers, improving nutrient flow and supporting surface life.

5. Regret and Conservation

- Both **Spielberg** and **Peter Benchley** (author of the *Jaws* novel) later **regretted** their work's impact.
- Spielberg said in 2022: "I truly regret the decimation of the shark population because of the book and the film."
- Conservationists now work actively to **reverse the damage** and **save shark species from extinction**.

HOW IS TESLA EXPECTED TO REMOTELY CONTROL ITS ROBOT AXIS?-Indian Express Explained

Science

Easy Explanation

Tesla has begun testing **driverless robotaxis** in Austin, Texas, where cars without human drivers are **carrying paying passengers** for the first time. To manage safety, Tesla plans to use a system called **teleoperation**—this means human operators **remotely monitor and intervene** if the self-driving car gets confused or stuck. There's also a safety person sitting in the front passenger seat as backup for now.

Teleoperation is used by other companies like **Waymo**, where humans can provide guidance to the autonomous system when needed. However, experts warn that remote control can be **unreliable**, especially if the **internet or cellular connection drops**, which is risky during emergencies.

While Tesla's small fleet might handle this safely, scaling it to thousands or millions of vehicles could cause **daily failures**. Critics, including lawmakers, have urged Tesla to delay its rollout until new laws on autonomous driving come into effect in Texas later this year.

Key Takeaways

1. Tesla's Robotaxi Launch

- Tesla launched a **small fleet** of robotaxis in **Austin, Texas**.
- These are **self-driving cars with no human driver** but a **safety monitor in the front seat**.
- The vehicles carried **paying passengers** for the first time.

2. What is Teleoperation?

- **Teleoperation** allows **remote human operators** to monitor or control vehicles.
- It's used to:
    - **Train** autonomous systems.
    - **Monitor** the vehicle's decisions.
    - **Intervene** when the system is unsure (e.g., during roadblocks or emergencies).

3. How Other Robotaxi Firms Use It

- Companies like **Waymo** use human agents to assist vehicles when needed.
- The system acts like a "**phone-a-friend**" approach for tricky situations.
- However, Waymo insists **final decisions are made by the software**, not humans.

4. Limitations and Safety Concerns

- **Remote control depends on stable internet connections**, which can lag or drop.
- This is a **major risk** in emergencies or high-speed scenarios.
- Experts call it **"inherently unreliable,"** especially when scaled to large fleets.

5. Legal and Regulatory Issues

- A group of **Texas lawmakers** requested Tesla delay the launch.
- A new **autonomous vehicle law** is expected in Texas in **September 2025**.
- Concerns remain about **safety oversight** and **public risk** in the meantime.

CRITICAL BLOCKAGE-Indian Express Editorial

Geography

Easy Explanation

China, which dominates the global production of rare earth elements (REEs) — crucial minerals used in making electronics, electric vehicles, wind turbines, and defense equipment — imposed export restrictions as part of a broader trade conflict with the U.S. This has raised alarms worldwide, including in India, where industries like automobile manufacturing are concerned about potential supply shortages.

REEs such as lithium, cobalt, nickel, neodymium, and dysprosium are vital to clean energy and high-tech sectors. China controls around **90% of REE refining**, and a significant portion of global reserves. In response to the crisis, countries are scrambling to diversify supply sources and strengthen domestic capabilities. India, too, has launched a **National Critical Mineral Mission** to boost local exploration and reduce dependency on imports.

Key Takeaways

1. What Triggered the Concern?

- On April 4, **China imposed export restrictions** on rare earth elements in retaliation to U.S. tariffs.
- These elements are essential for producing goods in **electronics, renewable energy, auto, and defense** sectors.

2. Why Are Rare Earths Important?

- **Lithium, cobalt, and nickel** are key for **EV batteries**.
- **Neodymium and dysprosium** are used in **wind turbines and magnets**.
- **Indium, gallium, and tellurium** support **solar panel production**.

3. China's Dominance

- **90% of global REE refining** is done in China.
- China has the **largest known reserves** (44 million metric tons), far ahead of India (6.9 million), Brazil, Australia, and others.

4. Global Repercussions

- China’s restrictions caused a **sharp drop in rare earth magnet exports** in May 2025.
- Countries like **India, the EU, and the U.S.** are now looking to **secure alternative sources**.

5. India's Response

- India launched a **National Critical Mineral Mission** in 2025.
- The **Geological Survey of India (GSI)** will carry out **1,200 exploration projects by 2030–31**.
- Domestic industries (especially auto majors) have urged the government to ensure uninterrupted supply.

6. Global Strategies

- The **U.S.–China trade framework** includes agreements for China to ease REE exports.
- Other countries, like **Vietnam, Brazil, and Saudi Arabia**, are **stepping up mining and exploration** to meet rising demand.

7. Way Forward

- **Short-term focus**: Secure stable supply chains to prevent industry disruptions.
- **Long-term focus**:
  - **Expand domestic mining and processing** capabilities.
  - **Diversify sources** through international partnerships.
  - **Develop substitute technologies** and recycling frameworks.

Pakistan's role in the U.S.-West Asia calculus-The Hindu Text and Context

International relations

Easy Explanation

In light of growing tensions between **Iran, Israel, and the U.S.**, Pakistan is being seen as a potentially useful player in the U.S.'s West Asia strategy. Though Pakistan has historically had **uneasy ties with Iran**, its **geographical position and influence in Afghanistan** make it strategically important.

Recently, Pakistan's Army Chief **General Asim Munir met U.S. President Trump**, sparking speculation that Pakistan might help the U.S. **isolate Iran**, especially if land trade routes are needed during conflict. Shortly after, **Pakistan shut most land borders with Iran**, a move that could be linked to the U.S. strikes on Iran's nuclear sites.

Despite economic collapse, Pakistan's **military budget rose** significantly, even as development funds were slashed. At the same time, **sectarian tensions** and domestic unrest in **Balochistan** are rising—issues that Pakistan manages partly through religious extremism. These contradictions—supporting anti-Iran

U.S. strategy while publicly backing Palestine—highlight Pakistan's **double game** for survival and strategic gain.

Key Takeaways

1. Pakistan's Strategic Role in West Asia

- After the U.S. attack on Iran's nuclear sites, Pakistan is being viewed as a **partner** to help **isolate Iran**.

- Pakistan shares a long land border with Iran, important for Iran's **food imports** if Gulf ports are blocked.

2. High-Level U.S.-Pakistan Engagement

- Pakistan Army Chief General Munir met Trump on **June 18**, shortly before the U.S. strikes.

- This meeting was **unusual**, bypassing diplomatic protocol and signaling backdoor strategic coordination.

3. Border Closure with Iran

- On June 15, Pakistan **closed all land borders with Iran**, except for returning nationals.

- The move is viewed as **alignment with U.S. pressure** against Iran amid ongoing regional conflict.

4. U.S. Geopolitical Calculus

- The U.S. values **West Asia more than South Asia** due to economic stakes and Israel's security.

- Trump recently secured **$3 trillion investment commitments** from Gulf countries.

5. Pakistan's Troubled Economy & Defence Focus

- Despite a **crippling debt crisis**, Pakistan hiked its **defence budget** by 17%.

- Debt and defence costs now **exceed total government revenue**, forcing more foreign loans.

6. Sectarian and Regional Fault Lines

- Pakistan's **sectarian rivalry with Shia-majority Iran** has sharpened.

- Sunni extremist groups supported by Pakistan's army have **targeted Shia pilgrims** headed to Iran.

7. Balochistan Factor

- Conflict in **Balochistan**, which borders Iran, continues.

- Pakistan uses **religious militancy** to suppress Baloch nationalism, with strategic ties to **Gwadar port**, a Chinese naval asset.

8. Contradictions in Pakistan's Foreign Policy

- Pakistan claims solidarity with **Palestinians**, yet could help the U.S. against Iran.

- This **double-speak** may backfire domestically, angering its **jihadist networks**.

9. Aid and Loans as Bargaining Chips

- Pakistan recently received new IMF support and loan rollovers, possibly tied to its **strategic realignment** with the U.S.

- Its cooperation in **anti-Iran actions** may be the **price for economic relief**.

10. Ideological Posturing

- General Munir reiterated Pakistan's identity as a **"superior ideology"** nation, reviving **two-nation theory rhetoric**.

- The ideological tone seeks to **unify domestic opinion** but may fuel further unrest in **ethnically diverse provinces**.

Rising evaporative demand spotlights India's data and research gap-The Hindu Text and Context

Science

Easy Explanation

As the Earth warms, the air becomes more "thirsty" — a concept scientists call **evaporative demand**, which is the atmosphere's ability to pull water from land and plants if water is available. When evaporative demand spikes for several days, it's called a **"thirstwave."**

These thirstwaves are becoming **more intense, frequent, and longer-lasting**, especially during crop-growing seasons. This means that plants lose more water, requiring more irrigation, and making them drier and more vulnerable.

In the U.S., these patterns are being well studied, but **India lacks detailed data** and research on how thirstwaves affect local crops and ecosystems. A few Indian studies hint at rising **evapotranspiration** (water loss via evaporation and plant transpiration) in parts of the Himalayas and Northern India — possibly due to increased agriculture or vegetation.

Experts urge more research in **climate-vulnerable countries** like India, where farmers could suffer greatly without proper monitoring, planning, and adaptation strategies.

Key Takeaways

1. What is Evaporative Demand?

- It reflects how much water the **atmosphere can pull** from soil and plants.
- In a warmer world, the air becomes **more "thirsty"**, leading to higher water loss from land.

2. Thirstwaves: A New Climate Term

- Coined by U.S. scientists, thirstwaves are **3+ days of extreme evaporative demand**.
- These are not caused by temperature alone but also **humidity, wind, and solar radiation**.

3. Why This Matters for Agriculture

- Crops like rice or wheat lose more water under high evaporative demand, needing **more irrigation**.
- **Frequent thirstwaves** mean rising water needs and **greater stress** on crops.

4. Evaporative Demand in India: Mixed Trends

- Older Indian studies (1997) showed a **decrease** in evaporation, due to **high humidity** balancing the warming.
- But **future warming** is expected to **override humidity effects**, increasing water demand from land.

5. Recent Indian Research

- A 2022 study found increasing evapotranspiration in **Northern India and the Himalayas**, possibly due to **more vegetation or farming**.
- However, **extreme thirstwave events in India are still uncharted**, creating a serious **data and preparedness gap**.

6. Research Gaps and Future Needs

- India lacks monitoring of **crop-specific and region-specific sensitivity** to high evaporative demand.
- New Indo-global collaborations (like Kukal's project with NIT Jalandhar) are **beginning to investigate** this in South Asia.

7. Policy and Climate Preparedness Implications

- The **worst thirstwaves don't always occur in the hottest areas**, so **climate response strategies must look beyond temperature**.

- Governments should **track, measure, and communicate** evaporative demand impacts to farmers and water planners.

Yeast shows physics can give rise to multicellular life sans mutations-The Hindu Science

Science

Easy Explanation

Scientists have long believed that **multicellular life** (like animals and plants) evolved from **unicellular organisms** through **genetic mutations** over billions of years. But a new study from India's **NCBS** and **Georgia Tech** suggests that **physics and chemistry alone** might have enabled this transition — even *before* genetic changes took place.

Using **snowflake yeast** — a modified yeast that grows in clusters instead of splitting into single cells — researchers found that these yeast clusters could **grow to large sizes** without specialized transport systems (like blood vessels in humans). How? The yeast created **natural fluid flows** around them by consuming sugar and releasing lighter substances like alcohol and CO_2. These changes in **density** caused **liquid currents** to form, helping nutrients reach all the cells in the cluster.

This discovery shows that **simple physical forces** might have kickstarted multicellularity — **even without any genetic evolution**. This opens new ideas about how life evolved and what defines being "alive."

Key Takeaways

1. What Was the Study About?

- Researchers from **NCBS (Bengaluru)** and **Georgia Tech** studied **snowflake yeast**, which grow in clusters, unlike normal yeast.

- They wanted to understand how these large clusters survive **without nutrient-transport systems** like in higher organisms.

2. Multicellularity Without Genes?

- Traditional view: Multicellularity evolved via **genetic mutations**.

- New view: **Physical and chemical processes** (like fluid flow caused by metabolic activity) may have **enabled multicellularity first**, with genes evolving later.

3. What Did They Find?

- The yeast clusters created **flows of nutrient-rich solution** around and into themselves.

- This happened **without cilia or flagella** (hair-like structures) — instead, it was driven by **changes in fluid density** due to sugar consumption and release of alcohol and CO_2.

4. How Did the Flow Work?

- Yeast used up **glucose**, and produced **lighter substances**.

- The surrounding fluid became **less dense** and naturally **flowed upward**, drawing fresh fluid inside.

- This **advection** process helped nutrients **reach all parts** of the large cluster.

5. Why Is This Important?

- Challenges the belief that **genetic change is the only path to complex life**.

- Shows that **non-living physical laws** can drive biological organization.

- May explain early stages of **evolutionary complexity** in Earth's history.

6. Next Steps in Research

- Check if **genetic changes** follow this process in yeast — making multicellularity permanent.

- Study if similar **fluid flows** can explain other complex behaviors like movement.

- Investigate how such lab-based findings relate to **natural evolution**.

7. Broader Implications

- Encourages a broader view of biology — not just **what exists in nature**, but also what **physics and chemistry can enable**.

- Could help redefine how we understand the **origin of life** and its complexity.

The sorry state of South Asian economic integration-The Hindu Editorial

International relations

Easy Explanation

South Asian countries trade very little with each other, even though they are close neighbors. Events like U.S. tariffs on India and terror attacks in Kashmir show that economic and national security are closely

connected. Problems like border disputes, terrorism, and political tensions stop countries like India, Pakistan, Bangladesh, and others from trading more. Trade agreements like SAFTA exist, but they are not working well. It is actually cheaper for India to trade with faraway countries like Brazil than with nearby Pakistan. The region has huge potential for more trade, investment, and growth, but internal mistrust and poor trade policies are holding it back.

Key Takeaways

1. Low Economic Integration

- South Asia has one of the lowest levels of regional trade (5–7% of total trade), compared to the EU (45%) and ASEAN (22%).

2. Trade and Security Interlinked

- Economic problems and insecurity feed each other. Without regional peace, trade suffers, and without trade, economic security weakens.

3. High Trade Costs Within Region

- Trading within South Asia is costlier (114%) than trading with faraway countries like the U.S. (109%) or Brazil.
- India-Pakistan trade is costlier than India-Brazil, even though Brazil is 22 times farther.

4. Missed Potential

- South Asia's potential trade could be $172 billion, but current trade is only around $23 billion.
- Bangladesh (93%), Maldives (88%), Pakistan (86%) have the highest unused trade potential.

5. Declining Indicators

- South Asia's trade-to-GDP ratio dropped from 47.3% (2022) to 42.94% (2024).
- Trade deficit rose from $204 billion (2015) to $339 billion (2022).
- Growth forecast for 2025 is down to 5.8% from 6% in 2024.

6. Major Barriers

- Border conflicts, terrorism, poor infrastructure, and political distrust hinder SAFTA implementation.
- Regional value chains are weak due to these frictions.

7. Way Forward

- Strengthen regional cooperation and trust.
- Reduce trade barriers and improve policy coordination.
- Focus on trade in services and investments, not just goods.

25th June 2025

EMERGENCY & ITS LESSONS-Indian Express Explained

Polity

Easy Explanation:

In June 1975, after being found guilty of election fraud by the Allahabad High Court, Prime Minister **Indira Gandhi** declared a **national Emergency** in India. She used a constitutional provision (Article 352) that allowed Emergency during "internal disturbance." This allowed her to **rule without Parliament**, **jail opponents**, **censor the press**, and **suspend civil rights**.

During this time, many opposition leaders were jailed, newspapers were censored, and ordinary people were victims of **forced sterilizations** and **slum demolitions**. Her son **Sanjay Gandhi** was behind many of these actions.

Although everything was done legally on paper, the Emergency period is remembered as one of the **darkest phases in Indian democracy**. In 1977, Indira lifted the Emergency, but the public voted her out of power in a historic defeat.

Key Takeaways

1. Background and Causes

- Indira Gandhi returned to power in 1971 but soon faced crises: the 1973 oil shock, inflation, unemployment, and public unrest.
- Students in Gujarat and Bihar launched anti-Congress movements against corruption.
- On June 12, 1975, the Allahabad High Court found Indira guilty of electoral malpractice and disqualified her as MP.

2. Declaration of Emergency (June 25, 1975)

- Indira declared Emergency using Article 352 citing "internal disturbance".
- President Fakhruddin Ali Ahmed signed the Proclamation on her advice.
- Cabinet approval was bypassed using Rule 12 of government procedures.

3. Suspension of Democracy

- Civil liberties, including right to free speech and legal remedy, were suspended.
- Over 1.12 lakh people were arrested under preventive detention laws like MISA and COFEPOSA.
- Press was subjected to pre-censorship; many journalists were jailed.

4. Constitutional and Legal Changes

- The 42nd Amendment (1976) curbed judicial review, empowered Parliament to amend the Constitution, and made laws implementing Directive Principles immune to courts.
- Elections were postponed; the Lok Sabha's term was extended by one year.

5. Human Rights Violations

- Sanjay Gandhi's 5-point programme led to forced sterilizations and slum demolitions.
- Over 1.1 crore sterilizations were performed; at least 1,700 deaths reported.
- The Turkman Gate incident in Delhi saw police firing on slum dwellers resisting demolition.

6. Resistance and Political Fallout

- Despite censorship, some newspapers like The Indian Express resisted Emergency excesses.
- The Shah Commission (1977–78) later revealed mass detentions, misuse of state machinery, and suppression of dissent.
- Indira lifted Emergency in January 1977 and held elections.

7. End of Emergency and Aftermath

- In March 1977, the Janata Party won the elections; Indira lost her seat from Rae Bareli.
- Morarji Desai became the first non-Congress Prime Minister.
- The 44th Amendment (1978) restricted Emergency powers: replaced "internal disturbance" with "armed rebellion" and reinstated judicial oversight.
- The Emergency weakened the Congress's dominance and led to the rise of regional and backward caste leaders like Lalu Yadav and Ram Vilas Paswan.

8. Long-term Legacy

- The Emergency remains a reminder of how democratic structures can be legally undermined.
- It led to greater checks on executive power and stronger civil society awareness.
- It sowed the seeds of multi-party competition and the eventual decline of one-party rule in India.

When we remember 1975-Indian Express Editorial

Polity

Easy Explanation

The Emergency of 1975-77, declared by Indira Gandhi, was a time when India's democratic institutions were suspended — with censorship, arrests, and repression. It was largely driven by her desire to retain power after her election was invalidated by the courts.

On the 50th anniversary of the Emergency, the article urges readers not just to remember the past but to **reflect on how similar trends exist today** — like the **centralisation of power**, **use of state machinery against dissent**, and **judiciary's alignment with the executive**.

Back then, the **Constitution, media, police, and courts** gave in to authoritarianism. Today, while elections continue, democracy is being **undermined from within**, using formal legal processes and nationalist rhetoric to **delegitimise protest and dissent**.

The concern is that India has moved from a one-time authoritarian event to a **systematic erosion of democratic values**, masked under development and nationalism narratives.

Key Takeaways

1. **Emergency was more than political repression; it involved institutional collapse**, where media, judiciary, police, and bureaucracy surrendered to authoritarian control.
2. **The judiciary and bureaucracy aligned with the political executive**, enabling the suspension of democracy and rule of law during the Emergency.
3. **The Emergency 'template' has not been discarded; many tactics are reflected in contemporary politics**, such as using state machinery against dissent and conflating partisan and national interests.
4. **Today's political moment is more organised and ideological**, aiming to undermine constitutional values and reject the legacy of India's national movement.
5. **Rise of vigilantism and informal 'punishment' systems** is a new, troubling feature distinguishing today's politics from the Emergency.

6. **Dissent is increasingly delegitimised and labelled anti-national**, with draconian laws like UAPA used to suppress opposition voices.

7. **Remembering the Emergency should inspire reflection on current threats to democracy**, not just condemn past abuses.

Widely used fungicide found to be driving C. tropicalis infections-The Hindu Text and Context

Science

Easy Explanation

Candida tropicalis is a dangerous fungus that causes serious infections, especially in India, with a **high death rate (55–60%)**. Doctors use antifungal drugs like **fluconazole** and **voriconazole** to treat it, but these drugs are becoming less effective.

A study by researchers from China found that a **fungicide called tebuconazole**, widely used in farming and gardening, is helping *C. tropicalis* develop resistance to these important medical drugs. The fungus changes its **chromosome number (aneuploidy)**, which helps it survive the drugs. These changes also make the fungus more **virulent** (harmful).

Shockingly, the study also found **haploid versions** of *C. tropicalis* that can **mate** and spread resistance further. This research warns against the unregulated use of fungicides, as they can directly impact **human health** by promoting drug-resistant infections.

Key Takeaways

1. Candida tropicalis infections rising

- A major fungal pathogen in India and globally.
- High mortality (55–60%).
- Becoming increasingly resistant to medical azoles like fluconazole and voriconazole.

2. Role of agricultural fungicide

- Tebuconazole, a triazole fungicide used on farms and gardens, found to **cause cross-resistance** to clinical antifungals.
- Environmental persistence leads to indirect exposure of pathogens like *C. tropicalis*.

3. Chromosomal alterations fuel resistance

- Resistant strains showed **aneuploidy** (abnormal number of chromosomes).

- This chromosomal variation—called **ploidy plasticity**—helps fungi resist antifungals.

4. Genetic mechanisms of resistance

- **Segmental duplications** (extra copies) of genes like **TAC1** boost efflux pumps (ABC-transporters) that eject drugs from fungal cells.

- **Deletions** of genes like **HMG1** increase ergosterol synthesis, improving resistance.

5. Resistance comes with a trade-off

- Resistant strains grow slower when drugs are not present.

- But in drug environments, they grow better than normal strains.

6. Discovery of stable haploid strains

- Some tebuconazole-resistant strains were found to be **haploid** (only one genome copy), capable of **mating**.

- This allows spreading resistance through sexual reproduction.

7. Real-world evidence

- Of 868 clinical strains studied worldwide, two haploid strains were found — both from Spain.

- Confirms that such adaptations are not limited to the lab.

8. Broader implication

- Agricultural use of triazole fungicides can **drive medical antifungal resistance**.

- Highlights the urgent need for **regulation** in fungicide use and **cross-sector awareness** (One Health approach).

9. Conclusion

- Resistance evolution in fungi can be rapid and genetically diverse.

- “Sow the wind, reap the whirlwind”: misuse in one sector (agriculture) can create crises in another (healthcare).

Technique to make CAR T-cells in vivo could transform cancer care-The Hindu Science

Science

Easy Explanation

CAR T-cell therapy trains a patient's own immune cells (T cells) to recognize and kill cancer cells. Traditionally, this involves taking out the T cells, modifying them in the lab, and putting them back into the patient's body — a complex, expensive process costing ₹60–70 lakh in India.

A new method developed by US researchers delivers **genetic instructions directly into the body**, using **lipid nanoparticles (LNPs)**, similar to how COVID-19 mRNA vaccines work. These particles target **CD8+ T cells** and convert them into **CAR T-cells inside the body (in vivo)**.

This **simplifies the entire treatment** — no lab processing, no chemotherapy, and fewer side effects. In animal trials, the therapy wiped out cancer-causing B cells and reset the immune system in autoimmune conditions like lupus. If human trials confirm its safety and effectiveness, this could make CAR T-cell therapy **cheaper, faster, and more accessible**, especially in countries like India.

Key Takeaways

1. What is CAR T-cell Therapy?

- CAR (Chimeric Antigen Receptor) T-cell therapy re-engineers immune cells to target specific cancer cells.
- Currently used for **blood cancers** like **leukemia and lymphoma**, and in trials for **autoimmune diseases**.

2. Traditional CAR T-cell Method

- Involves **extracting T cells**, genetically modifying them in labs with **viral vectors**, and re-infusing them.
- Requires **chemotherapy**, long hospitalisation, and costs **₹60–70 lakh** in India.
- Carries risks like **cytokine release syndrome (CRS)** and infections due to **low immunity**.

3. The New In Vivo Technique

- Uses **lipid nanoparticles (LNPs)** carrying **mRNA instructions** targeted to **CD8+ T cells**.
- No need to extract or manipulate cells outside the body.
- Works like a **drug infusion** (similar to a vaccine), making the process simpler and cheaper.

4. Results from Animal Studies

- In **mice and monkeys**, this approach **eliminated B cells**, shrank tumors, and showed strong immune response.

- Reprogrammed **85–95%** of T cells into cancer fighters after 2–3 infusions.

- Showed **temporary genetic changes**, reducing long-term risks.

5. Safety Benefits

- **No chemotherapy** needed — lowers risk of severe infections.

- **No viral vectors** used — reduces chance of permanent DNA changes.

- New biodegradable lipid (Lipid 829) improved safety with less liver stress and inflammation.

- One monkey had a serious immune reaction — shows need for careful **dosing and monitoring**.

6. Resetting the Immune System

- Depleted harmful B cells in **autoimmune disease** models.

- **New B cells** grew back as **naïve cells** — similar to immune reset seen in lupus patients.

7. Implications for India

- India has a **high burden of B-cell cancers** like DLBCL and childhood leukemia.

- **Autoimmune disorders** are also rising post-COVID.

- This platform may **reduce cost and complexity**, making advanced immunotherapy more **accessible in resource-limited settings**.

8. Remaining Challenges

- Needs **human trials** to verify safety and effectiveness.

- **Reproducibility and standardisation** remain issues in scaling up from lab to clinic.

- Regulatory and technical hurdles must be cleared.

[Crushed stone is being spread across farms to capture carbon-The Hindu science]

Environment

Easy Explanation

A new climate solution called **Enhanced Rock Weathering (ERW)** is being tested on farms from **India to Brazil**. It involves **spreading finely crushed rocks like basalt** on farmland. These rocks **naturally react with carbon dioxide (CO_2)** in the air and soil to form substances that lock the carbon away.

This process speeds up natural **rock weathering**, which normally happens very slowly over time. It can **remove CO_2 from the air** and potentially help fight climate change. However, real-world tests show **mixed results**. The effectiveness depends on climate, soil, rock type, and other factors. Also, **measuring the exact amount of carbon captured is hard**, and in some cases, not all CO_2 gets locked away.

Still, ERW can **improve soil health** and **prevent future emissions** by stopping CO_2 from escaping from water bodies. But care is needed since some rocks may release **toxic metals**, and handling the fine dust requires **safety precautions**.

Key Takeaways

1. What is Enhanced Rock Weathering (ERW)?

- A climate technique where **crushed volcanic rock** (like **basalt**) is spread over farmland.
- It **accelerates the natural weathering** process, which captures **carbon dioxide (CO_2)** from the air or soil.

2. How Does It Work?

- CO_2 combines with **water to form carbonic acid**, which reacts with minerals in rocks.
- The reaction forms **bicarbonates**, eventually turning into **limestone**, locking away CO_2.
- Crushing the rock finely increases its **surface area**, making the reaction faster.

3. Field Trial Results

- **Some trials** (e.g., in the US) showed **up to 10.5 tonnes of CO_2 captured per hectare** over 4 years.
- **Other trials** in Malaysia and Australia found **much lower capture rates**.
- Effectiveness depends on **rock type, climate, soil conditions, and farming practices**.

4. Challenges in Measuring Impact

- **Cation release** (used to estimate CO_2 capture) may occur from reactions with **other acids**, not just carbonic acid.
- This makes it **hard to verify** how much CO_2 was actually locked away.

5. Other Benefits and Considerations

- Crushed rock can **improve soil quality, nutrient content, and plant growth**.
- It can **neutralise harmful acids** that would otherwise release CO_2 downstream in rivers and oceans.
- This offers **indirect climate benefits** even if CO_2 isn't captured directly.

6. Safety and Environmental Concerns

- Some rocks may contain **toxic heavy metals** (like nickel or chromium).
- Spreading fine dust requires **protective gear** for farm workers to avoid health risks.

7. Commercial Interest and Carbon Credits

- Tech firms, airlines, and fashion companies are showing interest in **buying carbon credits** from ERW projects.
- However, **scientific uncertainty** about carbon removal rates may affect the credibility of such credits.

The need for gender equity in urban bureaucracy-The Hindu Editorial

Governance

Easy Explanation:

India is becoming more urbanized—by 2050, half the population will live in cities. While many women now hold political roles in local governments due to constitutional reforms, the people who actually manage and implement policies—bureaucrats, planners, engineers, and police—are still mostly men. This creates problems in how cities are designed and managed because women and men experience cities differently. For example, women rely more on public transport and need well-lit public spaces, but city planning often ignores these needs. Although India introduced gender-responsive budgeting (GRB) to include women's needs in public spending, it is not used effectively in most cities. Other countries do this better. To build truly inclusive cities, India needs more women in decision-making roles within the bureaucracy, supported by reforms and training. Cities work better when they reflect the lived experiences of all citizens, especially women.

Key Takeaways:

1. **Urban Growth Needs Gender-Inclusive Planning**
   With half the population soon living in cities, planning must consider women's specific needs for safety, mobility, and access to services.

2. **Women Are Politically Visible, But Not Administratively Empowered**
   While many women hold elected positions, very few are in actual decision-making bureaucratic roles like urban planners or engineers.

3. **Current Urban Design Ignores Women's Realities**
   Most city designs prioritize big infrastructure and ignore issues like street lighting, public toilets, and safe public transport that matter more to women.

4. **Female Bureaucrats Improve Governance Quality**
   Women in administration focus more on essential services like health and safety, and build public trust through more empathetic governance.

5. **Gender Budgeting Is Weakly Implemented**
   Although India adopted gender-responsive budgeting, it remains symbolic in most cities due to poor monitoring and limited staff capacity.

6. **Other Countries Offer Better Models**
   Countries like Rwanda, the Philippines, and South Korea show how gender equity in bureaucracy improves public services and safety.

7. **Inclusive Cities Begin With Inclusive Bureaucracies**
   More women in technical and administrative roles, supported by quotas and reforms, will lead to better cities for everyone—not just women.

Woman at the helm-The Hindu Editorial

Sociology

Easy Explanation:

Kirsty Coventry has made history by becoming the **first African** and **first woman** to lead the **International Olympic Committee (IOC)**—the most powerful body in global sports. At just 41, she's also the youngest president since the IOC's founder. While she was picked by outgoing president Thomas Bach, insiders believe she will bring her own leadership style—more empathetic and collaborative, shaped by her experience as an athlete from Zimbabwe and her time in politics. She faces major challenges ahead: doping, transgender participation in women's sports, reviving Olympic appeal, and handling global politics—especially with Russia's status, the 2028 Los Angeles Olympics, and future bids by countries like India, Saudi Arabia, and Qatar. Though new to sports administration at this level, her first few months show she's ready to take bold steps.

Key Takeaways:

1. **Historic Appointment:**
   Kirsty Coventry is the **first African** and **first woman** to become IOC president—marking a significant shift in sports leadership.

2. **Young and Independent Leader:**
   At 41, she's the youngest IOC president in a century and is showing signs of being **independent-minded**, not just a continuation of her predecessor Thomas Bach.

3. **Humane and Consensus-Based Approach:**
   Her background—as an athlete in racially divided Zimbabwe and as a government minister—suggests she may handle issues with **more empathy and dialogue**.

4. **Tough Global Issues Ahead:**
   She must navigate decisions around **Russia's return**, transgender participation, athlete protection, and doping—all of which are deeply **controversial and political**.

5. **Political Navigation Required:**
   Kirsty will need to engage with leaders like **Donald Trump** and respond to global conflicts that may affect Olympic hosting decisions.

6. **Emerging Hosts and India's Interest:**
   Countries like **Qatar, Saudi Arabia, and India** are eyeing future Olympic bids, making the next few years diplomatically sensitive.

7. **New to Global Sports Bureaucracy:**
   While she lacks deep administrative experience, her early performance hints she may **bring fresh perspective** to a complex and politicised global arena.

A reset in West Asia, a 'de-escalation' for the world-The Hindu Editorial

International relations

Easy Explanation:

West Asia is undergoing a major reset after **Israel and the U.S. bombed Iran's nuclear sites**, with most global and regional powers staying silent. The move weakens Iran's influence, making **Israel the region's only nuclear power**, backed by thousands of U.S. troops. While Gulf countries once feared Iran and relied on Israel-U.S. ties to counter it, they now face the uncomfortable reality of an unchecked Israel.

Iran retaliated by attacking U.S. bases in Qatar and Iraq, risking regional escalation. However, a **U.S.-brokered ceasefire** gives Iran a chance to back down while saving face. Meanwhile, **Israel's domestic politics and leadership under Netanyahu** may now focus on **annexing Palestinian territories**, raising questions of democracy and apartheid.

Gulf states, despite their public protests, seem resigned to this new order. **India, with strategic interests in both Israel and Iran**, has remained neutral and called for "de-escalation" — echoing how other countries responded to its own conflicts. The bigger issue is the erosion of international norms in favour of power politics.

Key Takeaways:

1. **Major Shift in West Asia's Balance of Power**
   With Iran's nuclear facilities bombed, **Israel becomes the sole dominant nuclear force**, supported by U.S. military presence in the region.
2. **Global Powers Remain Silent**
   Even Iran's allies like **Russia and China did not intervene**, signalling a deliberate decision to allow Iran's influence to shrink.
3. **Iran Retaliates but Accepts Ceasefire**
   Iran hit U.S. bases but agreed to a **ceasefire**, preserving its internal legitimacy while avoiding deeper conflict.
4. **Israel Eyes Annexation of Palestinian Territories**
   Netanyahu, emboldened after neutralising Iran, is expected to **annex Gaza and the West Bank** before the 2026 U.S. elections — possibly creating a de facto apartheid state.
5. **Gulf States Are Complicit or Silent**
   Once vocal on Palestine, Gulf nations now **prioritise stability and economic integration with Israel**, abandoning meaningful pressure on Israel.
6. **India Maintains Strategic Neutrality**
   India balances ties with both Israel and Iran, calling for "de-escalation" while staying silent on deeper geopolitical shifts.
7. **De-escalation Becomes a Cover for Injustice**
   The global trend now is to **equate the aggressor and the victim**, focusing only on peace, not justice — reflecting a breakdown in enforcing international law and norms.

26th June 2025

After the fighting has stopped-Indian Express Explained

International relations

Easy Explanation

The recent "12-day war" in the Middle East, initiated by Israeli strikes on Iran's nuclear sites and followed by a calibrated U.S. attack, ended with symbolic Iranian retaliation. Iran responded with a missile strike on the U.S. base in Qatar, deliberately avoiding casualties, suggesting a face-saving measure rather than escalation. Iran's military avoided closing the Strait of Hormuz or using its regional proxies. Israel caused deeper damage by degrading Iran's military leadership and threatening the Supreme Leader's security. The crisis has reaffirmed Iran's interest in sanctions relief and negotiation, especially amid economic hardship, while also showing the limits of both U.S. and Israeli objectives. The episode underscores the growing belief among regional powers that nuclear deterrence is the ultimate security guarantor, reinforcing the nuclearization dilemma in West Asia.

Key Takeaways

1. Iran's Calculated Response

1. Iran launched missiles at the U.S. Al-Udeid base in Qatar as symbolic retaliation after U.S. and Israeli strikes on its nuclear sites.

2. Iran provided advance warning to avoid casualties, helping prevent escalation.

3. Most missiles were intercepted; there was no significant damage or loss of life.

2. Avoidance of Regional Escalation

4. Iran deliberately avoided using its proxy groups — Hezbollah, Houthis, and Hashd al-Shaabi — in retaliation.

5. Tehran did not close the Strait of Hormuz, a vital global energy route, showing restraint.

3. Diplomacy & Strategic Messaging

6. Iran signaled willingness to resume nuclear negotiations if Israeli attacks stopped.

7. The U.S. informed Iran in advance that its June 22 strike would be a "one-off," allowing Iran to calibrate its response.

8. Qatar, a neutral regional actor with close Iran ties, was selected as the least risky site for retaliation.

4. Military & Political Outcomes

9. Israel inflicted the most damage—targeting Iran's nuclear infrastructure and senior IRGC leadership.

10. Iran's ability to strike back with ballistic missiles, like the Kheybar Shekan, served as symbolic success despite actual losses.

11. The U.S. avoided escalation, recognizing Iran's need to "save face."

5. Regional Security Implications

12. Iran's economic crisis makes prolonged conflict unsustainable, increasing pressure to negotiate.

13. The limited retaliation and muted proxy involvement show Tehran's weakened strategic depth.

14. Israel's goal of regime change and complete nuclear dismantling was not achieved.

15. The crisis has reinforced the perception among regional powers that nuclear weapons are the ultimate deterrent for national security.

WHY NATO MEMBERS HAVE AGREED TO INCREASE THEIR DEFENCE SPENDING-Indian Express Explained

International relations

Easy Explanation

NATO is a group of countries that promise to protect each other. These countries have now decided to spend **more money on defence**. Until now, each country aimed to spend **2% of its income (GDP)** on its military. But now they have agreed to **increase this to 5% by 2035**.

This 5% will be used in two ways:

- **3.5%** will go for **core defence**, like weapons, soldiers, and military equipment.
- **1.5%** will go for **other security needs**, like building stronger roads and bridges for military use, protecting energy pipelines, and improving cybersecurity.

They are doing this mainly because of **Russia's war in Ukraine**, **fears of future threats**, and **pressure from the U.S.**, especially under **President Trump**. The **EU is also helping** by relaxing budget rules and creating a big fund to support countries in buying weapons together.

Key Takeaways

1. New Defence Spending Goal: 5% of GDP

- NATO members have agreed to spend 5% of GDP on defence and security by 2035.
- This includes:
    - **3.5% for core defence** (troops, arms, logistics).
    - **1.5% for broader security** (cyber, infrastructure, energy).

2. Major Shift from Previous Target

- The previous target of 2% GDP was set in 2014 (Wales Summit).
- The new 5% goal is a **significant escalation** in defence preparedness.

3. What Falls Under Broader Defence

- Spending will now cover:

- Upgrading **roads, bridges, and ports** for military use.
- **Cybersecurity infrastructure**.
- Protection of **critical energy assets** like pipelines.

4. No Current Baseline for New Category

- NATO has **not tracked** the broader defence category so far.
- There's **no exact baseline**, so measuring progress will be challenging.

5. Financial Implications

- NATO spent **$1.3 trillion** on core defence in 2024.
- Spending 3.5% of GDP would have meant **$1.75 trillion** in 2024.
- Meeting the full 5% target could cost **hundreds of billions of dollars more per year**.

6. Why the Increase Now

- **Russia's ongoing war in Ukraine** has raised security concerns.
- Fears of **future aggression by Russia** in Europe.
- Strong **US pressure**, especially under Donald Trump.
- Desire for **strategic autonomy** in Europe due to uncertainty over future US military support.

7. European Union Support Measures

- EU allows countries to **exceed deficit rules** to boost defence:
  - Up to **1.5% of GDP per year for four years** without penalty.
- EU created a **€150 billion joint arms fund** using collective borrowing for defence collaboration.

8. Decentralised Funding Approach

- Each NATO country will decide **independently** where to find funds and how to allocate them.

- National discretion allows **flexibility**, but also creates **inconsistency**.

9. Strategic Consequences

- Shows a shift to **total defence readiness**, including civilian infrastructure.
- Reflects long-term **militarisation of European policy**.
- Prepares for a scenario where the **US reduces its role in NATO**.

10. Accountability and Future Monitoring Issues

- Lack of a clear tracking mechanism for broader security makes **accountability difficult**.
- Future NATO reviews may need to develop **standardised metrics**.

Why investigators cannot summon lawyers-Indian Express Explained

Polity

Easy Explanation

The Supreme Court has said that **police or investigative agencies cannot summon lawyers just because they are advising their clients**. Lawyers have **special legal protection** due to the confidential nature of their communication with clients. This is known as **attorney-client privilege**.

A lawyer can only be asked to reveal such communication in **very limited situations**, like when the advice is used for illegal purposes. Otherwise, what a lawyer discusses with their client is **protected** by law.

Recent court cases have confirmed that **summoning lawyers for doing their job is wrong** and goes against the legal profession's independence.

Key Takeaways

1. Supreme Court's Stand

- The Supreme Court observed that summoning lawyers **for advising clients violates their rights**.
- Such actions **threaten the independence of the legal profession**.

2. Attorney-Client Privilege

- Lawyers enjoy a **special protection**: they **cannot be forced to reveal communications** with their clients.

- This applies whether the communication is **oral, written, or electronic**.

- This privilege is **not extended to other professionals** like chartered accountants or company secretaries.

3. Legal Backing: Section 132 of Bharatiya Sakshya Adhiniyam (BSA), 2023

- Replaces the old Section 126 of the Indian Evidence Act.

- **Protects communications** between lawyers and clients from being disclosed to anyone.

- Exceptions:

    - If the **client consents**.

    - If the communication is **for illegal purposes**.

    - If the lawyer **witnesses criminal activity** during the engagement.

4. Recent Case Examples Supporting the Supreme Court View

- **A.V. Pavithran v. CBI (2024)**:

    - Bombay High Court **quashed summons** issued to a lawyer by CBI.

    - The court said **legal advice is not subject to disclosure** and is always privileged.

- **Praram Infra v. State of M.P. (March 2025)**:

    - Madhya Pradesh High Court **quashed a police summons** to Advocate Rahul Maheshwari.

    - Reiterated that **summons must not be issued when the lawyer is neither an accused nor a witness**.

5. Supreme Court Bar Association's Protest

- The **Enforcement Directorate (ED)** summoned two senior advocates (Arvind Datar and Pratap Venugopal) in June 2025.

- The **Supreme Court Bar Association condemned** this move, reinforcing the legal community's concern over such practices.

6. Principle: "Once Privileged, Always Privileged"

- Once a communication is protected under attorney-client privilege, it **remains protected**, even after the lawyer-client relationship ends.

- This ensures **trust and confidentiality** in legal advice.

7. Protection for the Legal Profession

- Courts have recognized that **summoning lawyers merely for professional conduct undermines legal autonomy**.

- This is essential for a **free and independent legal system**.

What Shubhanshu Shukla's trip to ISS means for India's space program-Indian Express Explained

Science

Easy Explanation

Indian astronaut **Shubhanshu Shukla** recently flew to the **International Space Station (ISS)** on the **Axiom-4 mission**. This isn't just a personal milestone—it marks a major turning point for India's space program. His trip shows that **India is now ready to move into human spaceflight**, an area dominated by only a few countries.

Though India missed its original 2022 deadline for sending a human to space, this mission supports ISRO's upcoming **Gaganyaan project**. India now aims to build its **own space station** and send **humans to the Moon by 2040**. The mission also strengthens India's role in global space efforts and gives its private sector and youth a chance to grow and contribute.

Key Takeaways

1. A New Era for India's Space Program

- Shukla's flight to the ISS marks the **beginning of India's human spaceflight journey**.

- India now joins the club of nations with active participation in **manned space missions**.

2. Support for the Gaganyaan Mission

- ISRO's **Gaganyaan mission** aims to send Indian astronauts into space by **2027**.

- Learnings from Axiom-4 will directly **benefit Gaganyaan**, especially in handling technical delays and planning.

3. ISRO as an Equal Partner

- India is **not just a passenger** in the Axiom-4 mission.
- ISRO played an **active, equal role**, with Chairman V. Narayanan and a full team involved in mission planning and troubleshooting.

4. Shift Toward Strategic Capabilities

- Human spaceflight is not just symbolic—it is a **strategic technology**.
- Countries with such capabilities will dominate **space resource use, research, and geopolitics**.

5. Ambitious Long-Term Plans

- ISRO plans to:
  - Build **India's own space station**.
  - **Land humans on the Moon by 2040**.
- These goals place India in direct competition with **US and China's space programs**.

6. Space: A Future-Defining Technology

- Alongside AI, quantum, and clean energy, **space technology will shape global power**.
- India is **ahead in space compared to other tech sectors** and must maintain this lead.

7. Boost for India's Private Sector

- The space sector is opening to private investment and startups.
- Yet, India holds **only 2% of the global space economy**, leaving room for significant growth.

8. Youth Inspiration and Economic Opportunity

- Space missions like Shukla's **attract young minds**, inspiring innovation and science education.
- This can **generate employment, attract talent, and spur economic activity** in high-tech sectors.

9. Symbolic Milestone with Real Implications

- Shukla's journey symbolizes **India's space ambitions maturing** from launch vehicles to human spaceflight.

- To truly benefit, India must use this as a **launchpad for deeper technological and strategic advancements**.

BUILD ON OUTREACH-Indian Express Editorial

Sociology

Easy Explanation

The Indian government has launched a **new outreach campaign** to improve access to welfare schemes in **1 lakh tribal villages**. It focuses on delivering key documents like **Aadhaar, health cards, and forest land titles** directly to tribal people's doorsteps. The two schemes involved are:

- **PM-JANMAN**: for socio-economic development of Particularly Vulnerable Tribal Groups (PVTGs).

- **DAJGUA**: for improving infrastructure in tribal villages.

While this effort is good, **many challenges remain**. Tribals often **lack land**, live in **remote areas**, or don't have **basic documents** needed to access benefits. Past development projects like **dams and industries have displaced them**, making it harder to prove their identity or claim entitlements. The campaign is a **welcome step**, but must go beyond symbolism and be supported by long-term governance.

Key Takeaways

1. New Outreach Programme Launched

- On **June 15**, the Ministry of Tribal Affairs launched an outreach effort covering **1 lakh tribal villages**.

- Focus: **Doorstep delivery** of documents and enrolment into welfare schemes.

2. Key Schemes Involved

- **PM-JANMAN (2023)**:

    - Aims at **socio-economic development** of **75 PVTGs** across **18 states and 1 UT**.

- **DAJGUA (2023)**:

    - Targets filling **infrastructure gaps** in over **63,843 tribal villages**.

3. Objectives of the Outreach

- **Create awareness** of government schemes in tribal communities.
- **Facilitate participatory governance** through community mobilisation.
- Help with documents like:
    - **Aadhaar**, **Ayushman Bharat** cards
    - **Forest Rights Act titles**
    - **Pension and Jan Dhan accounts**

4. Challenges in Implementation

- **Geographical inaccessibility**: Many tribal areas are in remote terrain.
- **Landlessness** among PVTGs: President Droupadi Murmu raised this issue in **Nov 2024**, urging NITI Aayog to act.
- **Documentation barriers**:
    - Example: **Katkari tribals** in Pune lacked **birth/death certificates** after being displaced by the **Dimbhe Dam (1984)**.

5. Legacy of Displacement

- Post-independence, tribal communities have been **displaced by dams, mining, and wildlife projects**.
- This has **disrupted their rights**, identity, and access to welfare.

6. Need for Sustainable Governance

- Efforts must go beyond **political symbolism**.
- Requires **continuous governance**, tailored to the **specific needs** of tribal populations.

7. Opportunity for Systemic Reform

- The outreach campaign can be a **starting point** to improve:

- **Land rights**
- **Document access**
- **Scheme inclusion**

- Needs **long-term planning** and **policy sensitivity** to succeed.

Turning point in Eurasia-Indian Express Editorial

International relations

Easy Explanation

U.S. President Donald Trump is questioning NATO's role and pushing Europe to handle its own security. This shift is creating major changes in **Eurasian geopolitics**. As America steps back, **Germany is emerging as a key power** in Europe. Trump's policies in the **Middle East** and **friendliness towards Russia** are also shaking old alliances. Many U.S. allies in Asia—like **Japan, Australia, and South Korea**—are now uncertain about depending on the U.S. for defence.

The result is that **Europe, the Middle East, and the Indo-Pacific** are all being forced to think **independently**, build **new partnerships**, and take control of their own security futures. For India, which connects all three regions, this is an opportunity to strengthen its strategic role across Eurasia.

Key takeaways

1. Middle East Instability and US Shift

- Trump's bombing of Iran's nuclear facilities and push for Israel-Iran peace marks a strategic shift.
- The idea of "Cyrus Accords" hints at a potential future normalisation between Iran and Israel, shaking regional balances.

2. NATO's Crisis and Europe's Reckoning

- Trump has pressured NATO to increase defence spending to 5% of GDP.
- This has revealed cracks in transatlantic relations and forced Europe to consider strategic autonomy from the US.

3. Germany's Strategic Transformation

- Germany, once seen as a "geopolitical dwarf," is emerging as NATO's anchor under leaders like Scholz and Merz.
- A special fund of €100 billion has been allocated to modernise the military, and Germany is taking frontline NATO roles.

4. Trump's Approach to Russia and its Implications

- Trump questions NATO's relevance and refuses to view Russia as a threat.
- This puts pressure on Europe to prepare independently for security challenges, especially from Russia.

5. Indo-Pacific's Growing Uncertainty

- Nations like Japan, South Korea, and Australia are reassessing their defence strategies due to doubts about continued US support.
- Their absence at the recent NATO summit is a telling signal of decoupling.

6. A New Eurasian Geopolitical Order

- There is an ongoing shift from US-dominated security to regional solutions and realignments.
- Countries will need to solve security problems through diplomacy and neighbourly engagement, not just military buildup.

7. India's Balancing Act

- India is well-placed geopolitically but must actively recalibrate its strategy.
- Strengthening ties with Europe, maintaining partnerships in the Middle East, and engaging all key Indo-Pacific actors is essential for navigating this uncertain era.

When cities have trees that don't belong, the birds notice -The Hindu Science

Environment

Easy Explanation

A new study from Bengaluru shows that **urban biodiversity, especially bird diversity, is higher in areas with native tree cover and lower heat**. But simply planting trees doesn't always help. **Non-native or exotic trees can actually hurt biodiversity** and cause health problems. Also, **not all birds benefit from trees**—some prefer open areas like grasslands or wetlands.

Cities like Bengaluru were originally a mix of lakes, grasslands, and farms. Replacing all of that with trees (especially non-native ones) harms both biodiversity and the people. The study calls for **restoration plans that consider the city's historical ecosystems**, and not just blindly plant trees.

Key Takeaways

1. Biodiversity Is Higher in Cooler Areas

- Bird diversity is **clustered in areas with lower heat and better tree cover**.

- **Heat islands**—urban zones significantly warmer than surrounding areas—have **much lower biodiversity**.

2. Not All Tree Cover Is Equal

- **Native trees** help urban biodiversity thrive.

- **Exotic or non-native trees** (e.g., Jacaranda, Tabebuia) are harmful:

    - They **don't support local wildlife**.

    - May **trigger allergies** and impact human health.

    - In Bengaluru, **77% of tree cover is exotic**.

3. Green Cover Alone Isn't Always the Solution

- Tree plantations may fail to support biodiversity **if the species planted are non-native**.

- Blind afforestation can damage **open habitats** like **grasslands and wetlands**, which are crucial for certain species.

4. Birds Respond Differently to Tree Cover

- **Birds of grasslands or human-altered areas** often prefer **less tree cover**.

- In Bengaluru, these birds sometimes fared better in open areas than in tree-heavy spaces.

5. Historical Ecology Matters

- Cities like Bengaluru once had a **mosaic of lakes, grasslands, agriculture**, and sparse tree patches.

- Urban green planning must consider a city's **historic land-use and habitat types**.

6. Examples from Other Cities

- In **Dehradun**, studies show a **positive relationship** between tree richness and bird richness.

- **Pune**, with its **savannah-like hilltops**, also has open habitat birds dependent on non-forested ecosystems.

7. Wetlands and Open Habitats Are Being Lost

- Urban development often ignores or encroaches on **wetlands and savannahs**.
- This leads to **local extinction of species** that depend on these environments.

8. A Broader Approach to Urban Greening

- Restoration should include:
    - **Native grasses, herbs, shrubs**, and trees.
    - **Constructed wetlands** and **open green patches**.
    - **Small home gardens** and **strategically planted trees**.

9. Social and Ecological Equity Are Linked

- Heat stress and poor green access **hit marginalised communities the hardest**.
- Urban biodiversity plans must aim to **reduce heat stress for all**, especially the vulnerable.

10. Urban Biodiversity Planning Needs Biodiversity Goals

- Cities need **specific biodiversity goals at the planning level**.
- This includes:
    - Differentiated land use (parks, wetlands, grasslands).
    - Inclusive green space access for all citizens.

[Swiss glaciers show holes reminiscent of cheese-The Hindu Science]

Geography

Easy Explanation

Swiss glaciers are **melting faster than before** due to climate change, and many now **look like Swiss cheese**, full of holes. These holes form when ice melts unevenly and collapses from inside. Scientists like **Matthias Huss** are worried because the glaciers are **losing their ability to regenerate** new ice.

Normally, glaciers stay healthy by forming new ice at higher altitudes while melting below. But now, even high-altitude areas are melting. This not only threatens the glaciers but also affects **water supply**,

hydropower, and even **regional stability**. As glaciers shrink, **summer water flow may drop**, affecting agriculture, electricity, and drinking water in the future.

Key Takeaways

1. Glaciers Are Rapidly Melting

- Swiss glaciers have been **shrinking for 170 years**, but the **melting has accelerated sharply** since the 1980s.
- **2022 and 2023 were the worst years** recorded for glacier loss.

2. Swiss Glaciers Now Have Visible Holes

- Many glaciers now resemble **Swiss cheese** due to the **emergence of holes** caused by:
    - **Water turbulence**
    - **Air flows inside the ice**
- As the ice weakens, **roofs of these holes collapse**, making them visible from the surface.

3. Loss of Glacier Dynamism

- A healthy glacier is **"dynamic"**, meaning:
    - It **gains ice** from snowfall at higher altitudes.
    - It **melts at lower levels**, but this is balanced.
- Climate change has pushed **melting to higher elevations**, so glaciers **no longer regenerate ice** effectively.

4. Glaciers Becoming Static Ice Patches

- Without new ice formation, glaciers **stop moving and just melt in place**.
- This change signals a **transition from active glaciers to decaying ice masses**.

5. Impacts on Water Supply

- Glaciers currently provide **extra summer water** (during dry seasons).

- Once they vanish, water levels will drop drastically, affecting:
    - **Drinking water**
    - **Agriculture**
    - **Fisheries**

6. Hydropower in Danger

- **Switzerland relies heavily on hydropower** from glacier-fed rivers and lakes.
- With glaciers melting away, the **country's energy security is at risk**.

7. Regional and Global Consequences

- Glacier melt may cause:
    - **Cross-border tensions** over water sharing.
    - **Ecological changes** in downstream ecosystems.
    - **Mudslides and disasters**, as seen in Blatten village recently.

8. Urgency for Monitoring and Mitigation

- Researchers like Matthias Huss (GLAMOS) and global experts are **calling for urgent glacier monitoring**.
- The holes and collapses are **new phenomena**, seen more frequently now, indicating **deep stress in glacier systems**.

27th June 2025

Revision of Bihar electoral rolls: Why, how-Indian Express Explained

Polity

Easy Explanation:

The Election Commission of India (ECI) is carrying out a **special revision of electoral rolls** in Bihar ahead of the Assembly elections. All voters must **submit a new enumeration form**. Those who were **added to the voter list after January 1, 2003** must also provide **proof of Indian citizenship**. This includes birth documents or proof of a parent's Indian citizenship, depending on one's date of birth. The ECI says this is

to eliminate **errors, duplicates, and non-citizens** from the rolls. Similar revisions may be conducted across India later. Opposition parties have raised concerns that this may **disenfranchise legitimate voters**.

Key takeaways

1. **Legal Authority**: The Election Commission of India (ECI) is conducting an *intensive revision* of Bihar's electoral rolls under Article 324(1) of the Constitution and Section 21(3) of the Representation of the People Act, 1950.

2. **Need for Revision**: The ECI cited large-scale additions and deletions, increased urbanisation, and frequent migration over the past two decades, which have led to errors and duplicate entries in the voter list.

3. **Citizenship Proof Mandated**: All voters added to the electoral rolls after January 1, 2003, must now submit documents proving their Indian citizenship, a new requirement introduced to maintain electoral integrity.

4. **Required Documents**: The proof required varies by date of birth. It includes birth certificates, electoral roll records of parents (as of Jan 1, 2003), passports, or naturalisation certificates, depending on individual cases.

5. **Procedure and Timeline**: Block Level Officers (BLOs) will visit homes between June 26 and July 26 to collect forms. Voters can also submit forms online. Final rolls will be published on September 30.

6. **Deletion Warning**: Voters who fail to submit forms by July 25 risk having their names deleted from the rolls. Objections and corrections can be filed between August 1 and September 1.

7. **Political Concerns**: Opposition parties, including the TMC and Congress, have criticised the move, alleging it could disenfranchise poor, migrant, and minority voters. They argue it's similar in intent to the NRC process and could be misused before upcoming elections.

World Banksays 5.75% Indianslive in abject poverty: How to read this data-Indian Express Explained

Economy

Easy Explanation:

The **World Bank's latest update** says that **only 5.75% of Indians now live in abject poverty**, down from 27% in 2011-12. This means only about **7.5 crore people** earn less than **Rs 62/day** in purchasing power parity (PPP) terms. The poverty line is not based on currency conversion using market exchange rates, but on PPP — which adjusts for what money can actually buy in India.

However, **India still lacks an updated official poverty line**, with the last one based on 2011-12 data using the **Tendulkar method**. Because of this, and the use of **multiple poverty lines**, estimates vary widely — **from 2% to 82% of the population**, depending on the method and benchmark.

Key Takeaways

1. **New Estimate**: The World Bank reports that **5.75% of Indians live in abject poverty**, defined as earning less than **$3/day (Rs 62/day)** in PPP terms. This is a sharp drop from **27% in 2011-12**.

2. **$3 Poverty Line Clarification**: This poverty line is based on **PPP**, not the market exchange rate. Hence, multiplying $3 by ₹85 is incorrect — the right value is around ₹62/day for India.

3. **Historical Misestimates**: The World Bank's revised methods show that **India's poverty in the past was overestimated**. For example, in 1977-78, poverty was not 64% but closer to 47%.

4. **Multiple Poverty Lines Create Confusion**:

    - Rs 62/day = 5.75% in poverty (abject).
    - Rs 87/day (lower-middle income poverty line) = 23.89% in poverty.
    - Rs 171/day (upper-middle income poverty line) = 82.7% in poverty.
      This wide range shows that **poverty estimates vary sharply depending on the benchmark**.

5. **India's Official Poverty Line Is Outdated**: The **last official poverty line** was set using the **Tendulkar method in 2011-12**, with **no update since then**. Other estimates like **NITI Aayog's Multidimensional Poverty Index** do not measure income poverty directly.

6. **Comparison with Domestic Lines**: Earlier Indian standards (like Rs 22–36/day in 2011) were **far below realistic consumption needs**. The **Rangarajan Committee** in 2014 suggested Rs 47/day (urban) and Rs 33/day (rural), but this was never implemented.

7. **How to Interpret the Data**: While the fall in "abject poverty" is real and worth noting, **over 83% of Indians still live below Rs 171/day**, indicating that while **extreme poverty is reducing, economic vulnerability remains widespread**.

WHY UN'S DEVELOPMENT CONFERENCE IN SEVILLE MATTERS-Indian Express Explained

International relations

Easy Explanation

The **UN's 4th Financing for Development Conference (FFD4)** in **Seville, Spain**, is a major global event aimed at reforming how the world funds development—especially for poorer nations. The centerpiece is the **"Seville Commitment"**, a non-binding document proposing new global taxes (like on polluters and the super-rich), better debt relief mechanisms, and stronger climate funding. Despite the **U.S. withdrawal**, over **70 countries** are participating to address urgent financing gaps, especially as developing countries face a **$4 trillion shortfall** and rising debt burdens.

Key Takeaways

1. **Purpose of FFD4**: To reform global aid, debt, and financing systems for sustainable development.
2. **Seville Commitment**: A 38-page political roadmap for development finance over the next decade.
3. **Proposed Reforms**: Debt swaps, climate-linked debt pauses, and global solidarity taxes.
4. **Platform for Action**: Launch of a new coalition to fast-track implementation of financing goals.
5. **U.S. Withdrawal**: The U.S. exited talks after opposing inclusion of climate and gender issues.
6. **Global Participation**: Over 70 world leaders and major institutions like the World Bank are attending.
7. **Debt and Aid Crisis**: Developing countries now spend more on debt than on health; interest costs have doubled.
8. **$4 Trillion Financing Gap**: The UN warns of a massive shortfall in development funding worldwide.
9. **Geopolitical Tensions**: Disagreements persist over debt restructuring approaches, especially between African nations and lenders like China.
10. **Urgency for Reform**: The conference stresses immediate global action on climate adaptation and equitable financing.

FILLING IN DETAILS-Indian Express Editorial

Economy

Easy Explanation

The Indian government has planned a **nationwide household income survey in 2026**, aiming to collect accurate data on how much households earn. This is crucial because India currently relies mostly on **consumption data** to estimate poverty and inequality, which often **understates the real income gap**.

Previous efforts to collect income data, like in the 1960s or in farm-related surveys, had problems — they underestimated income or covered only a part of the population. Surveys like the **Periodic Labour Force Survey** focus only on wages and miss other income sources.

Challenges remain: many people may not report all their income, especially those with irregular or seasonal jobs. Richer households also tend to underreport. Still, having **detailed, accurate income data** will help the government understand economic trends better and design **effective policies**.

Other countries like the U.S. have done this successfully for decades, offering a model India can learn from.

Key Takeaways

1. **Need for Household Income Data**
    - Currently, India lacks a comprehensive, all-India household income survey; income data is often estimated using consumption data, which can underestimate inequality.
2. **Past Surveys and Limitations**
    - Earlier surveys like the Integrated Household Surveys (1960s–70s) underestimated income compared to consumption and savings.
    - Other surveys collect limited income data, often only for specific groups (e.g., agricultural households or wage earners).
3. **Challenges in Income Surveying**
    - Households may not fully disclose income sources.
    - Seasonal jobs and recall errors affect accuracy.
    - Underreporting is often more pronounced among wealthier households.
4. **Importance of Granular, Regular Data**
    - Detailed income data over time enables a deeper understanding of economic and social changes.
    - International examples like the University of Michigan's Panel Study of Income Dynamics show the value of long-term, multi-generational income surveys.
5. **Policy Implications**

- Better income data can improve the measurement of poverty and inequality.

- It will assist policymakers in crafting more targeted and effective economic and social policies.

ASIA ON THE BOIL-Indian Express Editorial

Environment

Easy Explanation

A new report by the **World Meteorological Organization (WMO)** says **Asia is heating up twice as fast** as the rest of the world. Due to its large landmass, Asia faces more intense heat, rising sea levels, stronger storms, and unpredictable monsoons. Ocean temperatures around Asia have also risen faster than the global average, leading to marine heatwaves. These climate effects have led to **severe floods (Pakistan, Kazakhstan)**, **heatwaves (China, Central Asia)**, and **landslides (Wayanad, India)**.

This is a major threat for Asia where **many people work outdoors** and **agriculture is vulnerable**, especially crops like **rice**. Although most Asian countries have climate action plans, the report says it's time to **focus more on adaptation** — like **early warning systems**, better disaster response, and **building resilience** in communities.

Key Takeaways:

- **Rapid Warming**: Asia is warming **twice as fast** as the global average, especially over land areas.

- **Rising Ocean Temperatures**: The **Indian and Pacific Oceans** around Asia have seen temperature increases of **0.24°C per decade**, nearly **double the global ocean average**.

- **Frequent Climate Disasters**: The region has witnessed **floods** (e.g., Pakistan, Kazakhstan), **heatwaves** (China, Central Asia), **typhoons**, and **landslides** (e.g., Wayanad, India).

- **High Human Vulnerability**: Outdoor workers in **labour-intensive economies** face higher risks from extreme heat, rain, and cold.

- **Threat to Food Security**: Although productivity has grown, climate change is **slowing agricultural gains**, with **rice** highly vulnerable to drought, salinity, and soil degradation.

- **Mitigation Exists, Adaptation Lags**: Most Asian countries have **mitigation plans**, but the **urgency for climate adaptation** (like early warning systems) is rising.

- **Need for Resilience**: The report strongly urges **weatherproofing economies** and **investing in people's resilience** to face multiple hazards.

Is voter registration being subject to fraud?-The Hindu Editorial

Polity

Easy Explanation

The article presents a debate on whether India's **voter registration process is vulnerable to fraud**, especially in light of an unexplained **40-lakh voter surge in Maharashtra** between the 2024 Lok Sabha and Assembly elections. While some experts see this as a statistical anomaly, the Election Commission (ECI) defends the integrity of electoral rolls but has ordered a **Special Intensive Revision (SIR)** across India starting with Bihar. The discussion reveals deeper concerns over transparency, accountability, and the need for reform.

Key Takeaways

1. **Massive voter increase in Maharashtra (2024)**: Over 40 lakh new voters were added in just five months—more than the previous five years combined—raising suspicions of irregularities.

2. **Statistical anomalies flagged**: Critics say such a rise is illogical due to declining birth rates and youth population, suggesting manipulation or flawed verification.

3. **ECI's defence**: The Election Commission claims fraud is nearly impossible and insists parties should've used the appeal process during roll finalization.

4. **ECI initiates Special Intensive Revision (SIR)**: A national voter roll cleanup starting with Bihar is planned to ensure accuracy and eliminate ineligible entries.

5. **Demand for transparency measures**: Opposition parties are asking for machine-readable rolls and post-5 p.m. CCTV footage due to unexplained turnout surges.

6. **Concerns over Aadhaar seeding**: While seen as a way to prevent duplication, it also risks wrongful exclusions of genuine voters.

7. **Institutional accountability vs. party vigilance**: Critics argue ECI cannot shift its constitutional duty to political parties, even if party-level checks are weak.

8. **Need for balanced reform**: Both participants agree electoral rolls require reform, but the process must be **transparent, participatory, and fair** to maintain public trust.

Fathoming America's plan to manage AI proliferation-The Hindu Editorial

Science

Easy Explanation

The U.S. had earlier introduced the *AI Diffusion Framework* to control the spread of powerful AI technology, especially to countries like China and Russia. This framework treated AI like nuclear weapons—by restricting AI chips and tools from being exported to "untrusted" countries. But this strict policy backfired: it hurt U.S. allies, made other countries wary of depending on the U.S., and even pushed others to develop their own AI alternatives. For example, China created powerful AI models using less computing power. The U.S. has now withdrawn this framework, which is good news for countries like India. However, its basic goal—to limit China's access to AI—still continues. Now, the U.S. is trying new tech-driven control measures like building trackers inside AI chips. But these raise fresh concerns about privacy, ownership, and surveillance. So, even though the framework is gone, the same restrictive strategy may continue in different ways.

Key Takeaways

1. Rollback of the AI Diffusion Framework

The U.S. revoked its AI Diffusion Framework, which had imposed stringent export controls on AI chips and model weights, aiming to limit access for adversaries like China and Russia.

2. Misguided Nuclear Analogy

The framework wrongly equated AI with nuclear weapons, ignoring that AI is primarily civilian in origin and thrives in an open, collaborative international ecosystem.

3. Push for Strategic Autonomy Among Allies

By imposing controls on even trusted partners, the U.S. prompted allies to diversify their tech dependencies and pursue their own AI strategies to reduce reliance on American technologies.

4. Innovation Despite Controls

Controls led countries like China to innovate efficiently. For example, DeepSeek R1 achieved near-parity with U.S. models despite using much less computing power, weakening the impact of compute-based restrictions.

5. New Tech-Based Enforcement Tools

Even after the framework's repeal, the U.S. is exploring hardware-level measures such as chip usage restrictions and GPS tracking to enforce export controls indirectly.

6. Privacy, Autonomy, and Trust Concerns

These tech-based methods raise serious concerns over surveillance, loss of user control, and reduced trust among legitimate users, potentially impacting global adoption.

7. Strategy Intact, Only Tactics Changed

While the framework has been rescinded, the underlying U.S. strategy to limit adversaries' AI capabilities remains unchanged, now pursued through technical, rather than trade-based, controls.

Vaccinating India-The Hindu Editorial

Sociology

Easy Explanation

Despite major global gains in vaccination—doubling coverage for key diseases and cutting the number of zero-dose children (those missing their first DTP shot) by half—India still has the world's **second-highest** count of zero-dose kids. In 2023, **1.44 million** Indian children went unvaccinated at birth, which is **6.2%** of the nation's 23 million newborns. After spiking during COVID, numbers fell but have crept back up. The problem is now concentrated in certain large states (Uttar Pradesh, Bihar, Maharashtra, Rajasthan, Madhya Pradesh, Gujarat) and among the poorest, least-educated mothers, Scheduled Tribes, and Muslim families. To meet the WHO's goal of halving zero-dose rates by 2030, India must ramp up targeted efforts in hard-to-reach tribal regions, urban slums, and communities with high vaccine hesitancy.

Key Takeaways

1. Global Progress vs. India's Share

Worldwide vaccine coverage doubled (1980–2023) and zero-dose rates fell to 75%, yet India still accounts for over **9%** of the global zero-dose total.

2. Zero-Dose Children as an Inequity Marker

Zero-dose figures reveal gaps in health access. India reduced its rate from **33.4% (1992)** to **10.1% (2016)**, but COVID-19 set progress back.

3. Recent Trends and Numbers

Zero-dose children in India rose from **1.4 million (2019)** to **2.7 million (2021)**, then fell to **1.1 million (2022)**, before climbing to **1.44 million (2023)**.

4. Geographic and Demographic Hotspots

Highest counts are in **Uttar Pradesh, Bihar, Maharashtra, Rajasthan, Madhya Pradesh, Gujarat**, plus several Northeastern states.

5. Persistent Inequities

While gender, caste, and urban-rural disparities have narrowed, zero-dose prevalence remains highest among the **poor**, **low-educated mothers**, **Scheduled Tribes**, and **Muslim communities**.

6. Targeted Action Needed

Focus must shift to **remote tribal areas**, **urban slums** with migrant families, and **outreach to hesitant** communities to close the last gaps.

7. Meeting WHO's IA2030 Goal

To halve the 2019 zero-dose level (1.4 million) by 2030, India requires **intensified, sustained vaccination drives** and data-driven targeting over the next five years.

What are the most commonly used cancer drugs?-The Hindu text and Context

Science

Easy Explanation

The report discusses **six key cancer drugs** commonly used around the world—**cisplatin, oxaliplatin, cyclophosphamide, doxorubicin, methotrexate, and leucovorin**. These are chemotherapy drugs that attack cancer by damaging DNA or blocking cell growth. However, they also harm healthy cells, causing serious side effects like immune suppression, kidney and heart damage, and vulnerability to infections. A major investigation has revealed that **substandard versions of these drugs are circulating globally**, raising serious health and ethical concerns.

Key Takeaways

1. **Cisplatin**
    - *Use*: Effective against testicular, ovarian, bladder, and lung cancers.
    - *Action*: Binds to DNA and blocks cell division.
    - *Side Effects*: Kidney damage, nausea, hearing loss, bone marrow suppression.
2. **Oxaliplatin**
    - *Use*: Treats advanced colorectal cancer and post-surgery residual cancer cells.
    - *Action*: Similar to cisplatin, damages DNA.
    - *Side Effects*: Similar to cisplatin—nerve damage, immune suppression.
3. **Cyclophosphamide**
    - *Use*: Used for breast cancer, leukaemia, lymphoma, sarcoma.
    - *Action*: Disrupts DNA, inhibits replication.
    - *Side Effects*: Low white blood cells, bladder inflammation.
4. **Doxorubicin ("Red Devil")**
    - *Use*: Common for breast cancer, leukaemia, sarcoma, lymphoma.

- *Action*: Interferes with DNA replication.
- *Side Effects*: Severe—heart toxicity, hair loss, risk of infection.

5. **Methotrexate**
   - *Use*: Treats leukaemia, lymphoma, some tumours.
   - *Action*: Blocks DNA formation by inhibiting a key enzyme.
   - *Side Effects*: Toxic to healthy cells; given with leucovorin to reduce damage.
6. **Leucovorin**
   - *Use*: Not a chemotherapy drug but protects healthy cells from methotrexate.
   - *Action*: A form of vitamin B9 that helps rescue normal cells post-chemotherapy.
   - *Side Effects*: Minimal on its own; used to manage methotrexate toxicity.
7. **Global Quality Concerns**
   - An investigation found **substandard versions** of these drugs distributed to over 100 countries, raising serious public health risks.

At Bangkok event, a commitment to count every birth and death-The Hindu Science

International relations

Easy Explanation

At a major conference in Bangkok, countries across Asia and the Pacific committed to **register every birth and death by 2030**. Millions of people in the region still live without legal identity due to unregistered births or deaths. This affects access to healthcare, inheritance, education, and protection from abuse. The initiative also aims to make civil registration systems digital, inclusive, and legally strong. India reported strong progress and aims for full digital registration of all vital events.

Key Takeaways

1. **Goal of Universal Registration by 2030**
    - Countries signed a declaration to ensure **every birth and death is officially recorded** by 2030 under the Civil Registration and Vital Statistics (CRVS) framework.
2. **Why It Matters**
    - *Birth certificates* are crucial for legal identity and access to services.
    - *Death certificates* help with legal processes like inheritance and insurance.
3. **Present Gaps in the Region**
    - **14 million children** still lack birth registration before their first birthday.
    - **6.9 million deaths** go unrecorded every year in Asia-Pacific.
4. **Impact of CRVS Systems**
    - Prevents **child marriage**, **trafficking**, and **modern slavery** by proving age and identity.
    - Supports **inclusive governance** and is linked to **SDG 16.9** on legal identity for all.
5. **Progress in the Last Decade**
    - Unregistered under-5 population fell from **135 million to 51 million**.
    - **29 countries** now register over 90% of births annually; **30** do so for deaths.
6. **India's Role and Progress**
    - India achieved **96% birth registration**, aided by digital initiatives and CRVS reforms.

- Registration covers adopted, orphaned, and surrogate children.

- Birth/death documents now integrated into **DigiLocker**, reducing paperwork.

7. **Push for Digital Transformation**

   - Nations will use **digital tools**, **interoperable data**, and **legal safeguards** to make systems accessible, secure, and equitable.

   - India is a leader in showcasing digital CRVS systems in the region.

Study finds link between night shifts and asthma in women-The Hindu Science

Science

Easy Explanation

A large study in the UK has found that **women who work night shifts are more likely to suffer from moderate or severe asthma** compared to those working in the daytime. The disruption of the body's natural clock (circadian rhythm), hormone imbalances, and associated conditions like obesity or acid reflux could explain this link. Indian experts agree with the findings but call for more local studies to confirm the same in Indian populations.

Key Takeaways

1. **Main Finding**

   - Women working **permanent night shifts** are nearly **50% more likely** to develop **moderate or severe asthma** compared to daytime workers.
2. **Data Source**

   - Study used data from over **2.8 lakh UK Biobank participants** and was published in *ERJ Open Research*.
3. **Gender-Specific Risk**

   - More **adult women** than men are prone to asthma. Researchers suggest that **testosterone** may provide **protective effects** in men.
4. **Circadian Rhythm Disruption**

   - Working at night disrupts the **body's internal clock**, leading to health issues like **GERD**, **obesity**, **sleep apnoea**, and **hormonal imbalance**, all of which may worsen or trigger asthma.

5. **Link with Obesity**
    - **Obesity** is common in night-shift workers and is a **known asthma risk factor**, supported by the US National Heart, Lung, and Blood Institute.
6. **Indian Expert Insights**
    - Indian pulmonologists confirm night-shift workers often present with **poorly controlled asthma**, but stress that **large-scale Indian studies** are needed to confirm these links locally.
7. **Treatment Perspective**
    - According to WHO, asthma **cannot be cured**, but can be effectively managed with **inhalers and proper medication**, allowing patients to lead a normal life.

28th June 2025

ALL ABOUT THE PROPOSED GLOBAL POTATO RESEARCH CENTRE IN AGRA-Indian Express Explained

Economy(Agriculture)

Easy Explanation:

The Indian government has approved the setting up of a regional centre of the International Potato Center (CIP) in Agra, Uttar Pradesh. This centre, called the CIP-South Asia Regional Centre (CSARC), will help Indian farmers by improving potato and sweet potato varieties, increasing crop productivity, and reducing post-harvest losses. It will also support food processing industries and help farmers earn more. The project costs ₹171 crore, with India providing most of the funding and CIP contributing the rest. This centre is important because India's crop yields are currently low due to poor seed quality. With access to CIP's global collection of potato genes, India can improve seed quality, reduce dependence on imports, and become more competitive in global markets.

Key Takeaways

About the Centre:

- CSARC will be established at Singna in Agra as a regional branch of the International Potato Center (CIP), headquartered in Lima, Peru.
- CIP was founded in 1971 and specializes in potato, sweet potato, and Andean root crops.

Functions and Goals:

- The centre will focus on improving productivity, post-harvest management, and value addition of potato and sweet potato.

- It aims to boost food security, raise farmer incomes, and create jobs.

- It will develop climate-resilient, disease-free, and processing-suitable crop varieties.

Funding and Infrastructure:

- Total cost of ₹171 crore: ₹111.5 crore from India and the rest from CIP.

- The Uttar Pradesh government has allotted 10 hectares of land for the centre.

Need for the Centre:

- India's average potato yield is 25 tonnes per hectare, which is only half of its potential.

- Sweet potato yield is just 11.5 tonnes per hectare, much lower than the potential 30 tonnes.

- Poor seed quality is a major reason for low yields.

Genetic and Technological Advantage:

- India will gain access to CIP's global germplasm collection for developing better seed varieties.

- This will reduce dependence on seed imports from neighbouring countries.

Economic and Industrial Impact:

- The centre will help promote food processing industries and improve India's export potential.

Global Position:

- India is the world's second-largest producer of potatoes, after China.

- In 2020, India produced 51.3 million tonnes, and China 78.24 million tonnes.

GLP-1 drugs & weightloss-Indian Express Explained

Science

Easy Explanation:

Two advanced weight-loss and diabetes medications — **semaglutide** by Novo Nordisk and **tirzepatide** by Eli Lilly — are now available in India. These belong to a class of drugs called **GLP-1 receptor agonists** that mimic natural gut hormones. They help control blood sugar, slow digestion, reduce appetite, and promote significant weight loss — often **15–20% of body weight**, comparable to bariatric surgery. Initially developed for type 2 diabetes, they also show benefits for heart health, kidney disease, fatty liver, and possibly even neurological conditions. However, these drugs are expensive and come with side effects like nausea. They are not suitable for everyone, especially those with certain medical conditions or during pregnancy. Newer, more convenient and potentially more

effective versions of such drugs — including monthly injectables and oral pills — are currently under development.

Key Takeaways

What are GLP-1 Drugs?

- These drugs **mimic incretin hormones** (like GLP-1 and GIP) produced in the gut.
- They help **reduce blood sugar**, slow **stomach emptying**, **suppress appetite**, and **increase insulin secretion**.

Main Drugs and Their Benefits:

- **Semaglutide**: Shown to cause up to **15% body weight loss**.
- **Tirzepatide**: Can result in **up to 20% weight loss** and also targets GIP.
- Both improve **heart, liver, and kidney health**; reduce **stroke and heart attack risk**.

Discovery and Development:

- GLP-1 was identified in **1986**; stability issues delayed its use.
- Novo Nordisk developed **liraglutide** first, followed by more effective **semaglutide**.
- Gradual dose titration helped reduce side effects like nausea.

Pricing in India:

- **Semaglutide**: ₹17,345 to ₹26,015 per month (based on dose).
- **Tirzepatide**: ₹14,000 to ₹17,000 per month.

Who Should Avoid These Drugs:

- People with **gastric issues** or **family history of thyroid cancer**.
- **Pregnant women** or **growing children** (due to nutritional concerns).
- Those experiencing **strong side effects** like nausea and vomiting.

Additional Health Benefits:

- Reduced **cravings** and improved **eating habits**.

- Helps with **alcohol addiction** and possibly lowers risk of **Alzheimer's** and **dementia**.

Future Drugs in Development:

- New drugs like **retatrutide** (targets GLP-1, GIP, and glucagon) are being tested.

- Others like **CagriSema**, **Survodutide**, and **Mazdutide** are in late-stage trials.

- **Oral GLP-1 drugs** (e.g., orforglipron and danuglipron) may offer easier alternatives soon.

What is the legal dispute over Tansen's tomb?-Indian Express Explained

Polity

Easy Explanation:
The tomb of Sufi saint **Sheikh Muhammad Ghaus** in Gwalior, where **Tansen**, Akbar's court musician, is also buried, is at the centre of a legal dispute. A man named **Syed Sabla Hasan**, claiming to be the saint's **spiritual caretaker and heir**, asked the Madhya Pradesh High Court to allow **religious and cultural activities** (like the annual Urs) at the site. However, the **Archaeological Survey of India (ASI)** opposed this, saying it is a **Centrally Protected Monument** and such activities harm its structure and tourism value.

The **High Court rejected the petition**, stating that neither Hasan nor his family had any legal right over the monument. It also noted that similar claims had already been dismissed in various courts over the past **three decades**, and the issue was legally settled.

Key Takeaways:

1. Monument's Importance:

- The tomb of **Sheikh Muhammad Ghaus** in Gwalior, built after 1563, is a **Centrally Protected Monument** under the **1958 Ancient Monuments Act**.

- **Tansen**, the legendary musician and disciple of Ghaus, is buried beside him, adding cultural and musical value to the site.

2. Petition for Religious Rights:

- **Syed Sabla Hasan** claimed to be the **Sajjada Nashin** (spiritual caretaker) and **legal heir**, seeking permission to perform religious and cultural rituals including the **annual Urs**.

- He argued such practices had been performed at the site for centuries.

3. ASI's Opposition:

- The **Archaeological Survey of India (ASI)** opposed the plea, stating the petitioner was making **false claims**.

- It alleged that **unauthorised activities** like damaging walls were harming the structure's **integrity and tourism potential**.

4. Court's Verdict:

- The **Madhya Pradesh High Court rejected the plea**, holding that religious or cultural activities **cannot be allowed** at Centrally Protected Monuments.

- It confirmed that the petitioner had **no legal right or title** over the site.

5. Long Legal History:

- The matter has been **litigated multiple times** since **1995**, with consistent rulings against the claimants.

- Cases were dismissed by **civil courts**, **High Courts**, the **Supreme Court**, and the **MP Waqf Tribunal**, with legal finality reached in **2022**.

6. Preservation Over Privatisation:

- The ruling underscores the **primacy of preservation** over individual or hereditary claims in the case of **national heritage monuments**.

How India 'added' more than 3,500 km to its coastline,7 new islands-indian Express Explained

Geography

Easy Explanation:
India's coastline is now officially **3,582 km longer** than before, bringing the total length to **11,098 km**. But this increase is not because India gained new land—it happened because of **better and more detailed measurement methods** using **modern digital tools and high-resolution maps**. Earlier, many **curves, bends, and island coastlines** were left out due to low-resolution data and manual mapping.

Similarly, the **number of islands** has also been updated. After a fresh count and clarification of definitions, India now officially has **1,389 islands**, including offshore and inshore ones. This does not include river islands. These updated figures help with **planning, coastal regulation, climate action, tourism, and national security**.

Key Takeaways:

1. Coastline Length Increased Due to Better Mapping

- India's coastline increased from **7,516 km to 11,098 km**—a **48% rise**.

- This was due to the use of **high-resolution maps (1:2,50,000 scale)** and **modern GIS software**, not territorial expansion.

2. Earlier Measurements Missed Details

- Low-resolution data smoothed out **natural curves and bends**.
- Many **island coastlines** were also left out due to manual limitations.

3. Coastline Paradox Explained

- The more precisely you measure a coastline, the longer it becomes.
- This is because finer tools capture **tiny curves and features** that coarser tools ignore.

4. Island Count Also Updated

- Official number of islands is now **1,389**, including **1,298 offshore** and **91 inshore islands**.
- Earlier confusion over what qualifies as an island (e.g., tide-related changes) was cleared.

5. Administrative and Legal Impact

- Updated coastline may affect **Coastal Regulation Zone (CRZ)** boundaries.
- It will influence **tourism, development, coastal erosion efforts**, and **climate change planning**.

6. Future Measurements Will Continue

- Coastline measurements will now be done **every 10 years**.
- Reassessments are needed due to **natural changes** (like erosion, reclamation) and for **policy accuracy**.

7. Ground Reality Unchanged, But Data Now More Accurate

- No actual land has changed hands—the numbers are just **more precise** and better represent India's **true coastal geography**.

A new nuclear deal-Indian Express Editorial

International relations

Easy Explanation:
The US recently carried out **airstrikes on Iran's nuclear sites** at Fordow, Natanz, and Isfahan. The main goal was to damage Iran's underground centrifuge facilities that enrich uranium, which can be used to make nuclear weapons. While the bombs may not have directly destroyed the equipment (since the sites are deep underground), they may have **functionally crippled the site** by damaging ventilation or power systems.

However, the most pressing concern now is **what happened to Iran's stockpile of highly enriched uranium (HEU)** — the material needed to make a nuclear bomb. It may have been moved to **unknown**

sites, and if so, Israel and the US will try to find it. Direct attacks on these sites could cause radioactive fallout ("dirty bombs"), so the more likely option is to **negotiate a new nuclear deal** and bring back international inspections. But both sides have **limitations and political hurdles**, so any new deal will be difficult.

Key Takeaways:

1. US Airstrikes on Iranian Nuclear Sites

- Targets: Fordow, Natanz, and Isfahan nuclear facilities.
- Objective: Destroy or disable Iran's uranium enrichment capability.
- Fordow is underground (80m); US bombs may not have reached centrifuge halls but could have **crippled the site's operations** through structural damage.

2. Fate of Highly Enriched Uranium (HEU)

- Iran has stockpiled ~400 kg of HEU enriched to 60%.
- Reports suggest Iran **moved the HEU** before the attack.
- If dispersed, it becomes harder to target but more survivable.
- Direct strikes on HEU risk **radioactive contamination** — unlikely due to global backlash.

3. Dilemma for the US and Israel

- They cannot ignore the HEU — it could be enriched further into a bomb within months.
- But they also cannot bomb it directly.
- Likely strategy: **force Iran to disclose stockpile locations** and **resume IAEA inspections** (like under the JCPOA).

4. Road to a New Nuclear Deal

- The only sustainable solution is a **negotiated nuclear agreement**, possibly a JCPOA successor.
- Iran must agree to allow full inspections and monitoring.
- The US must offer **economic incentives**, such as **lifting sanctions**, to secure a deal.

5. Constraints on All Sides

- US wants to **avoid another prolonged conflict**, especially while also supporting Ukraine and Israel.

- Israel's missile defences are **stretched thin** and vulnerable to Iranian retaliation.

- Iran risks further US-Israel strikes and **domestic unrest**.

6. Fragile Ground for Diplomacy

- The ceasefire needs to hold.

- Iran must have a strong leadership willing to negotiate.

- Trump must overcome **domestic and Israeli resistance** to making concessions.

7. Long-Term Outlook

- A deal is **possible but difficult**.

- All parties are under pressure, but also **interested in de-escalation**.

- The current moment is a **critical diplomatic opportunity** — but any misstep could reignite conflict.

THE OLDEST ROCKS ON EARTH ARE IN CANADA'S QUEBEC,FINDS STUDY-indian Express Explained

Geography

Easy Explanation:
Scientists have discovered the **oldest known rocks on Earth** in the **Nuvvuagittuq Greenstone Belt** in northern **Quebec, Canada**, near the eastern shore of **Hudson Bay**. These rocks are estimated to be **4.16 billion years old**, dating back to the **Hadean Eon**, the earliest part of Earth's history. These are mostly **metamorphosed volcanic rocks** (basalt), which means they were changed by heat and pressure over time. They were formed from **magma intrusions** that solidified underground.

This finding is significant because there are **very few physical remnants** from the Hadean era. Studying these rocks can help scientists understand **how Earth's earliest crust formed** and what conditions were like in the planet's infancy.

Key Takeaways:

1. Oldest Rocks on Earth Discovered

- Rocks from the **Nuvvuagittuq Greenstone Belt** in northern Quebec are now considered the **oldest on Earth**, dated to **4.16 billion years ago**.

2. From the Hadean Eon

- These rocks formed during the **Hadean era**, a mysterious time in Earth's history (around the time Earth was just forming its first crust).

3. Rock Type and Formation

- The rocks are **metamorphosed volcanic rocks** with a **basaltic composition**.

- Specifically, they are **intrusions**, meaning they were formed when **magma entered existing rock layers** and solidified underground.

4. Scientific Importance

- These are among the **only physical remnants** from the Hadean eon.

- They offer a **unique geological record** of Earth's earliest crust formation.

5. Previous Record

- Earlier, the oldest known rocks were **4.03 billion years old**, found in Canada's **Northwest Territories**.

- This new discovery **pushes back** the known record of Earth's crust by over **100 million years**.

6. Future Potential

- Further study of these rocks can help scientists understand **early Earth conditions**, the **origin of continents**, and even the **precursors to life**.

Missed opportunity-The Hindu Editorial

International relations

Easy Explanation:
India is disappointed that the recent **Shanghai Cooperation Organisation (SCO)** Defence Ministers' meeting in Qingdao ended **without a joint statement** because Pakistan opposed the inclusion of any mention of **terrorism**. India, which had just faced a terror attack in Pahalgam, wanted the declaration to reflect concern about cross-border terrorism. However, **China and Russia did not support India's position**, reportedly even considering Pakistan's request to mention unrest in **Balochistan**, while ignoring India's concerns.

This incident shows that **India's influence in SCO is limited**, unlike in SAARC, where it had more control. India skipped sending delegations to SCO countries post-Operation Sindoor and also chose **not to host the SCO summit in 2023**, which might have affected its diplomatic standing. Going forward, India must **actively engage and diplomatically lobby** SCO members to ensure terrorism is treated as a **shared regional threat**.

Key Takeaways:

1. No Joint Declaration Due to Pakistan's Objection

- India **withdrew from the SCO Defence Ministers' declaration** after references to terrorism were excluded.

- Pakistan blocked anti-terror language; **India viewed this as unacceptable**, especially after the **Pahalgam attack**.

2. China and Russia's Role Problematic

- **China (host) and Russia** did not back India's position.

- Shockingly, they even considered **mentioning Balochistan unrest**, but not terrorism in Kashmir or cross-border attacks.

3. SCO's Anti-Terror Credentials Undermined

- This goes against SCO's **2002 Charter**, which prioritises fighting **terrorism, separatism, and extremism**.

- Even the SCO's **Regional Anti-Terrorist Structure (RATS)** was present, but the final draft was vague.

4. Missed Diplomatic Opportunities

- India did not send delegations to SCO countries post-**Operation Sindoor**, despite sending them to **32 other nations**.

- India also **skipped hosting an in-person SCO summit in 2023**, possibly hurting its engagement.

5. India's Position in SCO Weaker than in SAARC

- Unlike in **SAARC**, where India holds sway, the SCO is dominated by **China, Russia, and Central Asian states**, making India's diplomacy more complex.

6. Implications for Future Engagement

- India must assess if it's **clearly communicating its strategic priorities** like the "**new normal**" on terrorism post-Sindoor.

- Rather than withdraw, India should work to **build consensus within the SCO** to address terrorism jointly.

7. Walking Away Helps Pakistan

- If India distances itself from SCO, it may **leave space for Pakistan** to influence the platform further.

- India should **re-engage strategically** and **highlight shared security interests**, especially the threat of terrorism.

A China-led trilateral nexus as India's new challenge-The Hindu Editorial

International relations

Easy Explanation:
China recently hosted **trilateral meetings** with **Pakistan and Bangladesh**, and earlier with **Pakistan and Afghanistan**. These moves are part of China's attempt to **create a regional axis** to challenge **India's growing influence**. Historically, China has used Pakistan as a counterweight to India, especially after the **1962 war**. Now, China is trying to pull in India's neighbours like **Afghanistan and Bangladesh**, especially after their recent regime changes.

India's assertive military and diplomatic responses to Pakistan's terrorism and Chinese aggression (e.g., **Operation Sindoor, Galwan**) have prompted China to respond indirectly by **arming Pakistan**, **backing it diplomatically**, and **engaging South Asian countries**. This trilateral strategy could **isolate India**, create **regional instability**, and enable the spread of China's **BRI projects**. However, India's deepening ties with **Sri Lanka, Nepal, and the Maldives** show that China's strategy also faces resistance.

Key Takeaways:

1. China's Trilateral Strategy Emerges

- China hosted trilateral meetings with **Pakistan-Bangladesh** and **Pakistan-Afghanistan**.
- Aim: Deepen cooperation, promote China's regional role, and **counterbalance India**.

2. Reasserting the 1962 Strategy

- Like post-1962, China sees Pakistan as a tool to **keep India occupied**.
- Pakistan relies heavily on **Chinese loans and arms**, and China protects Pakistan at international forums.

3. India's Recent Assertiveness Unsettles Rivals

- India responded strongly to terror attacks in **Uri, Pulwama, Pahalgam**, and **Chinese aggression** in **Doklam and Galwan**.
- Post-**Operation Sindoor**, India suspended the **Indus Waters Treaty**, restricted trade, and targeted Pakistan militarily.

4. China-Pakistan Alliance in Action

- China criticized India's response to the **Pahalgam attack**, and Pakistan used **Chinese-made weapons** during escalation.
- China and Pakistan are trying to draw **Afghanistan and Bangladesh** closer, fearing India's influence.

5. Shifting South Asian Dynamics

- Despite earlier anti-India moves, Maldives' President **Muizzu** is now turning to India for support.

- In **Nepal**, BRI projects are stalling due to unresolved funding issues.

- **Sri Lanka** is aligning more with India under President **Dissanayake**.

6. Pakistan's Expanding Influence with China's Help

- Bangladesh and Afghanistan, once aligned with India against Pakistan, are now being pulled back by **China-Pakistan diplomacy**.

- This could lead to **new terror threats** and **cross-border instability** in the region.

7. China's Real Intent

- **China is the primary driver** of the regional challenge—not Pakistan.

- It uses Pakistan to **destabilize India**, enable **BRI expansion**, and test India's diplomatic resilience.

8. India's Path Forward

- India must continue to draw **clear redlines** and **warn of consequences** to neighbours for supporting hostile acts.

- It should **deepen partnerships** with like-minded countries and ensure **economic and security costs** for adversaries.

29th June 2025

What are the issues around deportation?: TH FAQ

International Relations

EASY EXPLANATION

Recently, some people from **West Bengal**, who were wrongly sent to **Bangladesh** by the **Border Security Force (BSF)** thinking they were illegal immigrants, were brought back to India. West Bengal's Chief Minister, Mamata Banerjee, criticized this action, saying that just because someone speaks Bengali doesn't make them Bangladeshi. Similar incidents have also happened in **Assam**, where people were sent back but later found to be Indian citizens or still waiting for their legal cases to conclude.

The background to this situation goes back to **August 2024**, when the government of Bangladesh changed. After that, India's **Union Home Ministry** directed all states to detect and remove illegal Bangladeshi migrants. The drive got a fresh push after the **Pahalgam terror attack in April 2025**, which led to **Operation Sindoor**.

Instead of following the proper **legal deportation process**, some states like **Assam** started using **"pushback" methods** — immediately sending people across the border without a court process. This is faster but not legal.

Deportation means the person is arrested, brought before a court, and, only after legal confirmation and cooperation with the foreign country, is sent back. In contrast, **pushback** has no legal framework — it's just the BSF returning people at the border based on their own judgment.

Assam's Chief Minister said they may now enforce a 1950 law — the **Immigrants (Expulsion from Assam) Act** — which lets the district authorities remove people believed to be illegal immigrants, especially if they are seen as harmful to public interests or tribal communities.

Till recently, India was using very old laws like the **Foreigners Act, 1946**, and others. But in April 2025, a new law — **Immigration and Foreigners Act, 2025** — was passed, replacing these outdated laws.

In border areas like **Nepal and Myanmar**, rules are different. India has **open borders with Nepal**, and a **Free Movement Regime with Myanmar**, allowing nearby people to cross easily. But after the military coup in Myanmar in 2021, many **refugees from Myanmar** came to **Mizoram**. India does not officially recognize refugee status because it's **not a signatory to the UN Refugee Convention**.

After the recent terror attack in Kashmir, the police started transporting undocumented migrants by **trains and even planes** to **border states** like **Tripura**, where BSF personnel pushed them into Bangladesh. However, BSF has not officially admitted to these pushbacks.

States have been asked to **verify identity claims within 30 days**, failing which migrants will be deported. There's also an effort to stop undocumented migrants from getting Indian identity documents. The **UIDAI** (Aadhaar body) was asked to maintain a **"negative list"** to prevent this.

KEY TAKEAWAYS

Recent Incidents

- **West Bengal Citizens Returned**
  - BSF mistakenly pushed Indian citizens to Bangladesh; they were brought back after state government intervention.
  - Mamata Banerjee raised concerns about Bengalis being labeled Bangladeshis.
- **Similar Pushbacks in Assam**
  - Some were sent despite pending court cases or proven Indian nationality.

Triggering Events

- **August 2024: Regime Change in Bangladesh**
  - India initiated stricter measures to detect undocumented Bangladeshi migrants.
- **April 2025: Pahalgam Terror Attack**
  - Led to **Operation Sindoor** and intensified migrant detection.

Pushback vs Deportation

- **Deportation (Legal Route):**
  - Involves arrest, court trial, and diplomatic confirmation before removal.
- **Pushback (Unofficial Route):**
  - Done at border by BSF without legal process.
  - No codified rules or formal court involvement.

Legal and Administrative Framework

- **Immigrants (Expulsion from Assam) Act, 1950**
  - Allows the Centre to expel people deemed harmful to the public or Scheduled Tribes in Assam.
- **Old Laws Repealed in 2025**
  - New **Immigration and Foreigners Act, 2025** replaces laws from 1920–1946.

Border Rules and Refugees

- **Nepal and Myanmar Borders**
  - Free movement allowed; Nepal has open-border agreement, Myanmar allows movement within 10 km.
- **Myanmar Refugees in Mizoram**
  - Over 40,000 Chin refugees live in Mizoram post-coup.
  - India does not legally recognize them as refugees.

Current Drive and Mechanism

- **Large-Scale Pushbacks**
  - 2,500+ migrants pushed back since April 2025.
  - Some flown from states like Rajasthan and Gujarat to Tripura and handed to BSF.
- **Identity Verification**
  - States asked to verify claims within 30 days.
  - Failure leads to deportation via Foreigners Regional Registration Officer (FRRO).
- **UIDAI Action**
  - Maintains a “negative list” to stop migrants from acquiring Aadhaar cards.

Political and Policy Highlights

- **Assam CM’s Stand**
  - Supports pushbacks and invoking the 1950 law for fast action.
- **Home Ministry’s Directive**
  - States instructed to detect, detain, and deport — even without acceptance from other countries.

Where does India lag in gender metrics?: TH FAQ

Sociology

EASY EXPLANATION

India has slipped two spots to **131st out of 148 countries** in the **2025 Global Gender Gap Index** by the World Economic Forum. This index measures how equally men and women are represented in four areas: **economic participation, education, health, and political power**. While India performed okay in the first three, its score **dropped in political empowerment**, which led to the overall decline.

The biggest concern is the low number of **women in Parliament and ministerial positions**. After the 2024 general elections, women MPs decreased from 78 to 74, and the number of women ministers also fell from 6.45% to 5.56%.

India has already passed a law in 2023 that will **reserve 33% of seats for women in the Lok Sabha and State Assemblies**, but it will only take effect from the **2029 elections**, because it's linked to the next **Census and seat redistribution (delimitation)**. Historically, women's representation in politics has always been low — just **3.4% in 1977** and only **14% in 2019**. Even now, the **average for State Assemblies is just 9%**, with some States like Mizoram having zero women MLAs.

The law will be valid for only **15 years**, which covers just two election cycles (2029 and 2034), so the **benefits may not last** unless further steps are taken. Also, even if more women get elected, there's no guarantee they'll be given **important roles in governance**, like ministerial posts.

At the local level (panchayats and municipalities), **33% reservation for women has existed for 30 years**, and even **50% in many States**, but there's no clear system to promote these local leaders to State or national politics.

While more **women are voting than ever before**, especially in the last two general elections, this has not led to more **women being given tickets by political parties**. Parties often avoid giving women seats where they think the chances of winning are high, and many women are fielded only in **reserved seats**.

Interestingly, data shows that **women candidates actually win more often than men**, but their **names rarely make it onto the party's final list**.

KEY TAKEAWAYS

India's Global Gender Gap Rank Falls

- **2025 Rank**: 131 out of 148 countries.
- **Cause of Decline**: Fall in **political empowerment** score.
- **Stable/Improved Categories**: Economic participation, education, and health.

Decline in Political Empowerment

- **Women MPs fell** from 78 (14.7%) to 74 (13.79%) in 2025 Lok Sabha.
- **Women ministers dropped** from 6.45% to 5.56%.
- Both indicators pulled down India's overall gender equality score.

Women's Reservation Law

- **Passed in 2023**; reserves **33% of seats** in Lok Sabha and State Assemblies.
- **Implementation** tied to next **Census and delimitation**, earliest in **2029**.
- **Time Limit**: Law is valid for **15 years** — likely only two elections (2029 and 2034).
- **Risk**: Gains may not be long-lasting unless further reforms follow.

State-Level Representation

- **Current Average of Women MLAs**: Only **9%**.
- **Best State**: Chhattisgarh (18% women MLAs).
- **Worst States**: Himachal Pradesh (1 woman MLA), Mizoram (none).

Panchayat Level Progress

- **33% Reservation** in local bodies exists for 30+ years; now **50% in many States**.
- **Issue**: No formal system to bring these leaders up to State/National politics.

Women Voters on the Rise

- **Historical Exclusion**: 28 lakh women missed voting in 1952 due to lack of identity.
- **Gender Gap in Voting**: Reduced from 17% (1962) to <2% (2014).
- **Recent Trend**: More women voted than men in last two Lok Sabha elections.
- **Reason**: Welfare schemes, male migration for work.

Representation in Candidate Lists

- **Low Candidate Share**: Women form only 8–9% of candidates from major parties.
- **Biased Seat Allocation**: Parties avoid fielding women in "winnable" seats.
- **Excuses Rejected**: Data shows **women have higher win rates** than men historically.

Expert Insights

- **Rahul Verma (CPR)**: Parties often limit women to SC/ST reserved seats.
- **Tara Krishnaswamy (Political Shakti)**: Women don't vote by gender alone — they seek real outcomes. Parties' excuse of "non-winnability" is not backed by data.

Digital fossil-mining reveals origin of squids hidden inside rocks: TH Science

Science

EASY EXPLANATION

Squids are among the smartest and fastest creatures in the ocean. But it has always been difficult to understand how they evolved, because their soft bodies don't leave behind fossils easily. A new study by Japanese scientists has changed that by using a method called **digital fossil-mining**.

Instead of using hammers or drills that can break rocks and damage delicate fossils, the scientists used a machine that **slowly grinds down rocks layer by layer**, taking high-quality photos of each layer. These photos were then combined to make a 3D model of what was inside the rock — helping them spot **tiny squid beaks**, which are hard and made of chitin (like the material in insect shells).

They used this method on rocks from Japan that were 70 to 110 million years old. These rocks are good at preserving fossils. From these rocks, scientists found **263 fossil squid beaks**, which is a huge jump — before this, only **one fossil beak** had ever been found.

The study revealed that **at least 40 squid species** had lived during that period, divided into **23 genera and 5 families**. Some of these belonged to modern squid types — those that live in the deep sea (Oegopsida) and those near the coast (Myopsida). This means modern squids have existed for at least **100 million years**, which is **30 million years earlier** than what scientists previously thought.

Even more interestingly, many types of squids evolved very quickly — within just **6 million years**, many of today's squid families had already formed. By the **Late Cretaceous period**, squids were so common that their fossils were found more frequently than those of other sea creatures like ammonites and bony fish.

These findings suggest that squids became **key players in marine ecosystems** much before the mass extinction that killed the dinosaurs 66 million years ago. They had already started replacing their shelled relatives like belemnites and ammonites. The scientists believe that squids may have been **early versions of today's fast and intelligent marine animals**, like whales and dolphins.

KEY TAKEAWAYS

Problem in Studying Squid Evolution

- Squids have **soft bodies** that don't fossilize well, making their evolution hard to trace.
- Only **one fossil squid beak** had been discovered before this study.

Breakthrough Discovery with New Method

- Scientists from Japan used **digital fossil-mining** to avoid damaging fragile fossils.
- They ground rocks layer-by-layer while photographing each layer.
- Images were combined to make **3D models** of internal rock contents.

Key Fossil Findings

- Rocks from **Cretaceous-era Japan** (110–70 million years old) were used.
- Discovered **263 squid beak fossils**, a massive leap from previous data.
- Fossils belonged to **at least 40 species, 23 genera, and 5 families**.

Implications for Squid Evolution

- Fossils prove that **modern squid groups** (deep-sea Oegopsida and coastal Myopsida) existed **100 million years ago**.
- Squids evolved **quickly**, with most known families appearing within just **6 million years**.
- By the **Late Cretaceous**, squid fossils became more common than ammonites and bony fish.

Evolutionary Importance

- Squids began **dominating marine ecosystems** long before the **66-million-year-old extinction** event.
- They had already started **replacing shelled cephalopods** like belemnites and ammonites.
- Scientists believe squids were **early forms of fast, smart marine animals**, paving the way for creatures like **dolphins and whales**.

Large genetic map of Indians flags hidden disease risks: TH Science

Science

EASY EXPLANATION

India has always been known for its diversity—languages, castes, tribes, regions—but now, scientists are discovering just how rich its **genetic diversity** is too.

A major new study has mapped the **DNA of 2,762 Indians** from 23 different parts of the country. This study shows how **India's past migrations, caste systems, and social customs** have left strong marks in people's genes, which even affect **health and disease risks today**.

The study confirms that most Indians came from one **big migration from Africa** around **50,000 years ago**. Earlier groups might have lived in India before that, but they didn't leave genetic traces in today's people.

India's genetic ancestry is a mix of **three ancient populations**:

1. **Ancient hunter-gatherers** of India.

2. **Iranian-related early farmers** from Central Asia.

3. **Eurasian steppe people**, who came around 2000 BCE and are linked to the spread of **Indo-European languages**.

People in **East and Northeast India** also have **East Asian ancestry**, especially in states like **West Bengal**, likely due to migrations around **520 CE** or even earlier through rice farming.

The study also explains how **marrying within one's own community (endogamy)** has created strong **genetic patterns**. In South India especially, people are more likely to get **the same gene from both parents**, increasing the chance of **recessive diseases**—those that happen only when both gene copies are faulty. For example, a **Telangana-specific gene variant** causes dangerous reactions to anesthesia.

Researchers also found **ancient genes from Neanderthals and Denisovans** in Indians. Some of these help with **fighting infections**, and are especially common in **East and Northeast India**, including genes linked to **severe COVID-19 reactions**.

The study found **2.6 crore (26 million) genetic variations**, including over **1.6 lakh that change important proteins** and were not in any global DNA database. Many of these are linked to diseases like **thalassemia, deafness, cystic fibrosis**, and **metabolic disorders**.

The study shows that Indians have been **largely ignored** in global genetic research, which can reduce the accuracy of **medical treatments and disease prediction**. To fix this, the researchers are expanding their work to include **more isolated and unique communities** and developing tools to understand how genetics affects **health outcomes in Indian populations**.

KEY TAKEAWAYS

Study Overview

- Genome sequencing of **2,762 Indians** from 23 States/UTs.
- Most detailed genetic map of India till date.
- Captures variations across **language, caste, tribe, region, and lifestyle**.

Ancestry Origins

- Indians primarily descended from **a single migration out of Africa** ~50,000 years ago.
- India's genetic makeup is a mix of:
  - **Ancient Ancestral South Indians (hunter-gatherers)**
  - **Iranian-related early farmers** (from ~4000 BCE)
  - **Eurasian steppe pastoralists** (from ~2000 BCE)
- **East and Northeast Indians** have additional **East Asian ancestry**, especially in **West Bengal**.

Genetic Structure and Social Practices

- **Endogamy** (marriage within communities) caused **strong founder effects**.
- Leads to high **homozygosity** (same gene from both parents), raising chances of **recessive diseases**.
- Every person in the study had at least **one close genetic relative**, showing high relatedness.

Ancient Interbreeding and Disease Links

- Indians carry up to **1.5% DNA from Neanderthals/Denisovans**.
- Genes from these ancient humans:
  - Helped in **immune responses**.
  - Include regions linked to **COVID-19 severity** and **viral resistance**.
  - Found especially in **East and Northeast Indian populations**.

Rare Variants and Medical Implications

- Found **2.6 crore undocumented variants**, with:
  - Over **1.6 lakh protein-altering mutations**.
  - ~7% linked to diseases like **thalassemia, congenital deafness**, etc.
- Many are **absent in global databases**, highlighting India's underrepresentation.
- This underrepresentation weakens **precision medicine** and **disease prediction accuracy** for Indians.

What's Next

- Study to expand into **more genetically isolated groups**.
- Researchers are studying how genes affect **protein functions and health**.
- Aim: Develop **India-specific medical tools** to improve inclusive healthcare.

30th June 2025

How decision by US SC could boost Trump citizenship order-Indian Express Explained

International relations

Easy Explanation:

The U.S. Supreme Court recently made a ruling that weakens the ability of lower federal judges to stop government policies across the entire country. This benefits former President Donald Trump's effort to end *birthright citizenship* — a right under the 14th Amendment that gives automatic citizenship to anyone born in the U.S., even if their parents are undocumented immigrants.

Trump had signed an executive order on his second term's first day to end this right for children of immigrants without legal status. Lower courts had blocked it using nationwide (universal) injunctions. Now, the Supreme Court says judges can only stop the law for the people directly involved in the case — not nationwide. This could let Trump's order be implemented more easily unless the top court itself strikes it down.

Key Takeaways

1. Background on Birthright Citizenship
The 14th Amendment, ratified in 1868, guarantees U.S. citizenship to anyone born in the country and "subject to its jurisdiction." It was introduced to ensure citizenship for Black Americans post-Civil War.

2. Trump's Executive Order
Trump issued the order on January 20, 2025, to deny birthright citizenship to children born to undocumented immigrants or those on temporary visas. This order interprets the phrase "subject to the jurisdiction" narrowly to exclude such groups.

3. Legal Challenge and Nationwide Injunctions
Federal district courts had blocked the implementation of the order using nationwide injunctions — legal

orders that prevent policies from being enforced across the entire U.S., not just for the parties involved in a case.

4. Supreme Court's Ruling

In a 6:3 majority decision, the Supreme Court limited the ability of federal judges to issue such universal injunctions. Justice Amy Coney Barrett emphasized that lower courts must not overstep their authority, even if the executive branch acts unlawfully.

5. Immediate Effect on Trump's Citizenship Order

The ruling does not decide on the legality of Trump's order but removes a key legal barrier to implementing it. Now, courts can only grant relief to those directly involved in the lawsuits, not to everyone affected by the policy.

6. Difference Between U.S. and Indian Systems

India has a unitary legal system where the Supreme Court's orders apply nationwide. In contrast, the U.S. federal system allows lower courts to affect national policies, which this ruling now restricts.

7. Political and Legal Consequences

The ruling shifts more power toward the executive branch and reduces judicial checks at early legal stages. It could allow controversial Trump-era policies to go into effect more easily unless challenged and struck down by the Supreme Court itself.

China's fertiliser supply squeeze-Indian Express Explained

Economy

Easy Explanation:

China, once India's key supplier of the DAP (diammonium phosphate) fertiliser, has stopped its exports to ensure local availability and meet rising demand for phosphate in EV batteries. This has caused a shortage of DAP in India and pushed global prices up sharply. Indian importers are turning to countries like Saudi Arabia and Jordan, but they haven't been able to fully replace China's volumes.

However, farmers and fertiliser companies are adapting by shifting to alternative fertilisers like APS (Ammonium Phosphate Sulphate) and other NPKS complexes. These are better balanced and more suited for many crops. Although DAP sales have dropped, the shift may benefit long-term soil health and reduce dependence on costly imports.

Key Takeaways:

1. China Halts DAP Exports

- China stopped all exports of DAP fertiliser to India in 2025.
- This was done to prioritise domestic use and meet rising phosphate demand in EV battery production.
- India's DAP imports from China dropped from 22.9 lakh tonnes (2023–24) to zero.

2. India Faces DAP Shortage During Peak Sowing Season

- India entered the 2025 kharif season with only 12.4 lt of DAP in stock, much lower than 21.6 lt in 2024.
- Monsoon rainfall is 8% above average, boosting sowing activity and increasing fertiliser demand.
- The shortage comes at a critical moment in the agricultural cycle.

3. Global Phosphate Prices Soar

- DAP landed prices rose to $781.5/tonne from Jordan, up from $515–525 a year ago.
- Saudi Arabia's latest quotes are over $810/tonne.
- Phosphoric acid prices (used in domestic DAP production) have increased to $1,258/tonne for July–September 2025.

4. DAP Sales Decline Nationwide

- DAP sales fell from 108.1 lt (2023–24) to 92.8 lt (2024–25).
- April–May 2025 sales declined further to 7.7 lt, down from 8.8 lt in the same period last year.
- The fall is seen as positive by some, who advocate less use of high-phosphorus fertilisers.

5. Shift Toward Alternative Fertilisers

- Sales of NPKS complexes rose by 28.4%, reaching 142.1 lt in 2024–25.
- APS (20:20:0:13), a balanced NPKS fertiliser with sulphur, saw record sales of 69.7 lt.
- These options offer better-balanced nutrient profiles and are seen as more crop-specific.

6. Industry Pushes APS and SSP as Substitutes

- Companies like Coromandel, Paradeep Phosphates, IFFCO, FACT, and GSFC are actively promoting APS.
- SSP (Single Super Phosphate), containing 16% phosphorus and 11% sulphur, saw sales rise to 49.3 lt.
- Farmers are gradually shifting to these substitutes due to availability and affordability.

7. Price Control vs. Market Reality

- DAP is officially priced at ₹1,350 per 50 kg bag, but farmers often pay around ₹1,700.
- APS is more affordable at ₹1,350–1,400, and other NPKS mixes are ₹1,700–1,800.
- This pricing mismatch has influenced fertiliser choices.

8. Long-Term Opportunity for Efficiency and Sustainability

- India has limited rock phosphate reserves and must import either raw rock or intermediates.
- Reducing DAP consumption can make better use of imports and foreign exchange.
- The transition to balanced fertilisers could improve soil health and long-term crop productivity.

FROZEN SECRETS:HOW ICE CAN PRESERVE MESSAGES,REVEAL CLUES-Indian Express Explained

Geography

Easy Explanation

Scientists from China, Korea, and Czechia have discovered a creative new way to store and hide messages using ice. When water freezes, air gets trapped inside as bubbles. By controlling how fast and in what direction the water freezes, the researchers were able to shape these air bubbles into patterns, like small dots and lines. These shapes can be turned into messages using Morse code or digital symbols. A camera can then capture these patterns, and a computer can decode them into words or numbers.

This method could be used to hide secret information—once the ice melts, the message disappears, making it a fun and secure way to send short-term messages. But the study is about more than just secret

codes. It can also help scientists design better ways to remove ice from planes, trains, or electric wires during winter. It might also be useful for building materials on the Moon or Mars. Understanding how bubbles form in ice can even help researchers study glaciers, climate change, and find gas trapped in frozen layers. This shows how something simple like ice can be used in powerful and unexpected ways.

Key Takeaways: Frozen Secrets – Ice as a Message Keeper and Scientific Tool

1. New Way to Store Messages in Ice

- Scientists encoded information using patterns of air bubbles trapped in ice.
- By changing how water freezes, they shaped bubbles into dots and dashes (like Morse code).
- A camera and computer system decoded the messages.

2. Ice and Air Bubbles Explained

- As water freezes, most gases escape, but some get trapped, forming bubbles.
- Everyday ice cubes look cloudy inside because of these bubbles.
- Researchers manipulated freezing speed and direction to control bubble shapes.

3. Secret Communication Potential

- Messages stored in ice melt away, offering a natural, secure method to hide information.
- This idea has been compared to something out of a spy film.

4. Real-World Uses Beyond Messaging

- Better understanding of ice bubbles can help in designing de-icing systems for aircraft, trains, and power lines.
- Can assist in building bricks from lunar or Martian soil by learning how bubbles affect strength and insulation.

5. AI and Climate Research Possibilities

- AI can be trained to read ice bubble patterns to study past climate events.
- Could help detect natural gas deposits by recognising gas bubble shapes in frozen layers.

6. Scientific Importance of Ice

- Ice is not just frozen water—it holds clues about Earth's history, ancient viruses, and even future construction in space.
- This discovery adds a new tool to study and use ice creatively and scientifically.

Threat of GPS interference to global air&sea transportation; the solutions-Indian Express Explained

Science

Easy Explanation

GPS interference is becoming a serious problem for global air and sea transportation. It happens when someone blocks or fakes GPS signals, which aircraft and ships rely on for navigation. This can cause flights to turn back or ships to crash or run aground. Recent examples include a Delhi-Jammu flight and two ship incidents near Hormuz and Jeddah.

There are two types: **jamming**, which blocks GPS signals, and **spoofing**, which tricks the system into reading false locations. Spoofing is especially dangerous because it misleads pilots or captains without them realizing it.

These attacks are rising, particularly in conflict zones like the **Red Sea and Persian Gulf**, causing hundreds of incidents daily. To deal with this, aircraft and ships are using **backup systems** like inertial navigation, radar, or switching to **manual control**. Many are also using **multiple satellite systems** to avoid relying on just one (e.g., U.S. GPS).

India developed its own system, **NavIC**, after being denied GPS access during the Kargil War. It now helps both civilian and military users navigate independently and safely.

Key Takeaways:

1. What is GPS Interference?

- **Jamming** blocks signals; **spoofing** sends false ones to misguide navigation.

2. Real-World Impact

- Caused a Delhi-Jammu flight to turn back and ship mishaps in the Red Sea and Hormuz.

- Can lead to collisions, grounding, or loss of control.

3. Why It's Increasing

- Mostly seen in **conflict zones** with advanced electronic warfare.

- Over **700 spoofing incidents daily** have been reported in 2024–25.

4. How Aviation and Shipping Manage It

- Planes use **INS**, radio signals, and manual navigation methods.

- Ships switch to **manual steering**, radar, and lighthouse signals.

5. Need for Multi-System Navigation

- Use of **multiple satellite systems** (GPS, GLONASS, NavIC) increases reliability.

- Reduces dependency on any single country's system.

6. India's Strategic Response – NavIC

- ISRO's **NavIC** system provides positioning across India and nearby regions.

- Developed after GPS access was denied during past military operations.

The Pachgaon way-Indian Express Editorial

Environment

Easy Explanation

India's forest governance system relies heavily on outdated and often inaccurate data provided by the Forest Survey of India (FSI) and managed by the Forest Department (FD). These institutions have a history of misreporting forest resources, often to benefit industrial interests like paper and rayon factories, which led to over-extraction and ecological damage. For instance, inflated bamboo estimates enabled new mills, and unchecked effluents from factories polluted rivers and harmed communities. Independent assessments using satellite imagery in the 1970s revealed much lower forest cover than the FD claimed, but these findings were suppressed. In contrast, the village of **Pachgaon** in Maharashtra demonstrates a successful community-led forest management model under the **Forest Rights Act**. By managing their 1,000 hectares of bamboo forest, villagers have improved incomes, stopped harmful practices like forest burning, and enhanced forest regeneration. This approach is now seen as a model for sustainable and inclusive conservation, especially in ecologically sensitive areas like the Western Ghats.

Key Takeaways

1. Outdated and Inaccurate Forest Data

- FSI data is delayed, aggregated, and often misrepresents actual forest cover.

- Independent satellite data in the 1970s showed only 15% forest cover, not the 23% claimed by FD.

2. Forest Department Mismanagement

- FD is accused of being anti-science and anti-people.

- It enabled resource depletion and colluded with industries for overexploitation.

3. Industrial Exploitation Examples

- Bamboo estimates were exaggerated to support new paper mills.

- Grasim rayon factory polluted Kerala's Chaliyar river, harming aquatic life and human health.

4. Suppression of Scientific Assessments

- The government halted NRSC's satellite-based assessments that revealed true forest conditions.
- Made FSI the exclusive agency for forest data despite better technologies being available.

5. Pachgaon's Community Forest Rights Model

- Pachgaon villagers manage 1,000 hectares of forest under the Forest Rights Act.
- Earn income through sustainable bamboo sales and protect biodiversity.
- Voluntarily preserved 30 hectares as sacred grove and reduced forest fires.

6. Benefits of the Pachgaon Model

- Improved carbon sequestration and forest health.
- Reduced out-migration and ensured local livelihoods.
- Increased local pride and self-reliance.

7. Way Forward for India's Forests

- Sincere implementation of the Forest Rights Act, especially in biodiversity-rich regions like the Western Ghats.
- Democratize forest governance and involve local communities.
- Promote science-driven, people-centric, and nature-aligned conservation strategies.

Why is the ECI de-listing political parties?-The Hindu Text and Context

Polity

Easy Explanation

The Election Commission of India (ECI) is trying to clean up the list of political parties by de-listing those that haven't contested elections in the last six years and are untraceable. These are called Registered Unrecognised Political Parties (RUPPs), and while they enjoy benefits like tax exemptions and common election symbols, many exist only on paper. The problem is, under current law, the ECI cannot directly de-register parties unless fraud is proven or they act against the Constitution. This loophole has led to the rise of "letter pad parties" that misuse privileges without contributing to democracy. The ECI has identified 345 such parties for de-listing. Experts recommend amending the Representation of the People Act to empower the ECI with clear de-registration powers and enforce inner-party democracy. The Pachgaon-

like approach — community-led, transparent and law-abiding — is seen as a better model for reforming India's political ecosystem.

Key Takeaways

1. Registration of Political Parties

- Governed by Section 29A of the Representation of the People Act, 1951.
- Parties must uphold the Constitution and democratic principles.
- Registration reviewed for internal democracy provisions.

2. Benefits Enjoyed by RUPPs

- Tax exemption under Section 13A of the Income Tax Act.
- Common election symbol.
- Permission to nominate 20 ‘star campaigners’.
- Required to disclose donors (₹20,000+), accept large donations only via cheque or bank.

3. Why De-listing is Happening

- Many parties haven't contested elections for years or are physically untraceable.
- ECI aims to prevent misuse of tax benefits and ensure electoral integrity.
- 345 such parties identified; show-cause notices issued.

4. Legal Constraints

- ECI has **no explicit power** under the RP Act to de-register political parties for inactivity.
- Supreme Court (2002): de-registration only allowed if party acts fraudulently, violates constitutional principles, or is declared unlawful.

5. Misuse and 'Letter Pad Parties'

- Of 2,800+ RUPPs, only 750 contested in 2024.
- Rest are dubbed 'letter pad parties'—exist in name only, often misused for financial gains.

6. Reforms and Recommendations

- Law Commission (2015): de-register parties not contesting for 10 years.
- ECI (2016): RP Act needs amending to allow it to de-register parties.
- Suggestion to ensure **inner-party democracy** through statutory provisions.

7. Way Forward

- Amend RP Act for de-registration powers and internal democratic norms.
- Continue de-listing inactive or non-compliant RUPPs.
- Strengthen transparency, reduce financial fraud, and improve political accountability.

Why did Axiom-4 need 28 hours to reach the ISS? -The Hindu text and Context

Science

Easy Explanation

The Axiom-4 mission took 28 hours to reach the International Space Station (ISS) because space travel follows strict rules of **orbital mechanics**. After launch, the Dragon capsule didn't go straight to the ISS like a car driving 400 km — it had to slowly "catch up" in Earth's orbit. The capsule was placed in a lower orbit and moved slightly faster than the ISS, allowing it to slowly align with the station over time. It performed **small, carefully timed thruster burns** to raise its orbit gradually until it matched the ISS's speed and position — like merging onto a moving highway. The 28-hour timeline included built-in delays for system checks, crew rest, and safe docking procedures. The capsule had to approach very slowly in steps, with checks at each holding point. SpaceX's Dragon capsule was used because it supports a safer, more conservative docking profile. This ensured safety and comfort for the crew, including India's Group Captain Shubhanshu Shukla.

Key Takeaways

1. Why 28 Hours to Reach ISS?

- Orbital mechanics requires spacecraft to match both speed and position with the ISS.
- Dragon was first placed in a **lower orbit** and moved slightly faster than the ISS.
- Over time, it caught up and aligned for docking — **not a direct upward path**.

2. Use of Phasing Burns

- The capsule used **small, planned thruster burns** to gradually raise its orbit.
- These burns helped shift Dragon's path to intersect with the ISS orbit precisely.

3. Docking Safety Procedures

- Dragon slowed down near the ISS and followed a "corridor" at very slow speeds.
- **Multiple checkpoints** (at 400 m, 220 m, 20 m, and 1 m) ensured accurate alignment.

- **Go/no-go checks and LIDAR scans** were required at each stage to proceed.

4. Conservative Mission Profile

- The 28-hour schedule allowed for crew checkouts, meals, and rest.
- This profile was chosen to minimize fuel use and maximize safety.

5. Why SpaceX's Dragon?

- Dragon supports **automated, safe, and flexible rendezvous protocols**.
- Axiom and NASA chose it for its **reliability, reusability, and docking systems**.

6. Relevance of Crew Coordination

- Docking was timed to match **ISS crew wake cycles** and port availability.
- Group Capt. Shubhanshu Shukla was the **mission pilot**, playing a key role in docking decisions.

How will the new U.S. visa rules affect online privacy and security?-The Hindu Text and Context

International relations

Easy Explanation

The U.S. now requires students and other visa applicants (F, M, J visas) to make their social media accounts public. This move is meant to help officials "vet" applicants more easily and check for any posts they see as problematic — such as support for protests or anti-government views. Applicants must list **all social media handles from the last five years** and leave their accounts open to scrutiny. While deleting accounts might seem like a way to avoid this, some deleted accounts still show up in searches.

This policy is especially risky for minors, who often share private content. Making such accounts public can expose them to **online threats like harassment, stalking, identity theft**, and **targeted ads**. Critics say the policy invades privacy and discourages free expression. It also creates confusion as there's no clarity on how long accounts must stay public. While technically optional, not complying might hurt your visa chances. Digital rights experts have condemned this as unfair and ineffective in improving national security.

Key Takeaways

1. What Has Changed?

- U.S. visa applicants (F, M, J types) must **make social media accounts public**.
- Applies to platforms like Facebook, Instagram, YouTube, LinkedIn, and even Threads or personal blogs.

2. Why Is This Being Done?

- To **screen applicants' online behavior**, especially amid recent student protests.
- Authorities want to detect any perceived anti-government or anti-Israel views.

3. Duration and Requirements

- Applicants must declare **social media handles used in the past 5 years**.
- No official duration is mentioned for keeping accounts public, but it's advised from **application submission to post-entry clearance**.

4. Can You Avoid It?

- Deleting accounts is risky — some platforms retain data or keep old accounts active temporarily.
- Not making profiles public may **risk visa rejection**.

5. Privacy and Safety Risks

- Minors and students may face:
  - **Cyberbullying and stalking**
  - **Blackmail and hacking**
  - **Increased exposure to ads**
- Personal posts, photos, and content shared in confidence could be exploited.

6. Legal and Ethical Concerns

- Experts argue this violates **basic digital privacy norms**.
- It's **optional in theory**, but refusal could affect visa approval.
- Seen as intrusive, authoritarian, and **ineffective at actually improving security**.

7. Advice to Applicants

- Conduct a **social media audit** before going public.
- **Remove personal/sensitive content**.
- Minors should consult **trusted adults** before changing privacy settings.

Noble rot, the alchemist of wines, is setting fungal biology abuzz-The Hindu Science

Science

Easy Explanation

Botrytis cinerea, known as “noble rot,” is a fungus cherished by winemakers because it infects grapes and helps make sweet, high-quality wines by drying the berries and concentrating their sugars and flavors. But scientists recently made a surprising discovery: this fungus **can’t be cloned** like other organisms. Normally, a single nucleus in a cell holds a complete set of chromosomes, making cloning possible. However, in Botrytis and a related fungus (Sclerotinia), **the full set of chromosomes is split between two nuclei** — and no single nucleus has everything. This defies what we’ve known in biology.

The discovery came accidentally while trying to create mutants in the fungus. Researchers noticed something odd: none of the colonies showed normal cells — all were mutants. Investigating further, they found that the fungi’s ascospores (spores formed after mating) had two nuclei with **non-overlapping sets of chromosomes**. This is the first known case of such a system in fungi, and it raises new questions in genetics, cell biology, and evolution.

Key Takeaways

Role of Botrytis in Winemaking

- Botrytis cinerea causes grapes to lose water and concentrate sugars and flavors.
- It helps produce premium sweet wines like Sauternes (France) and Tokaji (Hungary).
- Infected grapes are rare and picked manually, making these wines expensive.

Unusual Genetic System

- In Botrytis and Sclerotinia, chromosomes are split across two nuclei.
- No single nucleus carries the full genetic set, making cloning impossible.
- This structure contradicts the standard model of nuclear organization.

Discovery Through Experiment

- Scientists exposed spores to UV light to induce mutations.
- All resulting colonies were mutants, which was unexpected.
- Molecular probes showed each nucleus had only part of the chromosome set.

Biological and Genetic Implications

- This raises fundamental questions in chromosome biology:
  - How are chromosomes allocated to different nuclei?
  - How is genetic integrity preserved during cell division?
  - What mechanisms control chromosome sorting?

Impact on Research

- The discovery has generated excitement in fungal biology.
- It may shift attention from traditional model organisms to these fungi.
- It challenges core principles of cell biology and opens new research directions.

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