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PRESIDENT'S RULE AND THE ROAD AHEAD

- The **imposition of President's Rule** in Manipur on February 13 marks a **significant political development in India**, particularly considering the protracted violence that has gripped the state for over 21 months.
- The decision, taken after the **resignation of Chief Minister N. Biren Singh**, underscores the Bharatiya Janata Party's (BJP) strategic retreat rather than an outright resolution to the ongoing turmoil.
- This **move highlights not only the limitations of the double-engine sarkar but also raises broader concerns** about governance, state legitimacy, and institutional trust in Manipur.

Challenges to State Power and Restoring Governance in Manipur

- **Erosion of State Authority and Legitimacy**
 - One of the most fundamental challenges facing governance in Manipur is the **erosion of the state's authority**.
 - The **concept of 'infrastructural power,'** as described by political sociologist Michael Mann, refers to a state's capacity to implement policies and maintain effective control over its territory.
 - In Manipur, **this power has been significantly weakened due to the state's perceived bias** in handling the ongoing ethnic violence.
- **Politicisation of Law Enforcement and Administrative Machinery**
 - A significant challenge in restoring order is the **politicisation of the law enforcement agencies and the administrative machinery**.
 - Reports suggest that the **Manipur police and security forces have been accused of taking sides in the conflict**, either through inaction or direct complicity with certain groups.
- **Failure to Maintain Neutrality and the Rise of Majoritarian Narratives**

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- One of the most dangerous developments in Manipur's crisis has been the rise of **majoritarian nationalist narratives**, which have exacerbated tensions between communities.
- The state government under N. Biren Singh has been accused of adopting a populist, **Meitei-majoritarian** approach, which has alienated other ethnic groups, particularly the **Kuki-Zomi-Hmar tribes**.

The Way Ahead: Ensuring Equitable Representation and Power Distribution

- The **long-term solution** to Manipur's crisis lies in **decentralisation rather than centralisation**.
- The **President's Rule period** should be used to conduct a **thorough institutional audit** to address existing gaps in political representation, resource distribution, and governance.
- **Marginalised communities must be given a voice in decision-making processes**, and meaningful autonomy must be devolved to tribal regions to ensure a fair balance of power.
- History has shown that **when institutions fail to represent and protect diverse communities equitably, democracy deficits emerge**, leading to recurring cycles of violence and instability.

Conclusion

- The **imposition of President's Rule** in Manipur represents **both a challenge and an opportunity**.
- While it provides a temporary mechanism to stabilise the region, **it also exposes the limitations of the BJP's governance model and the fragility of state institutions** in the face of ethnic and political conflict.
- To achieve lasting peace, **the government must go beyond mere law-and-order approaches and work toward fostering genuine trust and legitimacy through equitable governance**, fair representation, and adherence to constitutional principles.

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VERTICAL PROPELLANT MIXER



- It is the largest **solid propellant mixing** equipment globally.
- It is developed and designed by **Satish Dhawan Space Centre** in collaboration with **Central Manufacturing Technology Institute**, a Bengaluru-based research and development organisation under the Ministry of Heavy Industries.

Key Features of Vertical Propellant Mixer

- It has high-capacity mixing of propellant ingredients in a single batch.
 - It has precision and control for quality consistency & performance.
 - Safety and Reliability for handling highly hazardous materials.
 - **World's Largest:** It is of approximately 150 tonne of weight.
 - **Advanced Technology:** It is equipped with **multiple agitators** which are **hydrostatic driven** and will be remotely operated using PLC based control system with SCADA stations.
- A propellant mixer is a machine that mixes the ingredients of rocket propellants, specifically **fuel and oxidiser**, to ensure a uniform and reliable mixture for solid rocket motors.
 - The quality of the mixed propellant directly impacts the performance and reliability of the rocket motor.

OPEC+



- It is a **group of 22 oil-exporting countries** which meets regularly to decide how much crude oil to sell on the world market.
- These nations aim to work together on adjusting crude oil

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production to bring stability to the oil market.

- **Origin:** These nations came to an **accord towards the end of 2016** “to institutionalize a framework for cooperation between OPEC and non-OPEC producing countries on a regular and sustainable basis.”
- At the core of this group are the 12 members of OPEC (the Organization of the Oil Exporting Countries), which are mainly Middle Eastern and African countries.
- **Members:** It comprises **12 OPEC countries** plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan, and Oman.

What is OPEC?

- It is a permanent intergovernmental organization of oil-exporting countries.
- It was **established in 1960** by the five founding members Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.
- Currently, it has 12 members, including Algeria, Congo, Equatorial Guinea, Gabon, Libya, Nigeria and the United Arab Emirates.
- Angola withdrew its membership effective 1 January 2024.
- **Headquarters:** Vienna, Austria.

EVO 2 AI SYSTEM



AI chipmakers Nvidia have unveiled powerful AI system for genetic research created new AI called Evo 2.

- It is a powerful **new foundation model** that understands the genetic code for all domains of life.
- It is the largest publicly available AI model for **genomic data**.
- It was built on the **NVIDIA DGX Cloud platform** in a collaboration led by nonprofit biomedical research organization **Arc Institute and Stanford University**.
- The model was built using 2,000 Nvidia H100 processors on Amazon's cloud infrastructure.

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- It is trained on an enormous **dataset of nearly 9 trillion nucleotides** pieces of genetic information taken from over **128,000 different organisms** on a wide array of species across domains of life — including plants, animals and bacteria.
- In early tests, it accurately identified 90% of potentially harmful mutations in BRCA1, a gene linked to breast cancer.
- **Potential applications of Evo 2 AI System:**
 - It can be applied to **biomolecular research applications** including predicting the form and function of proteins based on their genetic sequence, identifying novel molecules for healthcare and industrial applications, and evaluating how gene mutations affect their function.
 - The model can be applied to scientific fields such as **healthcare, agricultural biotechnology and materials science**.

NATIONAL DAM SAFETY AUTHORITY (NDSA)



The Supreme Court recently directed a supervisory committee chaired by the head of the National Dam Safety Authority, to look into issues raised by Tamil Nadu against Kerala concerning the maintenance of the 125-year-old Mullaperiyar dam.

NDSA is a **statutory body** set up by the Central Government in exercise of the powers conferred by Section 8(1) of the **National Dam Safety Act, 2021**.

- **Functions:**
 - It operates with a clear mandate to **regulate, oversee, and inspect dams**.
 - This authority plays a crucial role in **formulating policies and guidelines** that **govern the construction, maintenance, and operation of dams**
 - A key function of the NDSA is to **resolve any issue between the State Dam Safety Organisations** of states or between a State Dam Safety Organisation and any owner of a specified dam in that state.

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- The NDSA actively engages in nationwide **awareness programs** to educate citizens about dam safety.
- In the face of natural calamities or unforeseen events, the NDSA ensures that comprehensive **emergency response** plans are in place.
- It is headed by a chairman and assisted by five members to lead its five wings - policy and research, technical, regulation, disaster and resilience and administration and finance.
- It has its **headquarters at New Delhi**.

WHAT IS NUCLEAR FUSION?



A world record for nuclear fusion has been smashed after the WEST Tokamak reactor, in southern France, was able to maintain plasma for more than 22 minutes.

- Nuclear fusion is the process by which **two light atomic nuclei combine to form a single heavier one** while **releasing massive amounts of energy**.
- The process releases energy because the total mass of the resulting single nucleus is less than the mass of the two original nuclei. The leftover mass becomes energy.
- Fusion reactions **take place in a state of matter called plasma** — a hot, charged gas made of positive ions and free-moving electrons with unique properties distinct from solids, liquids or gases.
- The **sun**, along with all **other stars**, is **powered by this reaction**.

What are Tokamaks?

- The devices designated for the task of doing this here on Earth—**nuclear fusion reactors**— **are called tokamaks**.
- Tokamaks are often also **called 'artificial suns'** due to the fact that these doughnut-shaped machines replicate processes that occur in the sun.

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- There are **currently over 200 tokamaks in operation across the globe** with the scientific milestones achieved in these devices developing a roadmap for the operation of the **International Thermonuclear Experimental Reactor, or ITER, the world's largest fusion experiment.**
- A commercial tokamak will **aim to use the thermal energy of plasma heated by fusion to heat water**, create steam, and, in turn, spin a turbine that generates electricity.
- Fusion can involve many different elements in the periodic table. However, **researchers** working on fusion energy applications **are especially interested in deuterium-tritium (DT) fusion.**
- DT fusion produces a neutron and a helium nucleus. In the process, it also releases much more energy than most fusion.
- **Advantages of Nuclear Fusion:**
 - Nuclear Fusion **produces more energy than fission** Fusion could generate four times more energy per kilogram of fuel than fission (used in nuclear power plants) and nearly four million times more energy than burning oil or coal.
 - It also **doesn't produce radioactive byproducts** that need to be stored or harmful carbon emissions; it simply produces inert helium and a neutron.
 - **Unlimited Fuel Supply:** The **fuel** to make fusion happen is **simply heavy hydrogen atoms**, which can be found in something that Earth has in abundance: seawater. No mining of uranium is required.
 - It is much safer than nuclear fission, since fusion **can't create runaway reactions.**

WHAT IS THE CENTRAL POLLUTION CONTROL BOARD (CPCB)?



The Central Pollution Control Board (CPCB) recently filed a report before the National Green Tribunal's Principal Bench

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revealing concerning findings regarding the river water quality at Prayagraj (UP) during the ongoing Maha Kumbh Mela.

- It is a **statutory organisation** constituted in September, 1974, under the **Water (Prevention and Control of Pollution) Act, 1974**.
- Further, CPCB was **entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981**.
- It serves as a field formation and also provides technical services to the Ministry of Environment and Forests of the provisions of the **Environment (Protection) Act, 1981**.
- It **advises the Central Government** on matters related to control and **abatement of air and water pollution**.
- It also coordinates the affairs of other State **Pollution Control Boards**, assists them, furnishes guidance, and helps in conflict resolution in case of any disagreement among them.
- CPCB has **delegated its powers and functions** under the Water (Prevention & Control of Pollution) Act, 1974, the Water (Prevention & Control of Pollution) Cess Act, 1977, and the Air (Prevention & Control of Pollution) Act, 1981, **to the respective regional administration with respect to Union Territories**.

CPCB develops Standards for:

- **National ambient air quality**
- Water Quality Criteria from different sources
- Standards for Emission or Discharge of Environmental Pollutants from various Industries (Issued under Environment Protection Rules, 1986)
- Standards for Treatment and Disposal of Bio-Medical Waste by Incineration
- **Emission standard, Noise limits for Diesel Engines**
- Emission and Noise Limit of LPG and CNG Generator Sets

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- CPCB also **formulates the Minimal National Standards (MINAS)** specific for various categories of industries with regards to their effluent discharge (water pollutants), emissions (air pollutants), noise levels, and solid waste.
 - These standards are **required to be adopted by State Governments as minimal standards.**
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