

## Prelims Exam Topics

### ECOCIDE

#### Context

Recent global conflicts, including those in Lebanon and Gaza, have intensified calls from environmental groups and nations to recognize "ecocide" as an international crime.

#### What is Ecocide?

- **Definition:** Ecocide refers to the most severe harms caused to the environment by human activities, typically occurring on a massive scale or impacting a vast geographic area.
- **Origin of the Term:**
  - Coined in **1970** by Yale biologist **Arthur W. Galston** while describing the impact of the herbicide **Agent Orange** during the Vietnam War.
  - In 1972, Swedish Prime Minister **Olof Palme** popularized the term at the UN Conference on the Human Environment.
- **Vietnam** became the first country to codify ecocide in its domestic law in 1990; several others, including Russia, Ukraine, France, and Belgium, have since followed suit.

#### Current International Legal Framework

Existing laws primarily address environmental damage through an **anthropocentric lens** (harm to humans), whereas ecocide advocates seek to treat the environment as a distinct entity.

Instrument	Provisions Regarding the Environment
<b>Rome Statute (ICC)</b>	Recognises genocide, crimes against humanity, war crimes, and aggression; environmental damage is treated as a war crime only if it is intentional, disproportionate, and causes widespread, long-term, and severe harm.
<b>Geneva Conventions</b>	Prohibit methods of warfare that cause widespread, long-term, and severe damage to the natural environment.
<b>ENMOD Convention (1978)</b>	Bans deliberate environmental modification techniques that result in widespread, long-lasting, or severe effects.
<b>Council of Europe Convention (2025)</b>	First legally binding treaty specifically criminalising large-scale and severe environmental destruction.

## SYAMA PRASAD MOOKERJEE

### Context

Following electoral victories, political leaders often invoke the legacy of Syama Prasad Mookerjee.

### About Syama Prasad Mookerjee

#### ● Early Life

- **Background:** Born on July 6, 1901, he was the son of the renowned jurist and academician Ashutosh Mookerjee.
- **Youngest Vice-Chancellor of CU:** A brilliant student of Presidency College and Lincoln's Inn, he became the youngest Vice-Chancellor of Calcutta University at the age of 33.

#### ● Political Career Before Independence

- **Political Entry:** He was elected to the **Bengal Legislative Council** in 1929 and 1930, initially as a Congressman and later as an independent.
- **Hindu Mahasabha:** Officially joined the Hindu Mahasabha in Bengal in 1939, and became its working president in 1940.
- **Finance Minister of Bengal:** From 1941 to 1942, he served as Finance Minister in the Progressive Coalition government formed in opposition to the Muslim League.
- **Architect of West Bengal:** Strongly opposed the "United Bengal" plan and successfully campaigned for the partition of Bengal to ensure that a Hindu-majority West Bengal remained with India.

#### ● Political Career after Independence

- **Union Minister:** Was the **Minister for Industry and Supply** in Jawaharlal Nehru's first post-independence cabinet.
- In April 1950, he resigned from the cabinet to protest the **Nehru-Liaquat Pact**, which he believed failed to protect Hindu minorities in East Pakistan (now Bangladesh).
- **Foundation of Jana Sangh:** In 1951, he founded the **Bharatiya Jana Sangh**, the predecessor to the modern-day BJP.

#### ● Opinion on special status of Jammu and Kashmir

- **Opposition to Article 370:** Staunch critic of the special status granted to Jammu & Kashmir under Article 370.

- **Famous Slogan:** He adopted the slogan: "*Ek desh mein do vidhan, do pradhan aur do nishan nahi ho sakte*" (One country cannot have two constitutions, two Prime Ministers, and two flags).
- **The Praja Parishad Movement:** He supported the agitation by the Praja Parishad in Jammu for the complete integration of the state with India.
- **The 1953 Protest:** In May 1953, he attempted to enter Jammu & Kashmir without a permit, a symbolic act against the state's special restrictions. He was arrested upon crossing the Ravi River.
  - He died on June 23, 1953, while in detention in Srinagar.

## CABINET APPROVES INCREASE IN SUPREME COURT JUDGE STRENGTH

### Context

The Union Cabinet has approved an increase in the sanctioned strength of the Supreme Court from 34 judges to 38 judges, including the Chief Justice of India (CJI).

### Evolution of Supreme court strength

- **Original Constitutional Provision:** The Constitution originally provided for the Chief Justice of India and not more than seven other judges. However, Parliament was empowered to increase this number through legislation.
- **Supreme Court (Number of Judges) Act, 1956:** The 1956 Act initially fixed the number of Supreme Court judges at 10, excluding the CJI.
  - A Bill is required to be introduced in Parliament to amend the Supreme Court (Number of Judges) Act, 1956.
  - Under **Article 124(1)** of the Constitution, Parliament has the authority to determine and increase the strength of Supreme Court judges.
- **Gradual expansion over time:** The strength of the Court has been increased several times through amendments:
  - **1960:** Increased to 13 judges,
  - **1977:** Expanded to 17 judges,
  - **1986:** Increased to 25 judges,
  - **2009:** Increased to 30 judges,
  - **2019:** Increased to 33 judges plus the CJI,
  - **2026 Proposal:** Increase to 38 judges including the CJI.

### Reason behind the decision

- **Rising pendency of case:** The Supreme Court is facing a large backlog of pending cases, which has crossed more than 92,000 cases.
- **Increased case filings:** The use of digital filing and e-courts after the pandemic has made access to the Court easier.
- **Need for faster justice delivery:** Increasing the number of judges is expected to help reduce delays in hearings, Improve disposal of cases, and Strengthen access to timely justice.
- **Current vacancies:** At present, there are already vacancies in the Supreme Court due to retirements of judges. These vacancies affect the Court's ability to function at full strength.
- **Upcoming retirements:** Several more judges are scheduled to retire during 2026 and timely appointments necessary to prevent further shortage of judges.

## CABINET APPROVES PROPOSAL TO CRIMINALISE INSULT TO VANDE

### MATARAM

#### Context

The Union Cabinet has approved a proposal to amend the Prevention of Insults to National Honour Act, 1971 to make insult or obstruction to the singing of Vande Mataram a punishable offence. The amendment seeks to provide statutory protection to the National Song similar to existing legal protection available to the National Anthem and National Flag.

#### Proposed amendment

- **Inclusion of Vande Mataram under the 1971 Act:** The government proposes to amend the Prevention of Insults to National Honour Act, 1971 to include the National Song Vande Mataram within its scope.
  - This would make disrespect, insult, or obstruction during its singing a punishable offence.
- **Punishment Provisions:** Once amended, violations may attract imprisonment up to three years, fine or both.
  - These penalties are similar to those already applicable for insulting the National Anthem, National Flag, or Constitution.

#### Existing legal framework

- **Prevention of Insults to National Honour Act, 1971:** It criminalises acts that intentionally disrespect or insult these national symbols. Further the Act currently provides legal protection to:
  - The National Anthem (Jana Gana Mana),

- The National Flag,
- The Constitution of India.
- **Lack of Statutory Protection for National Song:** Until now, Vande Mataram did not have specific statutory protection under the law. Government advisories regarding its use and respect were not legally enforceable.

#### About Vande mataram

- **Origin of the Song:** Vande Mataram was written by Bankim Chandra Chattopadhyay and published in his novel Anandamath during the 1880s.
- **Language:** The song is a unique blend of **Sanskrit and Bengali** (often referred to as *Mishrita Sanskrit*)
- **First Public Performance:** The song was first sung in a political context by **Rabindranath Tagore** at the **1896 session of the Indian National Congress**.
- **Status as National Song:** In 1937, the Indian National Congress adopted the first two stanzas for use during national gatherings. Post Independence, it was accorded the status of the National Song of India.
- **Official Recognition:** On **January 24, 1950**, the first President of India, Dr. Rajendra Prasad, declared that *Vande Mataram* should be honored equally with the National Anthem, *Jana Gana Mana*.
- Unlike the National Anthem, the National Song is not explicitly mentioned or written within the Constitution of India.
  - While Article 51A(a) requires citizens to "respect the National Flag and the National Anthem," it does not include a specific reference to the National Song.

#### Government guidelines on Vande mataram

- **Home Ministry Advisory:** Earlier, the Ministry of Home Affairs issued advisory guidelines recommending that:
  - All six stanzas of Vande Mataram be sung or played at official events,
  - The song be given precedence before the National Anthem when both are performed.
- **Nature of the Guidelines:** These instructions were advisory and lacked legal enforceability. The proposed amendment seeks to provide legal backing to such directives.

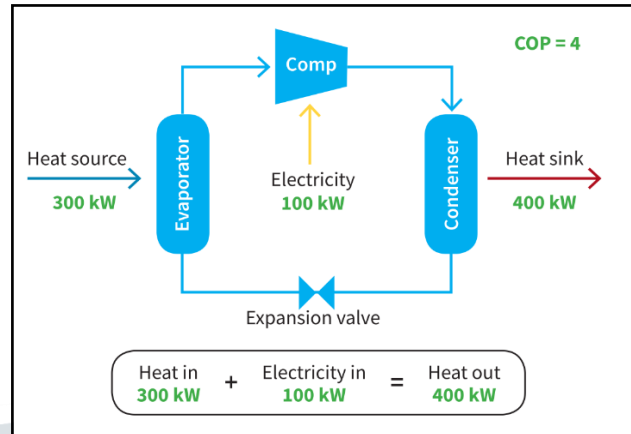
## INDUSTRIAL HEAT PUMPS

### Context:

Recent geopolitical disruptions highlight the urgency of shifting towards **electric and efficient heat technologies such as industrial heat pumps**.

### About Industrial Heat Pumps

- A system that **captures low-temperature heat from air, water or waste sources and upgrades it to useful industrial heat** using electricity *(based on refrigeration cycle principles)*.
- **Working Principle:** Operates on a **compression–expansion cycle**
  - Absorbs heat from a source *(waste heat, ambient air, water)*
  - Compresses refrigerant to raise temperature
  - Releases high-temperature heat for industrial use *(steam, drying, heating processes)*
- **Temperature Range & Applications**
  - Typically operates in **100°C–200°C range** *(suitable for textiles, food processing, chemicals)*
  - Used in **drying, pasteurisation, washing, steam generation**
- **Key Features**
  - **High efficiency (Coefficient of Performance (COP) > 3–5):** Produces multiple units of heat per unit electricity
  - **Electrification of heat:** Reduces dependence on fossil fuels. *(supports net-zero targets)*.
  - **Can utilise waste heat:** Improves energy recovery. *(improves overall system efficiency and reduces losses)*.



### Benefits of Industrial Heat Pumps

- **Cost Savings:** Heat pumps reuse ambient or waste heat, achieving **higher efficiency than boilers**.
- **Operational Safety:** Avoids combustion processes *(reduces fire risk and improves workplace safety)*.

- **Scalability & Flexibility:** Can be integrated into existing industrial systems (*hybrid use with boilers or solar thermal systems*).

## RADIATION CHALLENGE IN QUANTUM COMPUTING

### Context

Researchers at Google Quantum AI have identified **challenges in the quantum computers** caused by radiation.

### Radiation Challenge in Quantum Computers

- **Source of Radiation:** Cosmic rays and natural radioactive elements emit ionising radiation (present in environment and space).
- **Impact on Quantum Chips:** Radiation hitting superconducting chips breaks electron pairs that create quasiparticles that disrupt functioning.
- **Quasiparticle Interference:** These particles disturb qubits even without direct contact (affecting their frequency and stability).
- **Correlated Error Bursts:** A single radiation event can affect multiple qubits simultaneously (causing loss of synchronisation).
- **System Instability:** Frequency shifts across qubits lead to coordinated failure (critical in precision-based quantum systems).

### Solution: Quantum Error Correction

- **Concept:** Uses redundancy to detect and correct qubit errors (ensures computation continues despite failures).
- **Working Mechanism:** Multiple physical qubits form one logical qubit that enables identification of faulty signals.
- **Limitation:** Assumes independent errors, but radiation causes **correlated errors**, reducing effectiveness.

### Other Emerging Solutions

- **Radiation traps:** Absorb quasiparticles before disruption
- **Damping techniques:** Reduce vibration effects on qubits

## ECLGS 5.0

### Context

In response to economic stress triggered by the ongoing West Asia conflict, the **Union Cabinet has approved the Emergency Credit Line Guarantee Scheme (ECLGS) 5.0.**

## Background - Evolution of ECLGS

- **Launched:** In (May) 2020 under the Aatmanirbhar Bharat Abhiyaan during the COVID-19 pandemic.
- **Objective:** Provide collateral-free, government-guaranteed loans to businesses facing liquidity stress.
- **Expansion:** Over time expanded to include sectors like healthcare, hospitality, tourism, aviation, etc.
- **Achievements:** So far, 1.1 crore MSMEs benefitted, and ₹3.7 lakh crore credit extended.

## Key Features of ECLGS 5.0

- **Scale and financial outlay:** Targeted additional credit flow of ₹2.55 lakh crore, and government guarantee cost (fiscal outlay) of ₹18,000 crore. This includes a specific allocation of ₹5,000 crore for the airline sector.
- **Coverage and eligibility:**
  - **Beneficiaries:** MSMEs and non-MSMEs, and scheduled passenger airlines.
  - **Eligibility condition:** Existing borrowers with standard accounts as of March 31, 2026.
- **Credit limits:**
  - **For MSMEs and non-MSMEs (excluding airlines):** up to 20% of peak working capital (Q4 FY26), with a cap of ₹100 crore.
  - **For airlines:** up to 100% of outstanding credit, with a cap of ₹1,500 crore per borrower.
- **Guarantee structure:** 100% guarantee for MSMEs, 90% guarantee for non-MSMEs and airlines, provided by National Credit Guarantee Trustee Company Limited. It covers default risk of additional loans.
- **Loan terms:** 5 years for MSMEs and non-MSMEs, including a moratorium of 1 year; and 7 years for airlines, including a moratorium of 2 years.
- **Interest rate caps:** Maximum 9% for banks, and maximum 13% or 0.75% above benchmark rate (whichever is lower) for NBFCs.
- **Additional incentives:** Zero guarantee fee; loans sanctioned till March 31, 2027; and guarantee cover co-terminus with loan tenure.

## Significance of ECLGS 5.0 for the Economy

- **Address liquidity constraints:** Which is caused by global geopolitical disruptions, ensuring continuity of business operations, protection of employment, and resilience of supply chains. This will give targeted support to highly vulnerable sectors like MSMEs and aviation.

- **MSME sector support:** The sector is the backbone of the Indian economy, contributing **30% to GDP, and a major employment generator**. The ECLGS 5.0 helps avoid credit crunch and business closures.
- **Aviation sector stability:** As the sector is highly sensitive to fuel price volatility, geopolitical disruptions, the scheme ensures operational continuity and connectivity.
- **Financial system stability:** Reduces NPAs risk for lenders through sovereign guarantee. Encourages bank lending during uncertain times.

## NEW FDI APPROVAL SOP INDIA

### Context

India has introduced a **new Standard Operating Procedure (SOP)** to streamline **Foreign Direct Investment (FDI) approvals, mandating that proposals be processed within 12 weeks**.

### About New SOP

**Objective:** To create a more efficient and investor-friendly FDI approval system while maintaining strict scrutiny in sectors linked to national security and critical infrastructure.

### Key Features

- **Time-Bound Approval Process:** Under the new SOP, the Department for Promotion of Industry and Internal Trade (DPIIT) will circulate FDI proposals to concerned ministries, the Reserve Bank of India, the Ministry of Home Affairs, and the Ministry of External Affairs within two days.
  - These agencies are expected to provide their comments within eight weeks.
- **Additional Scrutiny for Sensitive Cases:** For proposals recommended for rejection or requiring extra conditions, DPIIT will get an additional two weeks for review.
  - Overall, the process aims to complete approvals in nearly 12 weeks through a structured and time-bound mechanism.
- **Shift Towards a Digital and Transparent System:** The SOP seeks to reduce duplication, improve coordination among agencies, and create a fully digital approval framework.
  - Experts believe this will strengthen ease of doing business and boost investor confidence through greater transparency and predictability.
- **Relaxation for Increased Foreign Equity:** Under the new SOP, prior government approval will not be required for increasing foreign equity up to ₹5,000 crore, provided the approved percentage of foreign or NRI ownership remains unchanged.
  - Companies only need to notify the competent authority within 30 days after receiving funds and allotting shares.

- **Dedicated Monitoring Mechanism:** To ensure faster processing and better coordination, each ministry will establish a dedicated FDI Cell headed by a nodal officer of at least Joint Secretary rank.
  - Additionally, the DPIIT Secretary will hold regular review meetings every four to six weeks to monitor pending proposals.
- **Security Clearance for Sensitive Sectors:** Certain strategic sectors will continue to require security clearance from the Ministry of Home Affairs.
  - These include: **Broadcasting; Telecommunications; Space; Defence; Civil aviation; Private security agencies; Mining and processing of titanium-bearing minerals and ores.**

## UDGAM PORTAL

### Context

The RBI informed the Supreme Court that **30 banks are now integrated with the UDGAM portal**, enabling legal heirs to trace unclaimed deposits of deceased account holders.

### About UDGAM Portal

- **UDGAM (Unclaimed Deposits-Gateway to Access information) is an online portal** developed by the **Reserve Bank of India (RBI)**.
  - The **RBI collaborated with Reserve Bank Information Technology Pvt Ltd (ReBIT), Indian Financial Technology & Allied Services (IFTAS)**, and selected banks to develop the platform.
- It facilitates the registered users to search unclaimed deposits/accounts across multiple banks at one place in a centralized manner.
- There are 30 banks, which are part of UDGAM portal, and they cover around 90% of unclaimed deposits (in value terms) in the Depositor Education and Awareness (DEA) Fund of RBI.
- **All unclaimed deposits/accounts that are part of the DEA Fund of RBI can be searched in the UDGAM portal.**
- It provides information related to both individual and non-individual categories of unclaimed deposits.

### Whether a user can settle/claim his/her unclaimed deposits through UDGAM portal?

- **No, the UDGAM portal facilitates only the search of unclaimed deposits/accounts across multiple banks at one place and provides information on the claim/settlement process of each bank (which will be available in the search result).**

- The unclaimed deposits can be claimed only from the respective bank.

### **What are Unclaimed Deposits?**

- According to RBI, “Unclaimed Deposits” refers to funds held in savings or current accounts that have remained inactive for a duration of 10 years, or in the case of fixed deposits (FDs), have not been withdrawn within 10 years from the maturity date.
- Such amounts are transferred by banks to the “Depositor Education and Awareness” (DEA) Fund, which is maintained by the Reserve Bank of India (RBI).

## **FAIR AND REMUNERATIVE PRICE**

### **Context**

The Cabinet Committee on Economic Affairs increased the Fair and Remunerative Price (FRP) of sugarcane for the sugar season 2026-27 (October-September) by ₹10 for a quintal from the last crop year.

### **About Fair and Remunerative Price**

- It is the price declared by the government, which mills are legally bound to pay to farmers for the cane procured from them.
- **Who determines it?**
  - The FRP is fixed by the Union government (Cabinet Committee on Economic Affairs (CCEA)) on the basis of recommendations of the Commission for Agricultural Costs and Prices (CACP).
- The payment of FRP across the country is governed by the Sugarcane Control order, 1966 which mandates payment within **14 days of the date of delivery of the cane.**
- Mills have the option of signing an agreement with farmers, which would allow them to pay the FRP in installments.
- Delays in payment can attract an interest up to **15 per cent per annum, and the sugar commissioner can recover unpaid FRP as dues in revenue recovery by attaching properties of the mills.**
- **The amended provisions of the Sugarcane (Control) Order, 1966** provides for fixation of FRP of sugarcane having regard to the following factors:-
  - cost of production of sugarcane
  - return to the growers from alternative crops and the general trend of prices of agricultural commodities

- availability of sugar to consumers at a fair price
- price at which sugar produced from sugarcane is sold by sugar producers;
- recovery of sugar from sugarcane;
- the realization made from the sale of by-products viz. molasses, bagasse and press mud or their imputed value
- reasonable margins for the growers of sugarcane on account of risk and profits.

### MISSION FOR COTTON PRODUCTIVITY

#### Context

The Union Cabinet, chaired by PM Narendra Modi, has approved the Mission for Cotton Productivity with an outlay of ₹5,659.22 crore for the period 2026–27 to 2030–31.

#### About Mission for Cotton Productivity

**Core Objective:** Raise cotton productivity from 440 kg/ha to 755 kg/ha, achieve 498 lakh bales (170 kg lint each) by 2031, benefiting 32 lakh farmers.

#### Key Features of the Mission

- **Seed & Technology Development: Development of High-Yielding Varieties (HYV)** of seeds that are climate-resilient and pest/disease resistant
  - **Scaling up modern farming technologies** like High Density Planting System (HDPS), Closer Spacing (CS) and Integrated Cotton Management.
- **Quality Improvement & Ginning Modernisation:** Capacity building and modernisation of 2,000 ginning and processing factories. Adoption of best processing practices to ensure least-contaminant cotton supply to industry.
- **Strengthening Testing Infrastructure:** Setting up modern, standardised and accredited cotton testing facilities across the country.
- **Kasturi Cotton Bharat — Branding & Traceability:** Robust branding initiative under Kasturi Cotton Bharat to position Indian cotton as a premium, sustainable, and globally trusted product.
- **Digital Integration of Mandis:** Digital integration of market yards (mandis) to enable:
  - Transparent price discovery and Direct market access for farmers.

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## Mains Exam Topics

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### INDIA'S ENERGY SECURITY AMID CHANGING GLOBAL OIL ORDER

#### Context

Ongoing conflicts in West Asia and disruptions around the Strait of Hormuz have exposed India's high dependence on imported energy, highlighting the need for long-term energy resilience.

#### Shift in the Global Oil Market Order

- **Breakdown of Traditional Energy Order:** Earlier stable supply chains have fragmented due to conflicts (*e.g. Russia–Ukraine war reduced Europe's reliance on Russian gas from 45% to 12%*).
- **Rise of Geopolitics over Economics:** Energy trade is now shaped by strategic security concerns rather than cost efficiency (*countries paying a premium for supply security*).
- **Chokepoint Vulnerability (Hormuz Factor):** 25% of global crude passes through the Strait of Hormuz (*conflicts directly trigger global price shocks*).
- **Strategic Behaviour of Major Economies**
  - China: Long-term LNG contracts (25 MMT/year)
  - Japan: Strategic reserves (470 million barrels)
  - South Korea: Diversified supply routes (*bypassing chokepoints*)
- **Producer Power Rebalancing:** moves like UAE's exit from OPEC+ reflect **loosening cartel cohesion and shift towards flexible production strategies** (*increasing volatility in supply management*).
- **Emergence of India as Demand Driver:** India becoming a key source of incremental demand (*~5.99 mb/d by 2026*), increasing its strategic importance.

#### India's Vulnerability to Energy Shocks

- **High Import Dependence:** India imports 85–89% of crude oil (*exposes the economy to global price fluctuations*).
- **Geographical chokepoint risk:** 45% of imports transit through Hormuz ()
- **Macroeconomic Impact:** Oil price spikes raise inflation (*2.3% → 4.4% projected*) and slow growth (*7.4% → 6.5%*).
- **Currency & Fiscal Pressure:** Higher import bills increase trade deficit and weaken currency (*affecting fiscal stability*).

- **Supply Chain Disruptions:** Conflicts can disrupt LPG and crude shipments (*e.g. naval escorts under Operation Sankalp*).
- **Energy Transition Risks:** Shift to renewables increases dependence on critical minerals (*e.g. lithium, cobalt, rare earths dominated by China*).

### Building Long-Term Energy Resilience

- **Diversification of Energy Sources:** Expand supplier base (*Russia, US, Middle East*) to reduce dependence on any single region.
- **Strategic Petroleum Reserves Expansion:** Increase storage capacity (*learning from Japan's 250+ days reserve model*).
- **Reducing Oil Intensity:** Promote EVs, public transport and energy efficiency (*reduces demand-side vulnerability*).
- **Strengthening Maritime Security:** Enhance naval presence and protect sea lanes (*ensuring uninterrupted energy flows*).
- **Renewable Energy & Storage Expansion:** Scale solar, wind and battery storage (*reduces long-term fossil fuel dependence*).
- **Critical Mineral Security:** Develop domestic processing and diversify imports (*reduce dependence on China*).
- **Policy & Institutional Reforms:** Adopt a comprehensive **energy security strategy** focusing on resilience, not just cost efficiency.

## BULLDOZER JUSTICE AND THE RULE OF LAW

### Context

The debate around “bulldozer justice” has intensified after repeated instances of demolition drives being carried out against persons accused of crimes, particularly in some States..

### What is Bulldozer Justice?

- Bulldozer justice refers to the practice of demolishing houses, shops, or properties of accused persons through executive action, often immediately after a crime or communal incident.
- Bulldozers have increasingly become political symbols associated with strict governance and quick punishment. Supporters view such actions as decisive administration, while critics see them as extra-legal punishment.

#### Supreme court guidelines (2024)

- **Due process clause:** In November 2024, the Supreme Court invoked Article 142 and issued

nationwide guidelines declaring punitive demolitions unconstitutional unless due process is followed.

- **Mandatory Prior Notice**: Authorities must provide a written notice at least fifteen days before demolition through registered post.
- **Right to Hearing**: The affected person must be given an opportunity for a personal hearing to challenge the proposed demolition. Authorities are required to issue a reasoned written order explaining why demolition is necessary.
- **Accountability and Transparency**: Entire demolition proceedings must be videographed. Officials violating these guidelines can face contempt of court proceedings and may be personally liable to compensate for the damage from their own salaries.
- **Exceptions**: The guidelines do not apply to unauthorised structures on public spaces such as roads, footpaths, railway land, or riverbanks. They are also not applicable where demolition has been ordered directly by a court of law.

### Why Bulldozer Justice Raises Concerns?

- **Violation of Rule of Law**: In a constitutional democracy, punishment can only follow a lawful process. Executive authorities cannot assume the role of investigator, judge, and punisher simultaneously.
- **Undermining Presumption of Innocence**: Indian criminal law follows the principle that a person is innocent until proven guilty. Immediate demolitions may create a public impression of guilt even before trial.
- **Weakening Separation of Powers**: The Constitution separates powers among the legislature, executive, and judiciary. Bulldozer actions blur these boundaries by allowing executive agencies to impose punitive measures without judicial scrutiny.
- **Right to Property under Article 300A**: The Constitution provides that no individual can be deprived of property except through authority of law. This requires a fair, transparent, and reasonable legal procedure before any demolition or seizure is carried out by the State.
- **Equality Before Law (Article 14)**: Selective or arbitrary demolitions may violate the principle of equal treatment guaranteed under Article 14 of the Constitution.
- **Right to Life and Personal Liberty (Article 21)**: The Supreme Court has interpreted Article 21 broadly to include the right to dignity, shelter, and fair procedure. Arbitrary demolitions may infringe these protections.

- **Right to Fair Procedure:** Any demolition action must follow legal procedures such as notice, hearing, and appeal mechanisms under municipal and land laws.
- **Concern of Collective Punishment:** Demolition of shared family homes punishes innocent family members for the alleged acts of one individual. Such collective punishment goes against the principle of individual criminal liability recognised in Indian law.
- **Risk of Arbitrary Action:** Without transparent procedures, demolitions may become selective or politically motivated, increasing the possibility of misuse of state power.
- **Impact on Vulnerable Families:** Demolitions often affect entire families, including women, children, and elderly persons who may have no connection to the alleged offence.

### Important Judicial Pronouncements on Property Demolitions

- **Maneka Gandhi Case:** The Supreme Court held that the “procedure established by law” under Article 21 must be just, fair, and reasonable and demolitions based merely on allegations or suspicion violate principles of fairness and non-arbitrariness.
- **Olga Tellis Case:** The Court recognised that the right to life under Article 21 includes the right to livelihood and shelter. Demolitions carried out without due process therefore violate constitutional protections.
- **KT Plantation (P) Ltd Case:** The Supreme Court ruled that any law depriving a person of property under Article 300A must satisfy standards of fairness, justice, and reasonableness.

### Impact on Democracy and Society

- **Normalisation of Extra-Legal Punishment:** Frequent bulldozer actions risk normalising punishment outside due judicial process, undermining the rule of law.
- **Influence on Public Culture:** Glorifying bulldozers as symbols of justice fosters public acceptance of coercive state action over constitutional methods.
- **Threat to Constitutional Morality:** Constitutional democracy depends on fair procedures, accountability, and protection of fundamental rights, due process, and individual dignity.

### Measures to Curb Bulldozer Justice

- **Adoption of UN Guidelines:** Incorporate the 2007 UN guidelines into domestic law to prohibit punitive evictions and ensure rehabilitation precedes displacement.
- **Principle of Proportionality:** Recognise demolition as a last resort in municipal laws, prioritising alternatives like regularisation or penalties unless there is an immediate public threat.
- **Independent Property Tribunals:** Establish quasi-judicial tribunals to review demolition orders before execution to ensure impartial oversight.

- **Suo Motu Judicial Intervention:** Enable courts to proactively intervene in cases of targeted demolitions, especially following communal tensions or protests.
- **Corrupt Electoral Practice:** Amend the Representation of the People Act, 1951 to classify endorsement or ordering of extra-judicial demolitions by elected representatives as a corrupt practice.

## **ROLE OF BATTERY STORAGE SYSTEMS IN SOLAR ENERGY**

### **Context**

India's solar capacity has expanded rapidly, but its actual contribution remains limited, highlighting a major gap.

### **Challenges Faced by Solar Energy**

- **Intermittency & Night-Time Gap:** Solar generation is available only during daylight (e.g. negligible contribution during evening demand).
- **Energy Curtailment & Wastage:** Excess solar power is curtailed due to grid limitations (e.g. 2.3 TWh curtailed in 2025).
- **Grid Stability Concerns:** High solar inflow without storage can destabilise the grid (states asked to reduce solar supply).
- **Low Effective Utilisation:** Despite rising capacity, actual energy share remains low (gap between installed capacity and generation).

### **How Battery Storage Systems Address These Challenges**

- **Bridging Day–Night Gap:** Stores excess daytime energy and supplies it at night (enables round-the-clock solar power).
- **Reducing Curtailment:** Captures surplus electricity instead of wasting it (improves efficiency and reduces losses).
- **Grid Stabilisation:** Balances fluctuations in supply and demand (prevents overload and outages).
- **Improving Solar Utilisation:** Enhances actual contribution of solar energy (narrows gap between capacity and generation).
- **Economic Efficiency:** Falling battery costs (e.g. tariff drop from ₹2.21 lakh to ₹1.48 lakh/MW/month in 2025) improve viability.
- **Enabling Energy Transition:** Supports large-scale renewable integration (critical for achieving climate goals).

**Indian Government Initiatives for Battery Energy Storage Systems (BESS)**

- **Production Linked Incentive (PLI) Scheme for ACC:** The government launched the PLI scheme for **Advanced Chemistry Cell (ACC)** Battery Storage with an outlay of **₹18,100 crore** to establish a local manufacturing capacity of 50 GWh.
- **Viability Gap Funding (VGF) for BESS:** To make storage projects bankable, the government approved a VGF scheme for the development of **4,000 MWh** of BESS projects by 2030-31, covering up to 40% of the capital cost.
- **National Programme on Advanced Chemistry Cell (NPACC):** This program aims to reduce import dependence by incentivizing the domestic production of high-performance batteries.
- **Energy Storage Obligation (ESO):** Under the revised **Renewable Purchase Obligation (RPO)**, the government introduced a specific ESO trajectory, mandating that a percentage of total energy consumption by DISCOMs must come from wind/solar energy stored in BESS.
- **Legal Status for Energy Storage:** The Ministry of Power has formally recognized **Energy Storage** as a standalone asset and part of the "Power System," allowing storage systems to be utilized for various services like grid balancing and peak shaving.

Solar expansion without battery storage limits its potential; scaling storage capacity is essential to ensure **reliable, efficient and round-the-clock clean energy supply.**