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CANADIAN FM VISIT TO INDIA

Context

 The Canadian Foreign Minister paid a state visit to India where both sides agreed to restore relations, including relaunching the energy dialogue.

About

- The process of normalisation of diplomatic relations began when PM Modi met his Canadian counterpart, on the sidelines of the G7 summit in Kananaskis, Alberta, this year.
- It was followed by both countries reinstating high commissioners in each other's capitals.

Major Highlights of the Visit

- Both sides agreed to begin at the earliest, their ministerial-level discussions on:
 - bilateral trade and investments.
 - re-establishing the Canada-India Ministerial Energy Dialogue for cooperation on renewables and critical minerals.
 - relaunching the Joint Science and Technology Cooperation Committee,
 - and encouraging Canadian AI companies and researchers to participate in India's AI Impact Summit in 2026.
- India and Canada have also begun preliminary talks on SMR (Small Modular Technology) nuclear-powered reactors and other cooperation in civil nuclear energy.
- Both sides agreed on starting talks on the Comprehensive Economic Partnership Agreement (CEPA) again.

Brief on India-Canada Relations

- Historical Relations: India and Canada established diplomatic relations in 1947.
 - Shared democratic values and Commonwealth membership have underpinned ties.
 - Relations were historically strained after India's nuclear tests in 1974 and 1998, due to Canada's non-proliferation stance.
- Economic Cooperation: In 2024, India was Canada's seventh-largest goods and services trading partner, with two-way trade coming to \$33.9 billion while Canada's merchandise exports to India totalled \$5.3 billion.
- Civil Nuclear Cooperation: Nuclear Cooperation Agreement (NCA) was signed in 2010, operational since 2013.
 - A Joint Committee oversees implementation of the 2010 Agreement on "Cooperation in Peaceful Uses of Nuclear Energy".

- Space Cooperation: MoUs were signed in 1996 and 2003 between ISRO and Canadian Space Agency (CSA).
 - Cooperation includes satellite tracking, space astronomy, and commercial satellite launches.
 - ISRO's commercial arm ANTRIX has launched multiple Canadian nanosatellites.
- Science and Technology: Department of Earth Science and Polar Canada have started a programme for exchange of knowledge and scientific research on Cold Climate (Arctic) Studies.
 - A Memorandum of Cooperation between National Centre for Polar and Ocean Research (NCPOR) and POLAR Canada was signed in 2020.
- People-to-People Links: There are around 1.8 million Indo-Canadians and one million non-resident Indians in Canada, making up over 3% of its population.
 - India is the largest source of international students in Canada, with Indians making up around 40% of that group.
 - Strong cultural exchanges and vibrant diaspora influence bilateral perceptions.
- Multilateral Cooperation: Both countries cooperate in forums like the G20, Commonwealth, United Nations, and International Solar Alliance.

Areas of Differences

- Khalistani Extremism: India has repeatedly raised concerns over pro-Khalistan activities, including hate speech, violence, and attacks on Indian diplomatic missions.
- Trade and Investment Uncertainty: Ongoing talks on the Early Progress Trade Agreement (EPTA) were paused in 2023 amid political tensions.
 - Despite strong business interest, political issues slow down economic engagement.
- **Differing Geopolitical Outlooks:** India seeks stronger Indo-Pacific cooperation, but Canada's approach is often seen as inconsistent and influenced by domestic politics.

Conclusion

- India-Canada relations have strong foundations and significant potential, especially in trade, education, and clean energy. However, bilateral ties remain fragile, with political and security concerns acting as key irritants.
- The chill in bilateral relations now appears to be in the past, the future of the relationship depends on how both countries manage these differences while leveraging shared interests.

Source: TH



CIVIL REGISTRATION SYSTEM (CRS) 2023 REPORT

Context

 The Registrar General of India (RGI) released the "Vital Statistics of India Based on the Civil Registration System (CRS)", highlighting key demographic trends, a decline in births, a marginal rise in deaths, and regional variations in sex ratio at birth and registration levels.

Key Findings of the CRS 2023 Report

- **Births Registered:** 2.52 crore births were registered in 2023, around 2.32 lakh fewer than in 2022.
 - Overall birth registration stood at 98.4%, indicating near-complete coverage.
 - Institutional births: 74.7% of total registered births.

Deaths Registered:

- 86.6 lakh deaths were registered in 2023, a marginal increase from 86.5 lakh in 2022.
- A significant jump had been noted in 2021, when deaths rose to 102.2 lakh (up by 21 lakh from 2020) due to the second wave of COVID-19.

Sex Ratio at Birth (SRB):

- Lowest SRB: Jharkhand (899), Bihar (900), Telangana (906), Maharashtra (909), Gujarat (910), Haryana (911), and Mizoram (911).
- Highest SRB: Arunachal Pradesh (1,085), Nagaland (1,007), Goa (973), Tripura (972), and Kerala (967).
- Trend: Bihar continues to record the lowest SRB since 2020, highlighting persistent gender imbalance.

Timely Registration of Births:

- 11 States/UTs achieved over 90% registration within 21 days, including Gujarat, Tamil Nadu, Haryana, Goa, and Punjab.
- 5 States (Odisha, Mizoram, Maharashtra, Chhattisgarh, Andhra Pradesh) reported 80–90%, while 14 States remained between 50–80%.
- Sikkim data was not included in the report.

About Civil Registration System (CRS)

- The Civil Registration System (CRS) in India is a unified process for the continuous, permanent, and compulsory recording of vital events such as births, deaths, and stillbirths. It does not include registration of marriages or divorces.
- The system operates under the Registration of Births and Deaths (RBD) Act, 1969, which mandates compulsory reporting of all births and deaths to the designated Registrar of the area where the event occurred.

Source: TH

NOBEL PRIZE IN ECONOMICS 2025

Context

 The 2025 Economics Nobel prize was awarded to Joel Mokyr, Philippe Aghion, and Peter Howitt for their groundbreaking work on innovation and economic growth.

Historical Roots of Modern Economic Growth

- The research explored why sustained economic growth emerged only in the last two centuries despite technological progress throughout history.
- It argued that before the Industrial Revolution, technological knowledge was largely "prescriptive" i.e. people knew how to make things work but not why they worked.
- The Scientific Revolution during the 16th–17th centuries transformed this into "propositional" knowledge i.e. linking empirical understanding with scientific reasoning.
- This fusion of science and technology created the foundation for "useful knowledge," enabling systematic innovation.

Economics of Creative Destruction

 Their 1992 model mathematically formalised how creative destruction, where new technologies replace old ones, drives long-term macroeconomic growth.

In this framework:

- Firms invest in R&D to create superior products or processes.
- Successful innovators earn temporary monopoly profits.
- Over time, they are replaced by new innovators
 a cycle of creative destruction.
- This process explains how aggregate GDP grows steadily, even as individual firms rise and fall.
- Their general-equilibrium model links all markets (goods, labor, and capital), showing how microlevel innovations translate into macroeconomic stability.
- They also demonstrated that R&D has positive social spillovers, justifying public investment in research and education.

Significance for India and other developing economies

- Invest in Science and Human Capital: Expand R&D funding, foster innovation hubs, and improve technology transfer between research institutions and industries.
- Balance Adoption and Innovation: While India can benefit from technology imports and FDI,

long-term growth demands indigenous innovation capacity supported by start-up ecosystems and simplified regulations.

- Strengthen Competition: Prevent excessive market dominance in sectors like telecom and technology to maintain a level playing field for new entrants.
- Resilient Labor Market Policies: Embrace "flexicurity"i.e. protect workers through training and social insurance rather than rigid job protection.
- Promote Inclusive Innovation: Align technology policy with national priorities like renewable energy, digital inclusion, and sustainable manufacturing.

Nobel Economics Prize

- The award is officially known as the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel.
- This prize was established in 1968 by the central bank of Sweden as a memorial to Alfred Nobel.
 - He is a 19th-century Swedish businessman and chemist, is known for inventing dynamite and establishing the five original Nobel Prizes.
- The first winners of the economics prize, in 1969, were Ragnar Frisch and Jan Tinbergen.

Source: IE

STRENGTHENING AND SAFEGUARDING DAMS IN INDIA

Context

 Recently, the Supreme Court of India issued notices to various stakeholders calling for urgent directions to reinforce the aging structure of the 130-year-old Mullaperiyar dam.

Mullaperiyar Dam

- It is a gravity dam built on the Periyar River in the Idukki district of Kerala that was constructed between 1887 and 1895.
- The dam is operated and maintained by Tamil Nadu, under a 999-year lease agreement signed in 1886 between the Maharaja of Travancore and the British government.
- It diverts water to the **Vaigai basin in Tamil Nadu** for irrigation across 68,558 hectares.

India's Dam Landscape

- According to the National Register of Large Dams (NRLD) maintained by the Central Water Commission (CWC), India ranks third globally

 after China and the United States — in the number of large dams, with over 6,000 operational dams and hundreds more under construction.
- These dams serve critical functions in irrigation (supporting agriculture across vast regions);
 hydropower generation; flood control; and drinking water supply.
- There are concrete gravity dams (e.g., Bhakra Dam), earthen dams (e.g., Banasura Sagar Dam), rock-fill dams, and arch dams (rare in India), based on topography, geology, and hydrological needs.

Why Dam Safety Is Urgent?

- Aging Infrastructure: Nearly 80% of these dams are over 25 years old, over 1,000 dams are between 50–100 years old, and more than 230 are over a century old.
 - Many were built using outdated engineering standards and are now vulnerable to structural fatigue, sedimentation, and climate-induced stress.
 - It poses serious risks to lives, property, and ecosystems, especially in the face of climate change and extreme weather events.
- Inconsistent Safety Practices: Dam safety protocols vary across states and agencies, leading to gaps in surveillance, inspection, and maintenance.
 - The Central Government has been working to unify these practices through the Dam Safety Act, 2021, and the creation of the National Dam Safety Authority (NDSA).
- Risk of Catastrophic Failure: Events like dam collapse due to a glacial lake outburst flood (GLOF) underscore the urgency of robust safety protocols.
 - The Supreme Court has repeatedly flagged concerns over dams like Mullaperiyar, warning that a breach could endanger lakhs of lives.

Legal and Institutional Framework

- **Dam Safety Act, 2021:** Enacted to ensure surveillance, inspection, operation, and maintenance of dams. It mandates:
 - Hazard classification of dams;
 - Emergency action plans;
 - Periodic safety reviews by independent panels;
 - It mandates the formation of State Committees and National Authority to oversee dam safety.

- National Dam Safety Authority (NDSA): It coordinates dam safety efforts across states.
 - It maintains the National Register of Large Dams and promotes capacity building, technical standards, and public awareness.
- State-Level Implementation: States have formed Dam Safety Review Panels and conducted preand post-monsoon inspections of thousands of dams.
- Dam Rehabilitation and Improvement Project (DRIP): It was launched by the CWC with World Bank support. It focuses on rehabilitation of aging dams; improved safety monitoring; and capacity building for dam operators and engineers;
 - **DRIP Phase II & III** are currently underway, covering over 700 dams across 19 states.
- Digital Monitoring and Reservoir Management: The Dam Safety Organisation of CWC has launched:
 - Web-based Reservoir Storage Monitoring System;
 - FloodWatch India App for real-time flood alerts and reservoir data.

Strengthening Measures

 Retrofitting and Rehabilitation: structural upgrades for high-risk dams. Prioritize

- Use Al & Analytics: Use sensors and real-time data systems to track dam health.
- Climate Resilience: Update safety norms to account for changing hydrological patterns.
- Public Awareness and Transparency: Publish safety audits and emergency plans for public scrutiny.

Source: TH

ACHIEVING CENTRE'S ROOFTOP SOLAR TARGETS TO REMAIN A CHALLENGE: STUDY

Context

 A report on the performance of PM Surya Ghar Yojana has been jointly published by the Institute for Energy Economics and Financial Analysis (IEEFA) and JMK Research & Analytics.

Major Highlights

- Target Achieved: Despite a near four-fold increase in applications between 2024 and 2025, only 13.1% of the target 1 crore solar rooftop installations, has been achieved.
 - In this scenario, the FY2027 target [of 1 crore installations] continues to be viewed as a considerable challenge.

- Subsidies Released: Just 14.1% of the allocated 65,700 crore in subsidies has been released till July 2025.
- Share in Total Capacity: As of July 2025, the 4.9 GW of installations added under the PMSGY accounted for approximately 44.5% of the country's total residential rooftop capacity.
- **Leading State:** Gujarat leads all States with the highest installed residential rooftop solar capacity of 1,491 MW, followed by Maharashtra, Uttar Pradesh, Kerala, and Rajasthan.

• Concerns:

- Approval Delays: The procedural approval process is slow, taking 45–120 days, which causes project delays.
- Domestic Content Restriction (DCR): The scheme provides incentives only for solar systems fully manufactured in India.
- **Higher Costs:** Domestic DCR components are I12/watt costlier than imported ones, reducing the cost-effectiveness of installations.
- Supply Constraints: Domestic DCR module production is fragmented and limited, leading to delivery delays of up to two months.
- Consumer Behaviour: Due to high prices and long waits, many consumers prefer non-DCR systems, choosing faster installation over subsidy benefits.

Recommendations

- Domestic Supply vs. Exports: Without stronger measures to prioritise domestic module supply for PMSGY instead of exports, and to mitigate anti-dumping-related cost pressures, the affordability and timely rollout of residential rooftop solar projects will remain uncertain.
- Need for State-Level Targets: Experts emphasize the need to set clear, time-bound rooftop solar capacity targets at the State level to create a coherent national vision and ensure effective policy execution across regions.

PM Surya Ghar: Muft Bijli Yojana

- It was launched in 2024 and aims to provide free electricity to households by facilitating the installation of rooftop solar panels.
- Installation Targets:
 - By October 2025: Reaching 40 lakh,
 - March 2027: 1 crore households.
- The scheme offers a subsidy of up to 40% to households, making renewable energy more affordable and accessible.
- Eligibility:

The household must be an Indian citizen.

The household must own a house with a roof that is suitable for installing solar panels.

The household must have a valid electricity connection.

The household must not have availed any other subsidy for solar panels.

Model Solar Village:

- An allocation of \$\pi 800\$ crore has been designated for this component, with \$\pi 1\$ crore provided to each selected Model Solar Village.
- To qualify as a candidate village, it must be a revenue village with a population of over 5,000 (or 2,000 in special category states).
- This initiative aims to promote solar energy adoption and empower village communities to achieve energy self-reliance.



 Achievement: PM Surya Ghar: Muft Bijli Yojana (PMSGMBY) has achieved a historic milestone with 10 lakh homes now solar-powered as of March 2025.

Source: TH

NEWS IN SHORT

UNESCO'S NEW VIRTUAL MUSEUM OF STOLEN CULTURAL OBJECTS

In News

 UNESCO officially launched the Virtual Museum of Stolen Cultural Objects at MONDIACULT 2025.

UNESCO's new Virtual Museum of Stolen Cultural Objects

- It was developed in response to Member States' call for coordinated action against illicit trafficking and it is the first global initiative of its kind.
- It offers a globally accessible, immersive digital platform to raise awareness about stolen heritage.
- It currently showcases around 240 missing objects from 46 countries, with the goal of gradually "emptying itself" as items are recovered and returned to their countries of origin.
- It was introduced by architect Francis Kéré and uses 3D modelling and virtual reality to digitally reconstruct stolen cultural items submitted by Member States.
- It features interactive tools, educational content, community testimonies, and a dedicated space for showcasing successful restitution cases.
- It is financially supported by Saudi Arabia and implemented with INTERPOL.

Do you know?

 Among the Indian entries are two ninth-century sandstone sculptures from the Mahadev Temple in Chhattisgarh—a Nataraja and a Brahma representing core Hindu philosophical themes of creation and dissolution.

Objectives

• It aims to foster international cooperation, promote best practices, and engage global audiences in safeguarding cultural heritage.

Source: IE

PASNI PORT

In News

 Pakistan has recently offered the United States the opportunity to develop and operate Port Pasni as a commercial terminal, enabling US access to Pakistan's critical minerals.

About Port Pasni

- Location: Pasni Port is situated in the Gwadar district of Balochistan, alongside the Arabian Sea. It is approximately 113 km east of the Chinaoperated Gwadar Port and roughly about 286 km from Iran's Chabahar Port.
- Facilities: The port currently hosts a fish harbour, cargo jetty, and base for the Pakistan Maritime Security Agency (PMSA).
- Natural Depth: Its deep-water harbour makes it suitable for major shipping and mineral export operations.



Strategic Significance

- Regional Hub: Its location near Gwadar (China-backed) and Chabahar (India-backed, Iran) positions Pasni as a central node in a possible "maritime triangle"—linking South, West, and Central Asia.
- Strategic Rivalry: With China at Gwadar and India at Chabahar, US presence at Pasni would bring all three major powers into close proximity, potentially escalating the competition over trade routes and mineral access.
- Trade and Security: The port could facilitate global supply chains for critical minerals, energy, and security cooperation while forming a powerful axis for regional trade with South, West, and Central Asia.

Source: TH

VISHWAS SCHEME

In News

- The Vishwas Scheme was launched in the 238th meeting of the Central Board of Trustees (CBT) of the Employees' Provident Fund.
 - CBT is a tripartite board with members from the Central and State Governments, Employers, and Employees, assisted by EPFO.

About

- Objective: To reduce litigation through rationalised penal damages. Litigation has been high due to steep penalties imposed for delayed PF contributions.
- Penal Damage Rates: Earlier, penal damages ranged from 5% to 25% per annum (and, for pre-2008 delays, even higher rates), leading to over 6,000 pending cases and Rs 2,406 crore in outstanding penal damages.
 - Now, under Vishwas, the penal rate is streamlined:
 - Flat 1% per month for most defaults.
- Graded rates: 0.25% per month for defaults up to two months, and 0.50% per month for defaults up to four months.
- Duration: The scheme will be operational for six months and may be extended for another six months.

Source: TH

DELHI DECLARATION ON 6G

In News

 Recently, the leading global 6G research alliance including Bharat 6G, 6G-IA, ATIS' Next G Alliance issued a Joint Declaration to develop 6G as a global public good at the International Bharat6G Symposium 2025 in New Delhi.

Delhi Declaration on 6G Alliance

- The declaration endorsed key principles to ensure that 6G networks are trusted, secure, resilient, open, inclusive, affordable, and sustainable.
- It emphasized trustworthy-by-design systems, Al-native safeguards, privacy-preserving architectures, and multi-vendor interoperability.
- Sustainability was central, calling for energyefficient, repairable, and recyclable infrastructure.

About 6G (sixth-generation wireless)

 6G (sixth-generation wireless) is the nextgeneration cellular technology following 5G, expected to offer numerous advantages including significantly higher data speeds, drastically reduced latency, and the integration of communication and sensing capabilities within the network

Source: PIB

LEAPS 2025

Context

 Union Minister for Commerce and Industry, launched the Logistics Excellence, Advancement, and Performance Shield (LEAPS) 2025.

About

- LEAPS is a flagship initiative of the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry.
- Purpose: To benchmark and recognize excellence in the logistics sector, promoting efficiency, sustainability, innovation, and technology adoption.
- Alignment: Supports National Logistics Policy (2022), PM GatiShakti, and initiatives like Make in India and Atmanirbhar Bharat.

Objectives:

- Promote best practices in logistics operations.
- Encourage ESG (Environmental, Social, Governance) compliance and green logistics.
- Foster collaboration between government, industry, and academia.
- It covers a wide spectrum of logistics players

 including air, road, sea, and rail freight operators; warehousing; multimodal transporters;
 MSMEs; Startups; and Academia.

Source: PIB

RHODAMINE B

In Context

Scientists at the Raman Research Institute (RRI) in India have developed an effective and sensitive method to detect toxic molecules like **Rhodamine** B using the coffee-ring effect combined with nanotechnology.

Coffee-Stain Effect Mechanism

 The coffee-ring effect is a natural phenomenon where, as a droplet of liquid evaporates, capillary flow moves suspended particles from the center to the edge of the droplet, resulting in a characteristic ring-shaped pattern of particle deposition.

About Rhodamine B

- Rhodamine B is a water-soluble synthetic dye known for its bright pink fluorescent color.
- It is widely used in scientific research including fluorescence microscopy, flow cytometry, and biochemical assays such as ELISA.
- Rhodamine B is toxic and has carcinogenic potential; it can cause damage to skin, eyes, and the respiratory system.

Source: TH

SEALS AND BIRDS UNDER THREAT IN IUCN'S NEW RED LIST

Context

 Arctic seals and global bird populations are facing severe threats from climate change and human activities, as highlighted in the latest IUCN Red List of Threatened Species released at the World Conservation Congress in Abu Dhabi.

Key Findings of the Report

- Status of Arctic Seals: The IUCN Red List now includes 172,620 species, of which 48,646 are threatened with extinction.
- The hooded seal has been moved from Vulnerable to Endangered status.
 - Bearded and harp seals are now classified as Near Threatened.
- Status of global bird populations: 61% of bird species are experiencing population decline, up from 44% in 2016.
 - Out of 11,185 bird species, 1,256 (11.5%) are globally threatened.
- The green sea turtle has been downlisted from endangered to least concern after its population rose by 28% since the 1970s.

Causes of Decline

- Climate Change: The Arctic is warming four times faster than the global average, rapidly melting sea ice essential for ice-dependent seals.
- Human Activities: Maritime traffic, industrial fishing, oil extraction, and mining have increased risks to marine species.
- Logging and agricultural expansion are leading to large-scale tropical forest destruction, threatening bird populations, especially in regions like Madagascar, West Africa, and Central America.

About IUCN

- Created in 1948, IUCN is now the world's largest and most diverse environmental network, harnessing the knowledge, resources and reach of our more than 1,400 Member organisations.
- IUCN (International Union for Conservation of Nature) stands for the International Union for Conservation of Nature, a global membership union of governments, civil society organizations, and experts dedicated to nature conservation and sustainable development.
- **Headquarters:** Gland, Switzerland.
- IUCN Red List: The world's most comprehensive source of information on the global extinction risk status of plants, animals, and fungi.

Source: TH

SNOW LEOPARDS

In News

The snow leopard, known as the elusive "ghost of the mountains", has the lowest genetic diversity among big cats, even lower than the critically endangered cheetah.

More about the news

 A Stanford University study, using wholegenome sequencing of 37 snow leopards, concluded that this low diversity is likely due to a persistently small population over evolutionary history rather than recent inbreeding.

About Snow Leopards (Panthera uncia)

- Physical traits: Long tail acts as a rudder for balance.
- **Habitat:** Rugged mountain ranges across **12 Asian countries**, including India.
- **Populations: 4,500–7,500 globally**, with India accounting for **10–15%**.



- **Conservation Status:** Vulnerable (IUCN); listed in Schedule-I of the Wildlife (Protection) Act, 1972.
- **Threats:** Climate change, habitat loss, reduced prey, retaliatory killings, and poaching.
- Cultural significance: State animal of Himachal Pradesh and Ladakh.

Source: TH

INDIAN WOLF

In News

 The International Union for Conservation of Nature (IUCN) has for the first time evaluated the Indian wolf (Canis lupus pallipes) separately, potentially recognizing it as a distinct species within the Canis genus.

Indian wolf (Canis lupus pallipes)

- The Indian Wolf is primarily found in India and Pakistan, with its historic range confined south of the Himalayas.
 - It is mainly found across central, western, and northern India, spanning sixteen states with major populations in Maharashtra, Madhya Pradesh, Gujarat, Rajasthan, and Karnataka.
- Threats: Habitat loss, persecution, and humanwildlife conflict.
- Protection status: It is one of the most ancient wolf lineages, and is now listed as Vulnerable on the IUCN Red List.

Source: PIB



