



PrepAlpine

— Preparation Meets Precision —

CURRENT AFFAIRS

For UPSC Civil Services Examination Aspirants



RESEARCH-DRIVEN
CONTENT



DAILY COVERAGE
WITH MAINS FOCUS



EXAM-READY
APPROACH

Stay **Informed**. Stay **Ahead**. Succeed.

Copyright © 2025 PrepAlpine

All Rights Reserved

No part of this publication may be reproduced, distributed, or transmitted in any form or by any means—whether photocopying, recording, or other electronic or mechanical methods—without the prior written permission of the publisher, except in the case of brief quotations embodied in critical reviews and certain non-commercial uses permitted by copyright law.

For permission requests, please write to:

PrepAlpine

Email: info@PrepAlpine.com

Website: PrepAlpine.com

Disclaimer

The information contained in this book has been prepared solely for educational purposes. While every effort has been made to ensure accuracy, PrepAlpine makes no representations or warranties of any kind and accepts no liability for any errors or omissions. The use of any content is solely at the reader's discretion and risk.

DAILY CURRENT AFFAIRS DATED 21.07.2026

GS Paper II: Polity

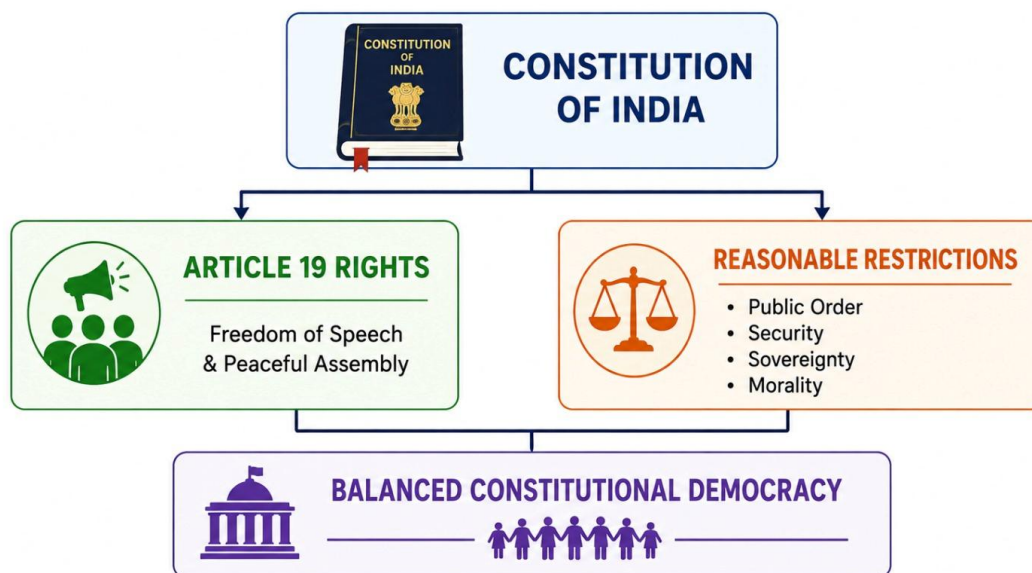
1. Right to Protest and Section 163 of the Bharatiya Nagarik Suraksha Sanhita: Balancing Civil Liberties and Public Order

a. Introduction

Recent police action against protesters in Delhi has revived the debate on the constitutional right to peaceful protest and the exercise of powers under Section 163 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), which replaces the erstwhile Section 144 of the Code of Criminal Procedure (CrPC).

Under Section 163 of the Bharatiya Nagarik Suraksha Sanhita, Executive Magistrates are empowered to issue prohibitory orders in urgent situations to prevent danger to human life, public safety, obstruction, riots or disturbances affecting public tranquillity.

CONSTITUTIONAL FRAMEWORK GOVERNING PROTESTS



b. Background Context

Peaceful protest is a fundamental feature of constitutional democracy. It enables citizens to express dissent, influence public policy and hold governments accountable through lawful and non-violent means.

However, the exercise of this right is not absolute. The Constitution permits reasonable restrictions to safeguard public order, security and the rights of other citizens.

Section 163 of the Bharatiya Nagarik Suraksha Sanhita provides preventive powers to Executive Magistrates in situations requiring immediate intervention. The continuing constitutional debate concerns the circumstances under which these emergency powers may legitimately restrict fundamental freedoms.

The judiciary has, over time, evolved important principles to balance civil liberties with the legitimate requirements of public order.

c. Important Judicial Principles

Judgment	Principle Established
Himat Lal K. Shah v. Commissioner of Police (1973)	The State may regulate public assemblies in the interest of public order, but it cannot impose arbitrary or blanket prohibitions on peaceful protests.
Mazdoor Kisan Shakti Sangathan v. Union of India (2018)	Prohibitory powers under Section 144 CrPC are intended only for exceptional situations and cannot become a permanent mechanism for restricting democratic protests. Regulation should not amount to prohibition.
Amit Sahni v. Commissioner of Police (2020)	Public protests cannot occupy public roads indefinitely. Demonstrations should ordinarily be held at designated locations so that the rights of protesters and the general public are balanced.

These judicial principles underline that the right to protest is constitutionally protected but must coexist with the maintenance of public order.

d. Significance of the Right to Protest

- **Democratic Participation:** Peaceful protest enables citizens to express dissent, influence public policy and participate in governance beyond the electoral process.
- **Democratic Accountability:** Public demonstrations help ensure that governments remain responsive to citizens' concerns and grievances.
- **Participatory Governance:** The right allows diverse social, political and economic interests to be represented within the democratic framework.
- **Protection of Constitutional Values:** Peaceful assembly reinforces the constitutional values of liberty, equality, democracy and pluralism.

While the right is fundamental, its exercise must be balanced against competing public interests.

e. Concerns

- **Frequent Use of Section 163:** Frequent or prolonged invocation of Section 163 of the BNSS may weaken the effective exercise of the constitutional right to peaceful assembly.
- **Risk of Blanket Restrictions:** Routine prohibitory orders may transform an emergency preventive power into an instrument of ordinary administration, contrary to constitutional principles.
- **Necessity and Proportionality:** Restrictions imposed without adequate justification or periodic review may fail to satisfy the constitutional requirements of necessity, proportionality and reasonableness.
- **Rights of Other Citizens:** Prolonged occupation of public spaces may disrupt essential services, traffic and the rights and freedoms of the general public.
- **Balancing Liberty and Order:** The principal challenge lies in ensuring that public authorities protect both democratic freedoms and public order without disproportionately favouring one over the other.

Addressing these concerns requires a balanced regulatory approach consistent with constitutional values.

f. Way Forward

- **Restrict Use to Genuine Emergencies:** Section 163 should be invoked only where credible material indicates an imminent threat to public order, public safety or public tranquillity.

- **Ensure Reasoned Decision-Making:** Executive authorities should record clear and objective reasons for issuing prohibitory orders, ensuring that restrictions remain necessary, proportionate and open to judicial review.
- **Transparent Permission Framework:** Objective and transparent procedures should be developed for granting permission for peaceful demonstrations, reducing arbitrariness.
- **Designated Protest Spaces:** Urban authorities should identify and maintain adequate public spaces where citizens can organise peaceful assemblies without causing disproportionate disruption.
- **Facilitative Policing:** Police should adopt a facilitative approach based on dialogue, minimum necessary restrictions and accountability while safeguarding both constitutional freedoms and public order.

Conclusion

The right to peaceful protest is a cornerstone of India's constitutional democracy and an indispensable component of the freedoms guaranteed under Article 19. At the same time, the Constitution recognises that these freedoms are subject to reasonable restrictions in the interests of public order and public safety. The constitutional objective, therefore, is not to choose between liberty and order but to maintain a careful balance in which Section 163 of the Bharatiya Nagarik Suraksha Sanhita remains an exceptional preventive measure rather than a routine instrument for restricting democratic expression.

GS Paper II: Science and Technology

2. India's First Approved Dengue Vaccine (Qdenga): A Milestone in Dengue Prevention

a. Introduction

The Drug Controller General of India (DCGI) has approved Qdenga, developed by Takeda Biopharmaceuticals, as the first dengue vaccine approved for use in India. The approval marks a significant advance in India's efforts to reduce the growing burden of dengue through preventive vaccination.

Dengue is a mosquito-borne viral disease transmitted primarily by the *Aedes aegypti* mosquito. It is caused by four distinct serotypes of the dengue virus:

- DENV-1
- DENV-2
- DENV-3
- DENV-4

Infection with one serotype provides lifelong immunity against that serotype but only temporary and partial protection against the others. A subsequent infection with a different serotype increases the risk of developing severe dengue due to Antibody-Dependent Enhancement (ADE).

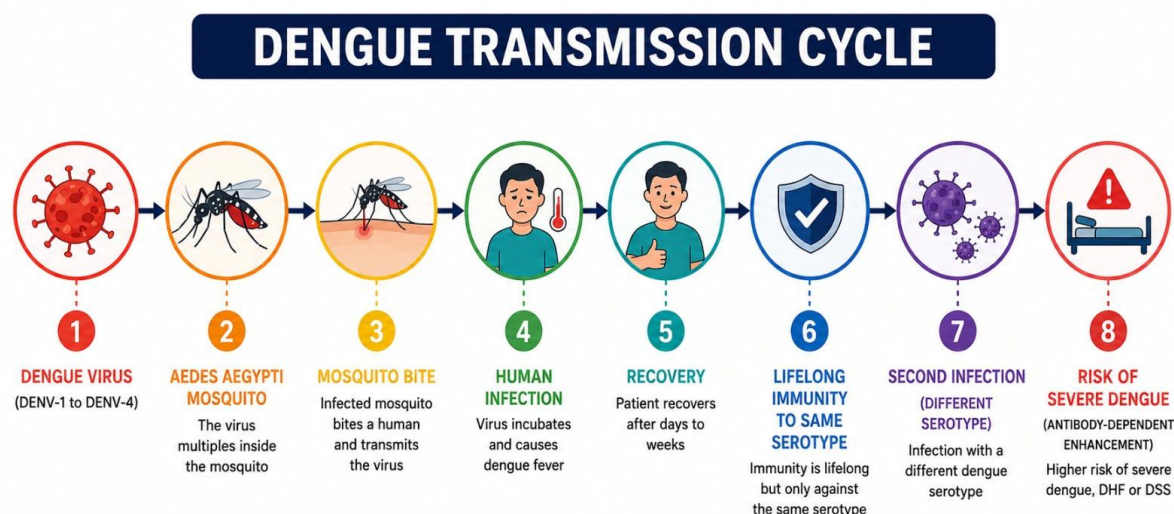
b. Background Context

Dengue has emerged as one of the fastest-growing vector-borne diseases globally. Rapid urbanisation, climate change, changing rainfall patterns and inadequate vector control have expanded mosquito breeding habitats and increased disease transmission.

India bears a substantial share of the global dengue burden, with recurrent outbreaks placing significant pressure on healthcare systems. Until now, dengue prevention has relied primarily on vector control, disease surveillance, early diagnosis and supportive clinical management.

The approval of Qdenga introduces vaccination as an additional preventive tool, strengthening India's overall dengue-control strategy.

This development marks an important shift from exclusive reliance on vector control towards a more comprehensive public health approach.



c. Key Features of Qdenga

- **Broad Protection:** Qdenga is the first dengue vaccine approved for use in India and provides protection against all four dengue virus serotypes (DENV-1 to DENV-4).
- **No Pre-Vaccination Testing Required:** Unlike certain earlier dengue vaccines, Qdenga can be administered irrespective of prior dengue infection, eliminating the need for pre-vaccination serological testing.
- **Two-Dose Schedule:** The vaccine is administered in two doses, with the second dose given three months after the first.
- **Domestic Manufacturing:** To strengthen indigenous vaccine production, Qdenga will be manufactured in India through a partnership with Biological E Limited, with an estimated annual production capacity of up to 50 million doses.

These features make the vaccine suitable for large-scale public health deployment.

d. Significance

- **Strengthening Dengue Prevention:** Vaccination adds a crucial preventive tool to existing strategies for controlling dengue, particularly in a country that accounts for a substantial share of the global disease burden.
- **Reducing Severe Disease:** Protection against all four serotypes can lower the incidence of severe dengue, hospitalisation and dengue-related mortality.
- **Reducing Healthcare Burden:** Fewer severe infections can reduce pressure on hospitals and lower the economic costs associated with recurrent dengue outbreaks.
- **Boosting Biotechnology and Vaccine Manufacturing:** Domestic production strengthens India's biotechnology ecosystem, enhances vaccine self-reliance and supports the objectives of Atmanirbhar Bharat.
- **Complementing Existing Public Health Measures:** Vaccination complements vector control, surveillance, early diagnosis and community awareness rather than replacing them.
- **Advancing Public Health Innovation:** The approval reflects India's growing capability to adopt and scale advanced biotechnology solutions for major public health challenges.

Despite these advantages, effective implementation will require addressing several operational challenges.

e. Challenges

- **Equitable Access:** Ensuring affordable and equitable access across all States and Union Territories remains a major challenge.
- **Integration with Existing Programmes:** Vaccination must be effectively integrated with ongoing dengue-control programmes without weakening vector-control efforts.
- **Long-Term Surveillance:** Continuous post-marketing surveillance is necessary to monitor long-term safety, effectiveness and protection against circulating dengue serotypes.
- **Continued Vector Transmission:** Vaccination alone cannot eliminate dengue because disease transmission fundamentally depends upon mosquito populations and environmental conditions.
- **Public Awareness:** Awareness regarding vaccine eligibility, benefits and the continued importance of mosquito-control measures will be essential for successful implementation.

A comprehensive public health strategy will therefore remain indispensable.

f. Way Forward

- **Develop National Vaccination Guidelines:** Formulate evidence-based guidelines for the phased introduction of the vaccine based on disease burden and epidemiological trends.
- **Prioritise High-Risk Areas:** Initially target high-burden districts and vulnerable populations where dengue transmission is most intense.
- **Continue Integrated Vector Management:** Strengthen mosquito control, sanitation, elimination of breeding sites and community participation alongside vaccination.
- **Enhance Disease Surveillance:** Improve reporting systems, laboratory diagnosis and genomic surveillance of circulating dengue virus serotypes.
- **Ensure Affordable Access:** Promote public procurement, domestic manufacturing and appropriate financing mechanisms to keep the vaccine affordable and widely accessible.

Conclusion

The approval of Qdenga marks a major milestone in India's fight against dengue by introducing vaccination as an additional tool for disease prevention. However, sustainable dengue control will require an integrated public health strategy combining vaccination, effective vector control, robust disease surveillance, early clinical management and active community participation. Such a comprehensive approach will be essential for reducing the long-term health and economic burden of dengue in India.

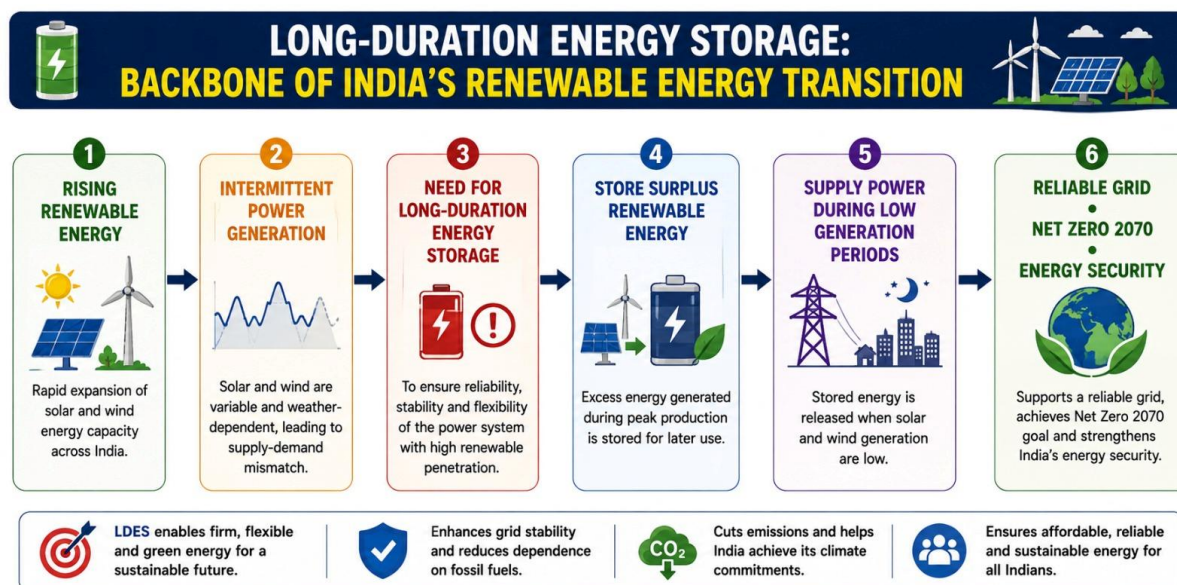
GS Paper III: Environment

3. Long-Duration Energy Storage: The Missing Link in India's Green Energy Transition

a. Introduction

As India's electricity demand rises alongside the rapid expansion of renewable energy, experts have emphasised the need for Long-Duration Energy Storage (LDES) to maintain grid reliability and ensure continuous electricity supply beyond the capabilities of conventional short-duration batteries.

It is closely associated with the National Electricity Plan, the Long-Term National Resource Adequacy Plan, the National Green Hydrogen Mission, India's Panchamrit commitments and the target of achieving Net Zero emissions by 2070.



b. Background Context

India is rapidly expanding solar and wind power to reduce greenhouse gas emissions and improve energy security. However, these renewable sources are intermittent because their output depends on weather conditions and the time of day.

Conventional battery storage can manage short-term fluctuations lasting a few hours. As the share of renewable energy increases, the electricity system will also require storage capable of supplying power during prolonged cloudy periods, low-wind conditions and seasonal variations in generation.

Long-Duration Energy Storage is therefore emerging as a critical component of a reliable, flexible and low-carbon power system.

c. What is Long-Duration Energy Storage?

Long-Duration Energy Storage refers to technologies capable of storing electricity for more than eight hours, with some systems providing storage for several days or even weeks.

These systems absorb surplus electricity during periods of high renewable generation and release it when generation declines or electricity demand rises.

By shifting electricity across time, LDSE helps balance supply and demand while improving the reliability of renewable energy-based grids.

d. Major Long-Duration Energy Storage Technologies

- **Pumped Hydro Energy Storage:** It stores energy by pumping water to an elevated reservoir during periods of surplus electricity and releasing it through turbines when power is required. It is currently the most mature form of large-scale energy storage.
- **Compressed Air Energy Storage:** It uses surplus electricity to compress air in underground caverns or storage facilities. The compressed air is later released to generate electricity.
- **Thermal Energy Storage:** It stores energy in the form of heat or cold for later conversion into electricity or direct use in industrial, commercial or domestic applications.

- **Flow Batteries:** These batteries store energy in liquid electrolytes held in external tanks, allowing longer discharge periods and greater operational flexibility than conventional lithium-ion batteries.
- **Hydrogen-Based Storage:** Surplus renewable electricity is used to produce hydrogen through electrolysis. The hydrogen can later generate electricity or be used as a clean fuel in transport and industry.

Together, these technologies provide different combinations of storage duration, cost, scalability and geographical suitability.

e. Significance

- **Grid Reliability:** LDES can supply electricity during periods of low solar or wind generation, reducing dependence on fossil fuel-based backup power.
- **Management of Prolonged Variability:** It can address seasonal, multi-day and prolonged fluctuations in renewable generation that short-duration batteries cannot manage effectively.
- **Reduced Renewable Curtailment:** By storing surplus electricity instead of allowing it to go unused, LDES improves the utilisation and economic efficiency of solar and wind projects.
- **Energy Security:** Greater integration of domestic renewable resources can reduce India's dependence on imported coal, oil and natural gas.
- **Climate Resilience:** LDES can strengthen electricity supply during heatwaves, storms and other extreme events when demand is high or generation and transmission infrastructure are disrupted.
- **Support for Decarbonisation:** It can reduce reliance on coal- and gas-based peaking plants and enable deeper decarbonisation of the power sector.
- **Industrial Development:** Domestic manufacturing of storage equipment, electrolyzers, flow batteries and associated components can create skilled employment and new industrial capabilities.

Thus, LDES is not merely a storage solution but a foundational technology for a high-renewable electricity system.

f. Challenges

- **High Initial Cost:** Many LDES technologies require substantial upfront investment and have long construction and project-development periods.
- **Geographical Constraints:** Pumped hydro and compressed-air systems depend on suitable geographical or geological conditions, restricting their locations.
- **Technology Uncertainty:** Several emerging technologies have not yet achieved large-scale commercial maturity, making cost and performance projections uncertain.
- **Regulatory Gaps:** India lacks a dedicated and comprehensive policy framework specifically addressing long-duration storage.
- **Uncertain Revenue Streams:** Storage projects may provide multiple services—such as capacity support, grid balancing and frequency regulation—but market mechanisms do not always adequately compensate them.
- **Financing Difficulties:** Investors face uncertainty regarding long-term tariffs, procurement arrangements and revenue recovery.
- **Environmental and Social Concerns:** Large pumped-storage projects may involve land acquisition, ecosystem disruption and displacement, requiring careful environmental assessment.

These constraints limit the commercial attractiveness and pace of LDES deployment.

g. Way Forward

- **Formulate a National LDES Framework:** India should develop a dedicated framework defining deployment targets, regulatory standards, institutional responsibilities and long-term policy support.
- **Integrate LDES into Power Planning:** The National Electricity Plan, resource-adequacy assessments and transmission planning should explicitly estimate long-duration storage requirements.
- **Introduce Predictable Procurement:** Competitive bidding, long-term storage contracts and capacity-payment mechanisms can provide stable revenue streams.
- **Provide Technology-Neutral Support:** Viability gap funding, concessional finance and fiscal incentives should support different technologies based on performance rather than favouring a single storage option.
- **Promote Research and Domestic Manufacturing:** Public investment, pilot projects and industry-academia partnerships should accelerate innovation in flow batteries, thermal storage, compressed air and hydrogen technologies.
- **Streamline Project Development:** Environmental clearances, land acquisition, grid connectivity and transmission approvals should be made more efficient without diluting safeguards.
- **Develop Storage Markets:** Electricity markets should appropriately value the multiple services provided by storage, including energy shifting, capacity, grid stability and ancillary services.

Conclusion

Long-Duration Energy Storage is a critical enabling technology for India's transition towards a reliable and renewable-based electricity system. While conventional batteries can manage short-term fluctuations, they cannot fully address the multi-day and seasonal balancing requirements of a high-renewable grid. Integrating LDES into national energy planning will therefore be essential for strengthening grid resilience, improving energy security, reducing renewable curtailment and advancing India's climate and sustainable-development goals.

Reader's Note — About This Current Affairs Compilation

Dear Aspirant,

This document is part of the PrepAlpine Current Affairs Series — designed to bring clarity, structure, and precision to your daily UPSC learning.

While every effort has been made to balance depth with brevity, please keep the following in mind:

1. Orientation & Purpose

This compilation is curated primarily from the UPSC Mains perspective — with emphasis on conceptual clarity, analytical depth, and interlinkages across GS papers.

However, the PrepAlpine team is simultaneously developing a dedicated Prelims-focused Current Affairs Series, designed for:

- factual coverage
- data recall
- Prelims-style MCQs
- objective pattern analysis

This Prelims Edition will be released separately as a standalone publication.

2. Content Length

Some sections may feel shorter or longer depending on topic relevance and news density. To fit your personal preference, you may freely resize or summarize sections using any LLM tool (ChatGPT, Gemini, Claude, etc.) at your convenience.

3. Format Flexibility

The formatting combines:

- paragraphs
- lists
- tables
- visual cues

—all optimised for retention.

If you prefer a specific style (lists → paras, paras → tables, etc.), feel free to convert using any free LLM.

4. Monthly Current Affairs Release

The complete Monthly Current Affairs Module will be released soon, optimized to a compact 100–150 pages — comprehensive yet concise, exam-ready, and revision-efficient.

PrepAlpine