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INDIA AND NEW ZEALAND SIGNED FTA

Context

- India and New Zealand signed the **India- New Zealand Free Trade Agreement (IN- NZ FTA)**.

About

- The India–New Zealand Free Trade Agreement** was concluded in **nine months** and marks a key milestone in India's engagement with developed economies.
- India is **signing its seventh FTA** in the last three and a half years, with plans for agreements with the **European Union and the United States**, taking the total to **nine FTAs with 38 advanced economies**, covering nearly 65–70% of global GDP.

What is a Free Trade Agreement (FTA)?

- A Free Trade Agreement (FTA) is a pact between two or more countries where they agree to:
 - Reduce or eliminate customs duties on goods;
 - Liberalise trade in services;
 - Provide investment protection;
 - Ensure safeguards for intellectual property rights (IPR).

Major Highlights of the FTA

- Zero-Duty Market Access:** India- New Zealand FTA **eliminates duty on 100% of Indian Exports**.
 - India has offered market **access in 70.03%** of the **tariff lines while keeping 29.97 % tariff lines in exclusion**.

INDIA - NEW ZEALAND FTA Signed

Expanding Markets and Opportunities

- Zero duty on 100% of goods exports** Upon entry into force
- Fast track mechanism** For inputs for our exports under our Foreign trade Policy
- Tariff elimination across all** Tariff lines

Farmers, MSMEs, youth, workers, artisans, women key beneficiaries of India's growing export competitiveness

Source: Ministry of commerce and industry

- FDI Commitment:** New Zealand will invest **USD 20 billion** in India over 15 years, strengthening long-term economic ties.
- Organic Primary Products:** Mutual recognition of organic certification to be agreed between the two sides.
- MSME Cooperation:** Institutional linkages to help small businesses access trade-related information and global markets.
- Technical Assistance:** Cooperation has been agreed in AYUSH, audio visual industries, tourism, sports and traditional knowledge systems.
 - The FTA promotes India's AYUSH systems internationally, encourages medical value travel, and positions India as a global wellness hub.
- MFN Treatment:** Commitment across 118 services sectors, with Most-Favoured Nation (MFN) treatment in 139 sectors.
- Student Mobility:** New Zealand signed Annex on Student Mobility and Post Study Work Visa for the first time with any country.
 - Indian students can work up to 20 hours per week while studying, even if there are policy changes in future, with extended post-study work visas (STEM Bachelor: 3 yrs; Master's: up to 3 yrs; Doctorate: up to 4 yrs).
- Professional Pathways:** A quota of 5,000 visas for skilled Indians for stay upto 3 years in the sectors of interest to India.
- Working Holiday Visa:** 1,000 young Indians annually can avail multiple entry in New Zealand for a period of 12 months.
- Certain products are kept in exclusion** from the dairy and agriculture sector of India, which is a huge win for labour intensive sectors.
 - Dairy, animal products, vegetable products, sugar, artificial honey, Animal, vegetable or microbial fats and oils, Arms and Ammunition, Gems and Jewellery, Copper and Articles, Aluminium and articles.

Significance to India from FTA

- The India–New Zealand FTA secures **duty free or preferential access across a wide range of sectors**.
 - These gains are expected to boost India's exports, create jobs, and strengthen the competitiveness of Indian industries in the Oceania region.
- Dedicated cooperation in Ayush and Indian traditional knowledge** has been agreed.
 - Engagement with **New Zealand's indigenous Maori communities** to promote

cultural exchange and mutual respect. This strengthens India's **soft power and global recognition of its heritage**.

- **Gains in Horticulture Sector:** New Zealand has agreed on **focused Action Plans for kiwifruit, apples, and honey** to improve productivity, quality, and sectoral capabilities of these **fruits growers in India**.
 - ♦ Projects for premium apple cultivators and sustainable beekeeping practices will enhance production and quality standards.
 - ♦ This access will be managed through a **Tariff Rate Quota (TRQ) system** with Minimum Import Price and seasonal imports, ensuring consumer choice while protecting domestic farmers.

India-NZ Bilateral Ties

- Currently, New Zealand is **India's second-largest trading partner in Oceania**.
 - ♦ In 2024, New Zealand's imports stood at USD 47 billion, while exports were USD 42 billion.
- **Services Trade:** India's services exports to New Zealand grew by 13% in 2024, reaching USD 634 million. Major sectors include travel, IT, and business services.
- **In 2024-25**, the exports from India to New Zealand were higher than imports from New Zealand, maintaining a positive trade balance with the country.

Conclusion

- The India–New Zealand Free Trade Agreement opened new avenues for comprehensive economic cooperation.
- From farmers and MSMEs to students and skilled professionals, the gains from this Agreement are expected to be broad-based.
- It reinforces India's position as a trusted, forward-looking global partner and advances the vision of a globally integrated Viksit Bharat 2047.

Source: PIB

CHINA SURPASSES US IN RESEARCH SPENDING

Context

- According to a report from the Organisation for Economic Co-operation and Development, **China has overtaken the US in research and development spending, crossing the \$1 trillion mark**.

Major Highlights

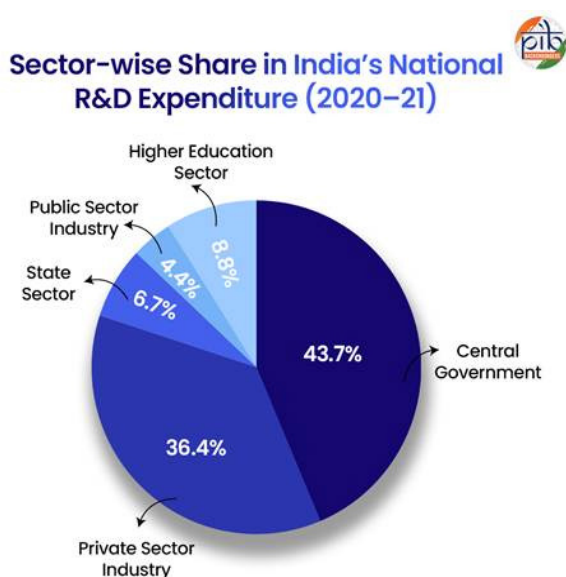
- **R&D Spending Parity Achieved:** China's R&D spending has matched and surpassed the US (Purchasing Power Parity terms).
 - ♦ Both countries have crossed the \$1 trillion research spending mark.
- **Legacy of US Scientific Leadership:** US breakthroughs include the internet, mRNA vaccines, semiconductors, microprocessors, and GPS.
 - ♦ This dominance was built on strong public investment and open scientific culture.
 - ♦ Scientific research contributed over 20% of US productivity growth since World War II, linking innovation directly with economic strength.
- **China's Low Base to Rapid Rise:** In 1980, China was among the lowest R&D spenders globally. It has since pursued systematic, state-driven investment in science and technology.
- **China Leading in Research Output:**
 - ♦ Surpassed US in top 1% highly cited papers (2019).
 - ♦ Became global leader in total cited papers (2022).
 - ♦ Overtook US in total scientific publications (2024).
 - ♦ In 2024, China filed ~1.8 million patents, far exceeding the US (~603,000). This indicates a strong innovation ecosystem and commercialization push.

Reasons Associated with US Declining Share

- **Declining Public Investment in R&D in USA:** US federal R&D spending has steadily fallen from 1.86% of GDP (1964) to ~0.66% (2021). Shift from public to private funding has reduced support for basic, open science.
- **Shift from Research to Development:** Private sector dominates (~78% of R&D) but focuses on commercial development, no open research is leading to a shrinking pool of openly shared scientific knowledge.
- **Policy-Induced Constraints on Scientific Openness:** There are increasing restrictions on international collaboration, visas, and access.
 - ♦ Security-driven policies undermine the open exchange system that fueled US scientific leadership.
- **Talent Drain and Long-Term Risks:** Immigrants contributed ~40% of US Nobel Prizes (since 2000), but inflow is declining.
 - ♦ Cuts in funding, fewer grants, and reduced openness are causing scientist exodus, which is hard to reverse.

R&D Expenditure in India

- India's Gross Expenditure on Research and Development (GERD) as a percentage of GDP remained between **0.6% to 0.7%** which is **below the global average** and lower than countries like **China, South Korea and the US**.
- Another factor contributing to this is the **relatively low investment by India's private sector**, accounting for **only around 36%**, whereas in the aforementioned countries, **private sector contributions are more than 70%**.
- The Central Government contributes **43.7% of total R&D expenditure**.



Need for Funding in R&D

- **Economic Growth:** Drives new industries, improves productivity, and enhances global competitiveness.
- **Technological Advancement:** Facilitates breakthroughs in fields like AI, biotechnology, and renewable energy.
- **Social Challenges:** Helps address poverty, healthcare, education, and environmental sustainability issues.
- **Job Creation:** Innovation generates employment opportunities and stimulates entrepreneurship.
- **Global Positioning:** Positions India as a global leader in science, technology, and knowledge.
- **Attracts Investment:** Promotes foreign and domestic investments in research-driven sectors.

Government Initiatives

- **Research, Development and Innovation (RDI) Scheme:** Approved with a 1 lakh crore corpus, this scheme aims to energise private-sector R&D and deep-tech startups.

- It offers long-term, low- or zero-interest loans, equity investments, and funds a new Deep-Tech Fund of Funds via the Anusandhan National Research Foundation (ANRF).
- **Anusandhan National Research Foundation (ANRF):** The ANRF established in 2023, provides high-level strategic direction for research, innovation, and entrepreneurship in science and technology.
 - The Foundation aims to mobilise funds amounting to 50,000 crore during 2023–28 through multiple streams, including the ANRF Fund, Innovation Fund, Science and Engineering Research Fund, and Special Purpose Funds.
- **National Geospatial Policy, 2022:** It seeks to position India as a global leader in the geospatial sector by 2035.
 - The policy liberalises access to geospatial data, encouraging its use in governance, business, and research.
- **Indian Space Policy, 2023:** It builds on the space reforms introduced in 2020, which opened the domain to non-governmental entities for end-to-end participation.
 - It aims to enhance space capabilities, promote a flourishing commercial space industry, and foster collaboration between public and private entities.
- **National Quantum Mission:** Allocated 6,003.65 crore for 2023–31, to advance quantum technologies through scientific and industrial R&D.
- **BioE3 Policy, 2024:** It encourages the creation of Biomanufacturing and Bio-AI hubs, along with a national Biofoundry network, to accelerate technology development and commercialisation.
- **National Supercomputing Mission (NSM):** Launched in 2015, the initiative empowers universities, research institutions, and government agencies with state-of-the-art supercomputing systems connected through the National Knowledge Network.
- **India Semiconductor Mission (ISM):** Established in 2021, the mission seeks to build a robust ecosystem for semiconductor and display manufacturing.
 - India has already approved 10 semiconductor projects across six states, including the first commercial Silicon Carbide fabrication facility in Odisha.
- **India AI Mission:** The IndiaAI Mission embodies the vision of "Making AI in India and Making AI Work for India."

- ♦ It is advancing rapidly, having already increased computing capacity from an initial target of 10,000 GPUs to 38,000 GPUs, ensuring accessible AI infrastructure for startups, researchers, and industries.
- **Atal Innovation Mission (AIM):** To foster innovation at the grassroots level by providing support to students, startups, and entrepreneurs.
- **The National Mission on High-Yielding Seeds** will focus on strengthening the research ecosystem and developing high-yielding, pest-resistant, and climate-resilient seeds, aligning with DBT's efforts in agricultural biotechnology.

Source: DTE

RBI TIGHTENS BAD LOAN RULES TO ALIGN WITH GLOBAL NORMS

In News

- The Reserve Bank of India (RBI) has tightened the rules governing classification of bad loans, definition, and recovery, to align with globally-accepted standards, effective April 1, 2027

What is a Non-Performing Asset (NPA) or Bad Loans ?

- It refers to a loan in which the borrower has not paid either principal amount or interest for over 90 days.
- It is classified into three types: substandard assets (overdue up to 12 months), doubtful assets (overdue beyond 12 months with uncertain recovery), and loss assets (considered largely irrecoverable).

Factors driving Bad Loans

- **Financial instability:** It can result in NPAs when borrowers lose their jobs, experience business losses, or sudden decreases in income.
 - ♦ High interest rates raise the burden of repayment, and borrowers find it harder to repay EMIs.
- **Excessive borrowing** without careful planning often results in borrowers being unable to manage multiple loan repayments.
- **Aggressive lending & poor due diligence:** Banks extended credit without robust risk assessment, especially during high-growth phases.
- **Economic slowdown & sectoral stress:** Industries like infrastructure, power, and telecom faced demand shocks, leading to defaults.
 - ♦ Market fluctuations impact businesses, leading to cash flow problems that affect loan repayments.
- **Wilful defaults:** Promoters diverted funds or failed to repay despite capacity.

- **Unexpected** events such as medical emergencies, accidents, or economic downturns can push borrowers into default.

Impacts

- **Weakens the Banking Sector :** Banks are the backbone of India's financial system, but high NPAs reduce their income, increase losses, and force higher provisions.
 - ♦ This weakens their financial health and limits lending, thereby slowing economic growth.
- **Reduces Credit Flow to Businesses:** High NPAs make banks cautious, restricting credit for businesses and infrastructure projects.
 - ♦ This slows growth, job creation, and development, while also reducing overall economic competitiveness.
- **Increases Cost of Borrowing:** To cover NPA losses, banks may raise lending rates, making loans costlier.
 - ♦ This discourages investment, reduces borrowing, and slows capital formation and economic growth.
- **Impacts Government Finances:** High NPAs in public sector banks force government recapitalisation using taxpayer money, increasing fiscal burden and reducing funds for welfare, healthcare, education, and infrastructure, thereby impacting national development priorities.
- **Weakens Investor Confidence:** High NPAs indicate banking instability, reducing investor confidence and investment inflows.
 - ♦ This weakens economic growth and India's attractiveness for FDI and global markets.
- **Affects Employment and Income Levels:** High NPAs reduce bank lending, making it harder for industries to expand and operate.
 - ♦ This causes job losses, lower incomes, reduced consumption, and a broader slowdown across sectors like manufacturing, retail, and construction.

Steps Taken by Government & RBI

- **Insolvency and Bankruptcy Code:** The Insolvency and Bankruptcy Code (IBC) was introduced in 2016 to ensure time-bound resolution of loan defaults through revival or liquidation of companies.
 - ♦ The 2026 amendment passed by Parliament aims to make the process faster and more efficient by adding provisions for out-of-court settlements, group insolvency, and cross-border insolvency.
- **Strengthening Debt Recovery Tribunals (DRTs):** Pecuniary jurisdiction of Debt Recovery Tribunal (DRTs) was increased from Rs. 10 lakhs

to Rs. 20 lakhs to enable the DRTs to focus on high value cases resulting in higher recovery for the banks and financial institutions.

- **SARFAESI Act:** The SARFAESI Act, 2002 allows banks and financial institutions to recover bad loans by taking and selling pledged assets without court approval.
- **Stressed asset management verticals:** Public Sector Banks have set-up specialized stressed assets management verticals and branches for effective monitoring and focused follow-up of NPA accounts, which facilitates quicker and improved resolution/ recoveries.
 - ♦ Deployment of Business correspondents and adoption of the Feet-on-street model have also boosted the recovery trajectory of NPAs in banks.
- **Bad Bank :** In 2021, the RBI granted a licence to the 6,000 crore National Asset Reconstruction Company Ltd. (NARCL), enabling it to begin operations as a “bad bank” to help manage and resolve stressed assets.

Latest Master Directions of RBI

- The RBI has revised rules on bad loan classification, recovery, and provisioning to align with global standards.
- **Key changes include:**
 - ♦ **Stricter NPA tagging:** If any one loan of a borrower becomes a Non-Performing Asset (NPA), all loans of that borrower will be treated as NPAs.
 - However, classification still depends on the 90-day overdue rule.
 - A borrower can return to “standard asset” status only after clearing all dues across all facilities.
 - ♦ **Automation requirement:** Banks must use automated systems to identify NPAs instead of manual tagging.
 - ♦ **New provisioning model (Expected Credit Loss - ECL):** Banks will now estimate potential loan losses in advance using a three-stage framework based on credit risk levels, replacing the older “incurred loss” model that triggered provisions only after default (90+ days overdue).
 - ♦ **Change in interest metric:** The ECL will be calculated using the Effective Interest Rate (EIR), which factors in expected cash flows rather than just contractual interest rates.
 - ♦ **Phased implementation:** New loans from April 2027 will follow the EIR-based ECL system, while older loans must transition by March 2030.

What more needs to be done?

- **Improve credit assessment** through better due diligence and risk analysis before giving loans.
- **Strengthen loan monitoring** to detect defaults early and enable timely action.
- **Use restructuring or rescheduling** to support borrowers facing temporary financial stress and prevent NPAs.
- **Adopt digital tools** like AI, machine learning, and big data to predict and monitor NPAs.
- **Implement stronger regulatory reforms** to improve recovery systems like IBC.
- **Increase collaboration with Asset Reconstruction Companies (ARCs)** to transfer stressed assets and improve bank balance sheets.

Conclusion

- Non-Performing Assets (NPAs) are loans where borrowers fail to repay principal or interest, reducing bank income and affecting financial stability.
- Although the Government and RBI have introduced reforms such as the IBC, recapitalisation, and stricter regulation that have improved the situation, effective control of bad loans also depends on stronger internal bank processes.
- Going forward, emphasis should be on preventing defaults, ensuring faster resolution, and improving bank governance to maintain a stable and efficient banking system.

Source :TH

G7 DECLARATION ON DESERTIFICATION

Context

- Recently, the **G7 Environment Ministers** have elevated desertification, land degradation and drought to the core of their agenda, and termed these conditions ‘**systemic global challenges**’ and ‘**security risk multipliers**’.

Key Highlights of Declaration

- **Scale of the Crisis:** Desertification, land degradation and drought leads to declining soil fertility, water scarcity, and loss of ecosystem services.
 - ♦ It directly threatens **food security and livelihoods**, particularly in agrarian economies.
 - ♦ Nearly **40% of global land is degraded**, affecting **about 3.2 billion people**.

- **Environmental Stress as a Security Threat:** G7 identifies desertification, land degradation and drought as a **'security risk multiplier'**.
 - ♦ Over **40% of intrastate conflicts** are linked to land and water disputes.
 - ♦ Environmental degradation contributes to resource competition, forced migration, and political instability.
 - ♦ It confirms the **climate-conflict nexus**, especially in vulnerable regions like the Sahel.

Land Crisis in India

- Approximately **97.85 million hectares (around 29.7%)** of India's total geographical area underwent land degradation as of 2018–19 (*ISRO Desertification and Land Degradation Atlas*).
 - ♦ India faces desertification across **around 30% of its geographical area** (around 97.85 million hectares).
- **Declining soil health** directly threatens food and economic security, with **over 40% of the population** dependent on agriculture and land-based livelihoods.
- India **became a signatory to the UNCCD in 1994** (ratified 1996) and has committed to restoring **26 million hectares of degraded land by 2030** under the **Bonn Challenge and UNCCD framework**.
 - ♦ India has already restored **18.94 million hectares** against this target.

India's Key Policy Interventions

- **Aravalli Green Wall Project (2023):** A green corridor across Haryana, Rajasthan, Delhi and Gujarat, **inspired by Africa's Great Green Wall**.
- **National Action Plan to Combat Desertification (NAPCD)**, revised in 2023, integrated with MGNREGS, CAMPA, and PMKSY.
- **Alignment with Global Commitments (UNCCD & SDGs):** India is a signatory to the **UNCCD** and has committed to the **Land Degradation Neutrality (LDN)**, and restoration of millions of hectares of degraded land.
 - ♦ Desertification, land degradation and drought action supports **SDG 2 (Food Security)**, **SDG 13 (Climate Action)** and **SDG 15 (Life on Land)**.
- **Green India Mission (GIM)**, revised in 2025 with 12,190 crore outlay targeting afforestation over 1 million hectares.
- **Integrated Watershed Management Programme (IWMP)** under PMKSY.

Policy Commitments By G7

- **Shift Towards Integrated Policy Approach:** There is a need to move beyond sectoral

thinking to a **systems-based framework** linking environment, economy and security.

- ♦ Recognises land as central to sustainable development, climate resilience, and peacebuilding.
- **Land Restoration and Drought Resilience:** Scaling up sustainable land management, ecosystem restoration, and drought preparedness.
 - ♦ **Ecosystem-based approaches** are critical for long-term resilience.
- **Financing Mechanisms:** Emphasis on **blended finance models** ie public and private investment, aligns with global calls for **green financing frameworks**.
- **Focus Areas Beyond Desertification:** Additional declarations include biodiversity conservation, ocean protection, water management, circular economy, pollution control, and resilient infrastructure.
 - ♦ It reflects a **holistic environmental governance approach**.

UNCCD and COP17 (Ulaanbaatar, Mongolia; Aug 2026)

- UNCCD is the **primary global convention** addressing desertification, land degradation and drought.
 - ♦ **Investment needed** for restoration (2025–30): \$1 billion per day
 - ♦ **UNCCD COP16** (2024, Riyadh, Saudi Arabia): \$12 billion was pledged for land restoration; India showcased the **Aravalli Green Wall** initiative.
- **Theme (2026):** 'Restoring Land, Restoring Hope'.
- **Expected outcomes:** Translating commitments into action, and focusing on vulnerable regions.

Other Institutional Mechanisms

- **Bonn Challenge (2011):** Global pledge to restore 350 million hectares by 2030
- **Kunming-Montreal Global Biodiversity Framework:** Targets 2 and 11 address land restoration
- **UN Decade on Ecosystem Restoration (2021–30):** Joint UNEP-FAO initiative
- **G20 Global Land Initiative:** Aligned with India's G20 Presidency (2022) goal to reduce degraded land by 50% by 2040

Source: DTE

PRINTED CIRCUIT BOARDS (PCBS) SUPPLY CHAIN DISRUPTIONS

In News

- The **Middle East conflict** has disrupted global supply chains for key raw materials used in **printed circuit boards (PCBs)**, driving sharp price increases across the electronics industry.

Printed Circuit Boards (PCBs)

- It is a **layered mechanical structure** that holds and electrically connects **components in a circuit**.
- It is used in almost all modern electronic devices like smartphones, computers, tablets, AI servers and smartwatches.
- It provides the **base for assembling electronic parts** and guides the flow of electricity between them.

Raw Materials Used for PCB Manufacturing

- **Resins:** High-purity Polyphenylene Ether (PPE) and epoxy resins serve as critical base materials for laminates — the insulating substrate of the board.
- **Copper Foil:** The primary conductive material, accounting for roughly 60% of total raw material costs.
- **Glass Fibre:** Used as a reinforcing material within the substrate to provide structural strength and insulation.
- **Helium & Bromine:** Qatar provides over a third of the world's helium (used in semiconductor lithography), while two-thirds of bromine (used for etching) comes from Israel and Jordan.

Key Issues

- A strike on Saudi Arabia's Jubail petrochemical complex has **disrupted production of a key material (PPE resin)** used in printed circuit boards.
- **China dominates global PCB manufacturing**, accounting for over **50% of global output** creating single-source concentration risk.
- **India's PCB industry remains heavily reliant** on imported raw materials such as copper-clad laminates, specialty chemicals, and soldering compounds.
- **India imports the bulk of its PCB requirements from China, Taiwan, and South Korea**, making it a strategic vulnerability for defence, telecom, and EV sectors.

India's Policy Interventions

- **Electronics Component Manufacturing Scheme (ECMS), 2025:** Approved by the Union Cabinet in April 2025 under MeitY with an outlay of 22,919 crore.
 - ♦ Specifically targets PCBs, SMD passives, Li-ion cells, capacitors, connectors, copper laminates — areas of peak import dependence.
 - ♦ Offers up to 25% capital subsidy and 4–6% incentive on incremental sales — distinct from PLI (which rewards final product sales).
- **PLI for Large Scale Electronics Manufacturing (LSEM):** Attracted global players (Apple via Foxconn and Tata) to manufacture in India.
 - ♦ India is now the world's second-largest mobile phone manufacturer.
 - ♦ **Limitation:** focused on assembly, not component/PCB manufacturing
- **Semiconductor Mission (India Semiconductor Mission):** Six semiconductor projects in execution; four more approved in Odisha, Punjab, and Andhra Pradesh.
 - ♦ Aims at a self-reliant semiconductor-to-PCB value chain by 2030.

Source :IE

NEWS IN SHORT

LUZON ISLAND

Context

- **China** conducted military drills including live-fire exercises in waters east of the **Philippines' Luzon Island**.

About

- It is the **largest and most important island of the Philippines**.
- It is located in the **northern part of the Philippine archipelago** and is bounded by the **Philippine Sea** to the east, the **Sibuyan Sea** to the south, and the **South China Sea** to the west.
- To the north, the **Luzon Strait separates Luzon from Taiwan**.



- Luzon represents about **one-third of the land area of the Philippines**.
- It is a part of the **Pacific Ring of Fire**, making it prone to earthquakes & volcanoes.
- Natural Landmarks:
 - ♦ **Mount Pinatubo is famous** for its 1991 eruption (global climatic impact).
 - ♦ **Mayon Volcano is known** for its near-perfect symmetry.
 - ♦ **Banaue Rice Terraces** is the UNESCO World Heritage site.

Source: TP

CHINA'S NEW ATLAS DRONE SWARM SYSTEM

In News

- Recently, Chinese People's Liberation Army (PLA) launched its **new Atlas drone swarm system (atelasi)**.

"Atlas" (or Atelasi) drone swarm system

- It is a Chinese PLA mobile platform designed to launch and control large numbers of drones in coordinated operations from a single operator interface.
- It is a truck-based swarm warfare unit made up of three vehicles: a launch vehicle (Swarm-2), a command/control vehicle, and a support vehicle.
 - ♦ Together, they function as a compact, mobile "drone battlefield node."
- Compared to systems like the US "Perdix" and DARPA's "Offset," which focus mainly on the number of drones deployed, the Atlas system is presented as more advanced due to its emphasis on coordinated intelligence rather than scale alone.

Key features

- **Mass launch capability:** Up to 96 drones can be deployed in one coordinated swarm, with

very short launch intervals (under 3 seconds per drone), meaning a full swarm can be released in about 5 minutes.

- **Centralized control:** A single operator can manage the entire swarm simultaneously, directing drones for reconnaissance, electronic disruption, formation flying, or strikes.
- **Flexible mission roles:** The drones can operate collectively for scouting, attacking, confusing enemy defenses, or forming coordinated patterns.
- **Mobility and concealment:** The system is vehicle-based, small enough to be hidden or rapidly repositioned, making it suitable for distributed and hard-to-detect operations.

Source :IE

INTERNATIONAL BIG CAT ALLIANCE (IBCA)

In News

- Ahead of the global big cat summit, the International Big Cat Alliance (IBCA), is deliberating on a New Delhi Declaration, which, if adopted, will be the first international declaration on big cat conservation.

About International Big Cat Alliance (IBCA)

- It was launched by India in 2023 to facilitate global cooperation for the conservation of seven big cat species:
 - ♦ **Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar, and Puma.**
 - ♦ Out of the seven big cats under IBCA, five are found in India: Tiger, Lion, Leopard, Snow Leopard & Cheetah.
- Open to 97 "range countries" where these big cats are found.
- Aims to **mobilise global knowledge, resources, and best practices** to protect big cats and their ecosystems.

Big Cat Conservation Status

Species	Conservation Status	Key Project(Year)	Unique Feature
Tiger	Endangered (NTCA)	Project Tiger (1973)	Orange coat with black stripes
Asiatic Lion	Endangered	Asiatic Lion Reintroduction Project (2004)	Only social big cat; lives in prides
Leopard	Vulnerable	—	Rosette spots; excellent climber
Snow Leopard	Vulnerable	Project Snow Leopard (2009)	Long tail for balance; powerful hind legs
Cheetah	Extinct (reintroduced)	Project Cheetah (2022)	Fastest land animal; solid spots

Made with Napkin

Source: TH

WORLD TAPIR DAY

In News

- Recently, World Tapir Day was observed globally to raise awareness about **Tapirs**.

Tapirs

- Tapirs are large herbivorous mammals.
- Tapirs inhabit jungle and forest regions of South America, Central America, and Southeast Asia.
- Tapirs form an important part of the ecosystem as seed dispersers and form one of the oldest surviving genera in the animal kingdom.
- Threats** posed are habitat loss, hunting, and human encroachment.

Types and IUCN Red List status

- Lowland Tapir(Tapirus terrestris) - **Vulnerable**
- Mountain Tapir(Tapirus pinchaque) - **Endangered**
- Malay Tapir(Tapirus indicus) - **Endangered**
- Baird's Tapir(Tapirus bairdii) - **Endangered.**

Source :Air

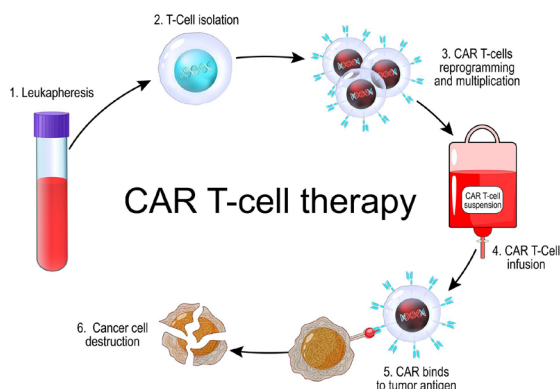
CAR-T CELL THERAPY

Context

- A recent study demonstrated that engineered **CAR-T cells can detect “faint” tumour signals**, offering a breakthrough in treating solid tumours such as kidney, ovarian, and pancreatic cancers.

About CAR-T Cell Therapy

- CAR T-cell therapy is a type of **immunotherapy** (treatment that uses the body's immune system to fight disease).
- It involves modifying a **patient's T cells** (white blood cells that kill infected or abnormal cells).
- These T cells are **engineered to express a Chimeric Antigen Receptor (CAR)**.
- Once reintroduced into the body, CAR T cells target and destroy cancer cells.
- Most commonly, CAR T cells target CD19 (a protein found on B cells, often overexpressed in certain blood cancers).



Key Challenge: Antigen Heterogeneity

- Solid tumours have diverse cells. Traditional CAR-T cells kill only “high-antigen” (visible) cells, leaving “low-antigen” cells behind to cause relapse.
- Pseudo-Heterogeneity:** Research shows many “negative” cells actually have tiny amounts of target protein (**CD70**). This protein is hidden by the **EZH2 enzyme**, which tightens DNA to suppress gene expression.

Source: TH

ATACAMA DESERT

Context

- Light pollution threatens the **world's darkest skies in the Atacama**.

About

- Atacama desert** is located in **Chile** stretching into parts of **Peru, Bolivia, and Argentina**, it is considered the **driest non-polar desert on the earth**.
- It lies between the **Pacific Ocean (west) and the Andes Mountains (east)**.
- There are more than 300 clear nights per year, meaning no clouds and no rain.



- Scientific Significance:** A rare combination of dry climate, high altitude, and isolation from urban light pollution makes the Atacama home to the **world's largest ground-based astronomical projects**.
- Every year, the Atacama Desert draws thousands of scientists **to investigate the origins of the universe**.

Source: TH