Today's Prelims Topics

Bagram Airbase

Context

Afghanistan has rejected President Donald Trump's demand to return Bagram air base to US control.

About Bagram AirBase

- **Location**: Afghanistan.
- **Built By**: The Soviet Union in the 1950s.
    - Used extensively during the **Soviet-Afghan War (1979–89)**.
- **US Interest**: The base was later expanded and modernized after the **US invasion post-9/11**.
    - It was under US control from 2001–2021.
    - US vacated Bagram on **July 2, 2021**; Taliban took control on **August 15, 2021**.

Source: The Hindu

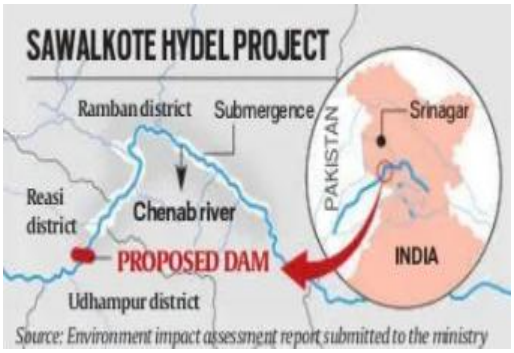
Sawalkote Hydel Project

Context

The Environment Ministry's Expert Appraisal Committee (EAC) will review the 1,865 MW Sawalkote dam project for environmental clearance.

About Sawalkote Hydel Project

- It is a run-of-river project on the **Chenab River** at **Sidhu village, Ramban district, Jammu & Kashmir (J&K)**.
- **Capacity: 1,865 MW**, to be developed in two phases.



Related Fact

The Chenab (Chandrabhaga) is the **largest tributary of the Indus**, formed by the confluence of Chandra and Bhaga rivers at **Tandi, Himachal Pradesh**.

Source: Indian Express

Dada Saheb Phalke Award

Context

Malayalam actor Mohanlal named Dada Saheb Phalke award winner.

About the Award

- It is **India's highest film honour**, instituted in **1969**.
- Conferred for **"Outstanding contribution to the growth and development of Indian cinema."**
- **First Recipient:** Awarded first to **Devika Rani**, regarded as the "first lady of Indian cinema."
- **Award Components:** Swarna Kamal (Golden Lotus medal), Cash prize of ₹10 lakh, Certificate, Silk roll, Shawl.
- **Presented by: President of India** at the **National Film Awards ceremony**.

Dada Saheb Phalke

- **Dhundiraj Govind Phalke (1870–1944)**, known as the **"Father of Indian Cinema."**
- He directed **India's first full-length feature film**, *Raja Harischandra* (1913).

Other Honours to Actor Mohanlal

- **Padma Shr**i in 2001, and the Padma Bhushan in 2019. Mohanlal has won **5 National Film Awards.**

Source: Indian Express

Extreme Nuclear Transients (ENTs)

Context

Astronomers at the University of Hawaii's Institute for Astronomy (IfA) have discovered a new class of phenomena, termed Extreme Nuclear Transients (ENTs).

What are ENTs?

- ENTs occur when **very massive stars—at least three times heavier than the Sun—wander too close to supermassive black holes** at the centres of galaxies.
- The immense gravitational pull of the black hole tears the star apart in a process called *spaghettification*, where the star is stretched into a long, thin shape.
- The debris from the destroyed star falls into the black hole, creating a spectacular burst of energy that we see as an ENT.

How are they different from other events?

- **Tidal Disruption Events (TDEs):** Both involve stars torn apart by black holes, but ENTs occur with **more massive stars and bigger black holes**, making them far rarer and more powerful.
- **Fast X-ray Transients (FXTs):** Unlike ENTs, FXTs are short-lived X-ray flashes caused when jets from supernovae fail to break through a star's surface. They are weaker, briefer, and very different in origin.

Source: The Hindu

Exercise Amogh Fury

Context

The Sapta Shakti Command of the Indian Army conducted the 'AMOGH FURY' Integrated Fire Power Exercise at the Mahajan Field Firing Ranges in Rajasthan.

About Exercise Amogh Fury

- **Objective:** To test **combat power**, **coordination**, and **operational readiness** in **real-time battle scenarios**.
    - To reflect preparedness for **multi-domain operations** (integration of land, air, and emerging domains like cyber and space).
- **Features:** Integrated manoeuvres involving battle tanks, infantry combat vehicles (ICVs), attack, helicopters, long-range artillery systems, UAVs.

Source: India Today

Industrial Park Rating System (IPRS) 3.0

Context

Recently the Union Minister of Commerce & Industry launched IPRS 3.0 in New Delhi.

About IPRS 3.0

- **Developed by:** Department for Promotion of Industry and Internal Trade (DPIIT) with support from the Asian Development Bank (ADB).
- **Background:**
  - **Pilot Phase:** 2018
  - **IPRS 2.0:** 2021
  - **IPRS 3.0:** Introduces an **expanded framework** with new focus areas.
- **New Parameters in IPRS 3.0:**
  - Sustainability and green infrastructure
  - Logistics connectivity
  - Digitalization
  - Skill linkages
  - Enhanced tenant feedback
- Industrial parks will be rated into three categories:
  - Leaders
  - Challengers
  - Aspirers
- **Purpose & Objectives:** To **assess, benchmark, and categorize** India's industrial parks based on facilities, infrastructure, and competitiveness.
  - To provide **reliable and transparent data** to stakeholders, investors, and policymakers.
  - To **encourage best practices** and support the creation of **world-class industrial infrastructure.**
  - To strengthen the **Make in India** programme and enhance **India's global competitiveness.**

Source: PIB

Logistics Data Bank (LDB) 2.0

Context

Union Minister of Commerce & Industry recently launched LDB 2.0 on the occasion of the decade-long celebrations of Make in India.

About LDB 2.0

- **Developed by:** NICDC Logistics Data Services (NLDSL).
- **Purpose & Objectives:**
  - To provide **real-time tracking and performance assessment** of India's logistics system.
  - To enhance **planning, efficiency, and cost reduction** in supply chains.
  - To serve as a **digital tool** for industry and government to:
    - Improve competitiveness
    - Strengthen supply chain management
    - Make Indian logistics more **efficient and business-friendly**.
- **Key Features:**
  - **High-Seas Container Tracking:** Allows exporters to track containers **even after leaving Indian ports across international waters**.
    - Improves global coordination and enhances India's credibility in international trade.
  - **Multi-Modal Visibility:** Covers **road, rail, and sea transport**.
    - Tracking enabled using **container, truck, trailer numbers**, and **railway FNRs**.
    - Integrated with **Unified Logistics Interface Platform (ULIP) APIs**.
  - **Live Container Heatmap:** Provides **location-based views** of container distribution across India.
    - Helps stakeholders and policymakers spot **imbalances and potential bottlenecks** in real time.

Source: PIB

Harmonized System of Nomenclature (HSN) Codes

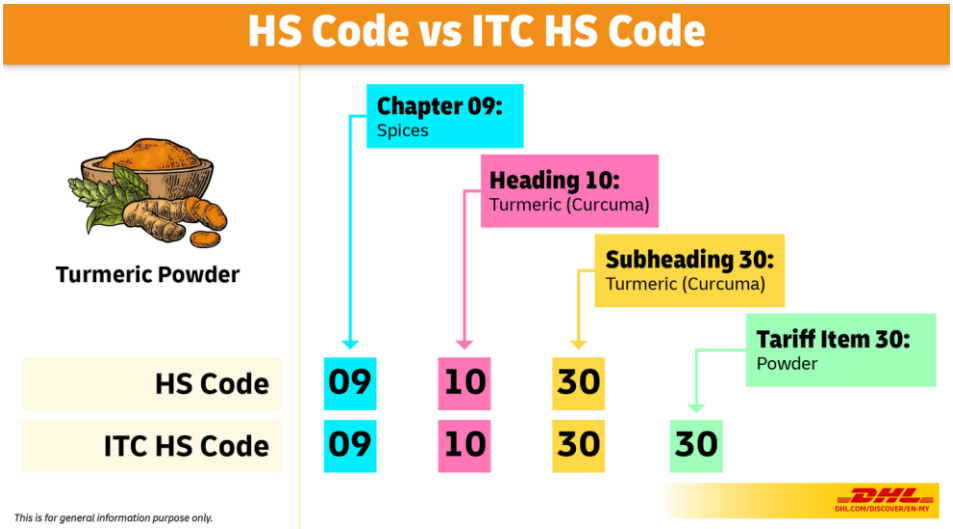
Context

Union Minister of Commerce and Industry released the Guidebook on Mapping of Harmonized System of Nomenclature (HSN) Codes prepared by the Department for Promotion of Industry and Internal Trade (DPIIT).

More in News

- The guidebook **maps over 12,000 HSN codes** to different ministries.
- A total of **31 ministries** have been linked with specific HSN codes.

About HSN Code



- It is a globally standardized, **six-digit numerical system** created by the **World Customs Organization (WCO)** in **1988** for **classifying goods in international trade**.
- The base HS code is **6 digits** long:
    - First 2 digits ⟶ **Chapter**
    - Next 2 digits ⟶ **Heading**
    - Last 2 digits ⟶ **Sub-heading**
- India has been a WCO member since 1971, initially used a 6-digit HSN code for Customs and Central Excise duties.
    - Then, they added 2 more digits (Tariff item) to HSN Code to be more precise in goods classification for importing, exporting, and taxation.

Source: The Hindu

Species in News

Striped Dolphin

News? A pod of striped dolphins was recently spotted off the coast of Visakhapatnam.

About Striped Dolphins

- **Distribution:** Found in the **Pacific**, **Indian**, and **Atlantic Oceans** and many of the adjacent seas, including the **Mediterranean**.
  - Between latitudes of 50° North and 40° South.
- **Characteristics:**
  - Found in groups of about 100-500 individuals.
  - Display a unique behavior called **roto-tailing.**
    - It means an animal leaps high out of the water and vigorously rotates its tail while airborne.
  - Like other delphinids, striped dolphins often vocalize with clicks and whistles, which presumably function in communication.
- **Conservation Status:**
  - **IUCN: Least Concern**
  - **Appendix II** of the **Convention on Migratory Species (CMS)**

Source: New Indian Express

Mains Topics

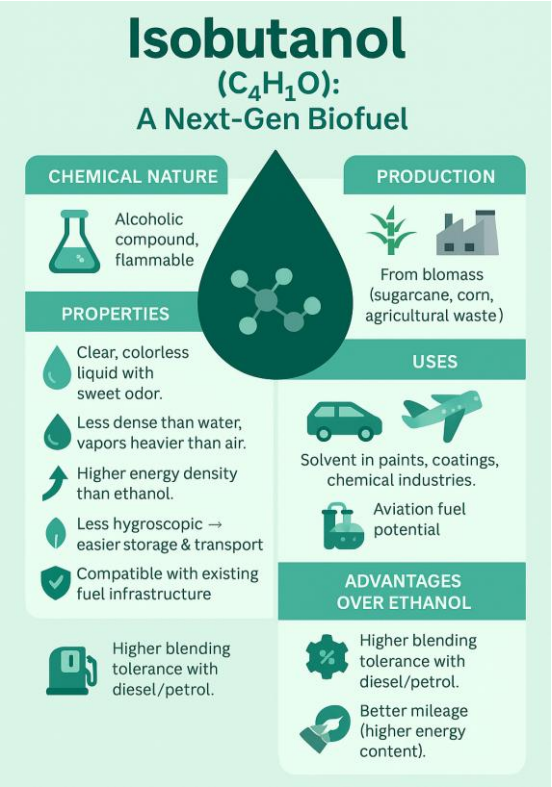
Isobutanol–Diesel Blending: Opportunities and Challenges

Context

Recently the Automotive Research Association of India (ARAI) has started a pilot project to study the feasibility of blending isobutanol with diesel. This comes after attempts to blend ethanol with diesel failed, despite ethanol being available in surplus

Why Ethanol Was Discarded for Diesel Blending

- **Low Flash Point:** Ethanol ignites at lower temperatures, making it volatile and unsafe for diesel blending.
- **Poor Miscibility:** Ethanol does not mix uniformly with diesel without chemical additives, raising costs and operational challenges.
- **Engine Compatibility Issues:** Blending ethanol with diesel caused ignition delays, incomplete combustion, and engine performance issues.
- **Economic Constraints:** Ethanol's price is stagnant while sugarcane procurement costs have risen, discouraging its diversion to diesel blending.
- **Policy Prioritisation:** Ethanol is already committed in surplus to petrol blending (E20 target), leaving little rationale for its diversion.
- **Global Precedent:** Globally, ethanol is mainly used for petrol blends; diesel blending trials have been unsuccessful



Pros of Isobutanol–Diesel Blending

- **Better Miscibility:** Unlike ethanol, isobutanol blends more easily with diesel. Reduces need for co-solvents or additives.
- **Higher Flash Point:** Safer to store and transport compared to ethanol. Reduces fire hazard risks.
- **Lower Water Absorption:** Less hygroscopic than ethanol, ensuring longer storage stability.
- **Import Substitution:** Could reduce India's diesel import dependence & Supports energy security.
- **Emission Reduction:** Cleaner burning fuel, potentially reducing particulate and CO_2 emissions.
- **Surplus Utilisation:** Provides a new avenue for utilising surplus sugarcane and grains productively.

Difference Between Isobutanol and Ethanol		
Feature	**Ethanol**	**Isobutanol**

Molecular structure	C2 alcohol (2 carbons)	C4 alcohol (4 carbons)
Flash Point	Low (volatile, unsafe for diesel)	Higher (safer for diesel blending)
Water Absorption	Highly hygroscopic	Less hygroscopic, more stable
Miscibility with Diesel	Poor blending, requires additives	Blends more easily
Cetane Impact	Lowers cetane moderately	Lowers cetane significantly
Use in India	Blended with petrol (E20 target)	Under pilot trails for diesel

Cons and Technical Concerns

- **Low Cetane Number:** Reduces combustion quality, leading to ignition delay.
    - Cetane number (measure of ignition quality) of isobutanol is much lower than diesel.
- **Risk of Diesel Knock:** Low cetane blends can cause **diesel knock** (uneven combustion), damaging engines. Results in reduced power and efficiency.
- **Additive Requirement:** Cetane value can be restored with additives, but at higher cost.
- **Limited Blending Ratio:** Experts advise not exceeding 10% isobutanol in diesel. Higher levels may impact engine life and performance.
- **Miscibility Issues:** Though better than ethanol, some miscibility problems may persist. Biodiesel may need to be added to improve blending uniformity.

Source: The Hindu

Uranium Mining in Meghalaya

Context

Recently, the Union Environment Ministry issued an **Office Memorandum (OM)** exempting the mining of atomic, critical, and strategic minerals from public consultation.

Background

- Uranium deposits in **Domiasiat and Wahkaji (Meghalaya's South West Khasi Hills)** were identified in the 1980s.
- Since then, **Khasi tribal groups** have consistently opposed exploration and mining, citing health, livelihood, and ecological concerns.
- The recent decision of exempting the mining of atomic, critical, and strategic minerals from public consultation has reignited protests, with Khasi groups urging the **Khasi Hills Autonomous District Council** to exercise its **Sixth Schedule powers** to safeguard tribal rights.

Uranium Reserves in Meghalaya

- Meghalaya holds about 16% of India's uranium reserves, making it the third-largest deposit in the country after Jharkhand and Andhra Pradesh.
- The **Domiasiat–Wahkaji belt** alone is estimated to have around **9,500 tonnes of uranium oxide**.
- While strategically significant for India's nuclear energy programme, the reserves are located in ecologically fragile and demographically sensitive tribal areas.

Concerns Over the OM Route

- **Bypassing Democratic Safeguards:** OMs are executive orders that lack parliamentary scrutiny. By removing mandatory public hearings, the OM sidelines affected communities.
- **Erosion of Consent:** It undermines the principle of free, prior, and informed consent required under global norms.
- **Precedent Setting:** If applied widely, this could reshape mining governance across India, weakening public participation in resource decisions.
- **Constitutional Conflict:** The OM clashes with protections guaranteed under the Fifth and Sixth Schedules, which empower tribal communities in resource management.
- **Distrust Creation:** Such moves reinforce perceptions that tribal lands are treated as resource frontiers for the rest of India.

Concerns of Uranium Mining

- **Environmental Hazards:** Uranium mining is highly polluting, generating radioactive tailings that contaminate soil, water, and air.
- **Health Risks:** Radiation exposure can cause cancer, genetic mutations, and chronic illnesses in nearby populations.
- **Ecological Impact:** Mining can irreversibly damage forests, rivers, and fragile hill ecosystems of Meghalaya.

- **Livelihood Threats:** Tribal communities dependent on agriculture, forest produce, and grazing face displacement and loss of income.
- **Security vs Sustainability Dilemma:** While uranium is critical for nuclear energy and national security, extraction without consent undermines sustainable development and tribal autonomy.

Case Study: Jharkhand's Singhbhum Experience

- The **Uranium Corporation of India Limited (UCIL)** has been operating mines in Jharkhand's Singhbhum district for decades.
- Local protests have highlighted:
    - **Radiation Exposure:** Villagers reported health problems linked to radiation.
    - **Loss of Livelihoods:** Displacement and loss of traditional farming and grazing lands.
    - **Procedural Manipulation:** Public notices often issued in **unfamiliar languages** and objections disregarded,

Way Forward

- **Restore Democratic Processes:** Withdraw the OM and reinstate mandatory public consultations and hearings for mining projects.
- **Respect Constitutional Safeguards:** Honour the Sixth Schedule provisions and tribal autonomy in Meghalaya.
- **Balance Development and Rights**: National security and development goals must not override tribal rights, ecological integrity, and democratic safeguards.
- **Adopt Consent-Based Governance:** Uphold the principle of free, prior, and informed consent in all resource projects.
- **Explore Alternatives:** Consider other uranium reserves, substitute minerals, or alternative energy strategies (solar, wind, thorium) to reduce dependence.
- **Environmental Safeguards:** Ensure comprehensive environmental impact assessments and radioactive safety measures before any mining approval.
- **Dialogue over Coercion:** Engage with tribal communities through transparent negotiations rather than imposing top-down decisions.
- **Judicial Oversight:** Communities can invoke precedents like the **Niyamgiri judgment (2013)** where the Supreme Court upheld local gram sabha rights in resource decisions.

Source: The Hindu

H1B Visa & Recent US Policy Shifts

Context

The U.S. administration has introduced a presidential proclamation imposing a $100,000 entry fee for new H-1B visa applicants outside the U.S., sparking concern especially among Indian tech workers and students.

About H1B visa

- It is a Visa in the United States that allows the **US employers to employ high skilled foreign workers in specialised occupations.**
- It was **established in 1990** to help employers address skill shortages that cannot be filled by the domestic workforce.
- **Specialised Occupation:** It refers to a job that requires a specific set of specialised skills and educational qualifications.
    - **Educational Requirement:** At least a Bachelor's degree or higher in a specific field of study.
    - **Specialised Knowledge:** Expertise in a particular field like- IT specialists, engineers, scientists, healthcare professionals etc.
- **Eligibility and Limits:**
    - Valid for up to **6 years** (initially issued for 3 years and renewable for another three).
    - Workers must either leave the US after 6 years or apply for permanent residence **(Green Card).**
    - **Annual cap: 65,000 visas** under the regular cap. An additional **20,000 visas** for individuals with advanced degrees from US universities.
- **Beneficiaries by Country:**
    - **Indians dominate the H-1B program**, accounting for over **70%** of all approvals annually since 2015.
    - Chinese nationals **come 2nd**, representing **12-13% of approvals since 2018.**

Latest Policy Change (September 2025 Proclamation)

- **$100,000 Entry Fee** imposed on H-1B holders entering the U.S. from outside.
- **Applicability**:
    - Does **not** apply to current visa holders already in the U.S. seeking extensions or transfers.
    - Applies prospectively to **new entrants and future lottery winners abroad**.
    - F-1 students converting to H-1B **within the U.S. are exempt**.
    - F-1 students or workers **outside the U.S.** applying for H-1B will have to pay.
- **Nature**: A **presidential proclamation** (not legislation), justified under "national security authority," but likely to be challenged in courts.

Implications

For Indian Workers and Students

- **Financial Barrier:** $100,000 fee acts as a near-impossible cost for fresh entrants, especially young STEM graduates.
- **Reduced Opportunities**: Indian professionals may find fewer pathways to the U.S. job market.

- **Pipeline Disruption**: OPT (Optional Practical Training) students in the U.S. may temporarily benefit from reduced competition, but long-term prospects decline.
- **Uncertainty**: Fear of frequent rule changes may discourage students from choosing the U.S. as a higher education destination.

For Indian IT & Tech Companies

- **Increased Costs:** Indian IT firms (Infosys, TCS, Wipro) heavily rely on sending talent through H-1B. $100,000 per worker makes this model unviable.
- **Shift in Recruitment**: Companies may prefer local U.S. hiring (more expensive in salary terms but avoids visa fee).
- **Global Diversification**: Indian companies may move more operations to Canada, Europe, or set up offshore delivery hubs in India.
- **Reduced Competitiveness:** Smaller Indian IT companies, unlike tech giants, may struggle to absorb the added cost.

For U.S. Companies & Economy

- **Talent Shortage:** U.S. tech industry depends on Indian talent in areas like AI, cloud computing, and cybersecurity. Restricting inflows could slow innovation.
- **Increased Costs**: Reliance on local hires may raise wage bills, impacting competitiveness against global rivals.
- **R&D and Innovation Impact:** Reduced inflow of skilled immigrants may slow innovation and weaken America's global tech competitiveness.
- **Policy Contradiction**: While the U.S. promotes AI and semiconductor growth, restricting skilled immigration hampers capacity.
- **Legal Uncertainty:** Proclamation likely faces legal challenges, creating unpredictability for companies' workforce planning.

For India & Indian Economy

- **Reduced Remittances**: H-1B workers contribute significantly to India's annual **$120+ billion remittances**. Fewer placements = reduced inflows.
- **Brain Drain Dynamics**: May slow down the outflow of skilled workers, potentially benefiting India's domestic workforce availability.
- **Domestic Pressure:** More STEM graduates may stay back, straining India's already competitive job market.
- **IT Sector Losses:** India's $245 billion IT services industry, a major exporter to the U.S., may face reduced competitiveness.
- **Geopolitical Strain:** Could emerge as a point of friction in India–U.S. relations, despite broader strategic cooperation (Quad, I2U2, defense ties).

Way Forward

- **Diplomatic Engagement:** India must raise concerns through bilateral forums (e.g., India–U.S. 2+2 Dialogue, Trade Policy Forum).

- **Diversify Markets:** Expand IT exports and skilled workforce mobility to Europe, Canada, Australia, and East Asia.
- **Strengthen Domestic Ecosystem:** Invest in R&D, AI, and emerging technologies to create high-quality jobs in India.
- **Legal Challenge Monitoring:** Track U.S. court proceedings for potential relief, as similar proclamations (e.g., 2017 travel ban) faced judicial review.
- **Support to Students & Workers:** Indian missions in the U.S. must provide advisory and legal support to affected communities.

Source: The Hindu