

NEXT IAS

SUMMARY OF DOWN TO EARTH

[16–28 February, 2025]



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SUBJECTIVE QUESTIONS

MCQs

NAVIGATING INDIA'S CLEAN ENERGY TRANSITION

Context

- As global temperatures rise and the impacts of climate change intensify, there is increasing pushback against mitigation efforts. It will likely grow even as the wealthy face devastating losses, insurers struggle to cover rising costs, and insurance companies withdraw from high-risk areas.

Urgency of a Clean Energy Transition

- Transitioning to clean energy is not just about reducing emissions—it is about securing livelihoods. Millions of people still suffer from energy poverty, with unreliable, expensive, or unavailable electricity.
 - It is why Indian industries prefer **captive power generation, often relying on coal.**
- Therefore, India's strategy must focus on expanding access to energy, ensuring affordability, and making it cleaner.
- A well-executed transition to low-carbon growth can not only reduce emissions but also drive economic development.

500 GW of Clean Energy Capacity By 2030

- It aims **not to replace coal**, which currently provides **75% of India's electricity**, but to displace it by increasing the capacity of clean energy sources like solar and wind.
- By 2030, clean energy sources are expected **to generate 44% of the country's electricity demand**, requiring a more than doubling of current clean energy capacity.

Assessing the Progress of Renewable Energy Deployment

- Currently, India has around 200 GW of installed clean energy capacity, accounting for 45% of total power generation capacity as of March 2024.
- However, this capacity is not translating into adequate power generation. Non-fossil fuel power sources contribute less than a quarter of the electricity produced, and **solar and wind contribute only 13%.**
- If India is to displace coal effectively, these two sources alone must generate 30% of electricity by 2030—a target far from reality.

Key Concerns

- Mismatch Between Installed & Actual Generation Capacity:**
 - One key issue is the **capacity utilization factor (CUF) of solar and wind plants.**

While CUF data is available for government-owned plants, it is lacking for private projects, creating a transparency gap.

- Unlike thermal power plants, there is **no public database tracking renewable energy projects**, their electricity generation, or their distribution.
- Challenge of Stalled Projects and Power Purchase Agreements (PPAs):**
 - Solar Energy Corporation of India (SECI)** highlights several projects that have not been commissioned even beyond the deadline set in their **Power Purchase Agreements (PPAs).**
 - By June 2024, nearly 34.5 GW of solar, wind, and hybrid projects remained uncommissioned, despite having signed PPAs.
 - Ironically, the cost of electricity from new coal projects is now higher than that of solar energy.

Road Ahead: Fixing the Systemic Shortcomings

- If India is to achieve its 500 GW clean energy target, urgent action is needed to resolve these systemic issues:
 - Improve Data Transparency:** Establish a public database tracking all renewable energy projects, including generation data, commissioning status, and power distribution.
 - Address Project Delays:** Streamline approvals and enforce stricter adherence to PPA deadlines to prevent project stagnation.
 - Resolve PPA Bottlenecks:** Encourage state power agencies to sign PPAs, especially when renewable energy is now cheaper than coal.
 - Invest in Storage Solutions:** Accelerate the deployment of battery storage and hybrid energy systems to ensure reliability.
 - Enhance Private Sector Participation:** Reduce bureaucratic hurdles and provide clear incentives for private investors.

DRAFT NATIONAL POLICY ON AGRICULTURAL MARKETING

Context

- Recently, the Union Ministry of Agriculture and Farmers' Welfare released the Draft National Policy Framework on Agricultural Marketing (NPFAM) for public comments.

About the Policy

- It aims to create a vibrant marketing ecosystem where farmers can find markets of their choice to realize the best prices for their produce.

- It envisions improving the efficiency and competitiveness of agricultural markets through multiple marketing channels, transparency, infrastructure development, and innovative digital technologies.

Rationale Behind the Policy

- The draft NPFAM aims to enhance farmers' income by creating a competitive and transparent marketing ecosystem.
- It seeks to mitigate market and price uncertainties, improve market efficiency, and integrate production and marketing through digital public infrastructure.
- The policy also addresses the unsustainability of Agricultural Produce Market Committees (APMCs) and the need for value chain-centric infrastructure.

Key Features of the Draft Policy

- **Private Wholesale Markets:** The policy encourages the establishment of private wholesale agricultural markets.
 - ♦ Currently, there are 125 private wholesale markets in five states. The policy aims to expand this model to enhance market access for farmers.
- **Direct Purchases:** The draft policy promotes direct purchases by processors, exporters, organized retailers, and bulk buyers from farm gates.
 - ♦ It aims to reduce intermediaries and ensure better prices for farmers.
- **Corporate Post-Harvest Infrastructure:** The policy proposes replacing traditional market yards with corporate warehouses and silos.
 - ♦ It aims to improve storage and reduce post-harvest losses.
- **Unified National Market:** The draft policy seeks to establish a unified market fee and trading license system.
 - ♦ It aims to create a seamless national market for agricultural produce, reducing regional disparities.
- **E-Trade Platforms:** The policy allows the establishment and operation of private e-trading platforms.
 - ♦ It aims to facilitate digital transactions and improve market transparency.
- **Contract Farming:** The draft policy enables agro-processing, exporting, or trading units to enter into contracts with farmers and Farmer Producer Organizations (FPOs).
 - ♦ It aims to provide assured markets and prices for farmers.

- **Federal Committee:** The policy proposes setting up an empowered agricultural marketing reform committee comprising state agriculture ministers.
 - ♦ It aims to build consensus among states to move towards a unified national market.
- **Modernization and Technology:** The policy emphasizes leveraging cutting-edge technologies like blockchain, artificial intelligence, and machine learning to modernize supply chains and improve efficiency.

Key Concerns in Draft National Policy on Agricultural Marketing

- **Privatization and Corporate Control:** The draft policy proposes expanding private wholesale markets and promoting public-private partnerships (PPP) for improving infrastructure at Agricultural Produce Market Committee (APMC) markets.
 - ♦ However, it is argued that this could lead to corporate control over the agricultural supply chain, similar to the concerns raised during the protests against the now-repealed farm laws.
- **Lack of Legal Guarantee for MSP:** Farmers have been demanding a legal guarantee for the Minimum Support Price (MSP) for all crops.
 - ♦ Despite assurances from the government, this guarantee has not been provided, leading to continued dissatisfaction among farmers.
 - ♦ The draft policy does not address this demand, which remains a significant point of contention.
- **Implementation Challenges:** The draft policy lacks a robust grievance redressal mechanism for farmers selling in private markets.
 - ♦ Additionally, the limited window for public comments on the draft policy has been criticized as insufficient for meaningful stakeholder engagement.
- **State Autonomy and Constitutional Validity:** The draft policy proposes a unified national market, which raises questions about state autonomy and constitutional validity.
 - ♦ Agriculture and agricultural marketing are **state subjects under the Constitution**, and the central government's intervention could be seen as an overreach.
- **Impact on Small and Marginal Farmers:** The draft policy aims to address long-standing challenges in agricultural marketing, but critics argue that it does not provide sufficient support for the most vulnerable farmers.

Conclusion

- The Draft National Policy Framework on Agricultural Marketing has reignited debates

about privatization, corporate control, and the need for a legal guarantee for MSP.

- Addressing these concerns will be crucial for ensuring that the policy benefits all stakeholders, particularly small and marginal farmers.

BUDGET 2025-26: INDIA HAS A NON-PAID EMPLOYMENT CRISIS

Context

- The Union Budget 2025-26 has brought to light a significant issue plaguing India's workforce: the non-paid employment crisis.

About

- Every second employed person in India is self-employed, a statistic that is not necessarily a cause for celebration.
- Self-employment includes a wide range of activities, from running a tea stall to working on a farm to practicing as a doctor.
- However, a significant portion of this self-employment is unpaid work undertaken in household enterprises.
- This shift towards self-employment has been driven by the need for flexible work arrangements and the lack of stable, remunerative jobs.

Economic Survey 2024-25 Insights

- It highlighted the rise in self-employment as a factor driving down the unemployment rate.
- However, it also pointed out that the share of workers in regular/salaried jobs has decreased from 22.8% in 2018 to 21.7% in 2024.
- It indicates that while more people are employed, they are not necessarily earning a stable income.

Challenges Faced by the Workforce

- The Economic Survey noted that the number of casual workers has declined from 24.9% in 2017-18 to 19.8% in 2023-24, suggesting a shift towards more structured forms of self-employment.
- However, this shift has not been enough to address the income disparity and job insecurity faced by many workers.

Government Initiatives and Measures

- The Union Budget 2025-26 has proposed several measures to address the non-paid employment crisis. These include revamping the **PM SVANidhi scheme** to provide greater financial assistance to street vendors and introducing UPI-linked credit cards to facilitate better access to formal credit.
- Additionally, the budget aims to include gig workers under the **Ayushman Bharat health**

insurance scheme to provide them with social security.

- Union Finance Minister Nirmala Sitharaman's budget speech emphasized the need for **'hundred percent skilled labor with meaningful employment'** and **'seventy percent women in economic activities'** by 2047.

Conclusion

- While the Union Budget 2025-26 has taken steps to address the non-paid employment crisis, there is still a long way to go in ensuring that all workers have access to stable, remunerative jobs.
- The government's focus on skill development and women's participation in the workforce is a step in the right direction, but more needs to be done to create meaningful employment opportunities for all.

STUBBLE BURNING

Context

- Recently, Thailand ordered a crackdown on stubble burning as pollution levels spiked in Bangkok and other cities.

About

- Stubble burning, the practice of setting fire to the straw stubble left after harvesting crops like rice and wheat, is a significant environmental issue, **particularly in South Asia**.
- It is often used as a **quick and cost-effective method** to clear fields for the next planting season.

Environmental Impact

- Stubble burning contributes to severe air pollution, releasing large amounts of particulate matter (PM2.5 and PM10), carbon monoxide (CO), nitrogen oxides (NOx), and other harmful pollutants into the atmosphere.
- These pollutants can travel long distances, affecting air quality in urban areas far from the source of the fires.
- For instance, the smoke from stubble burning in Punjab and Haryana often drifts to Delhi, exacerbating the city's already poor air quality.

Health Consequences

- Exposure to the pollutants from these fires can lead to respiratory diseases, cardiovascular issues, and other serious health problems.
- Children, the elderly, and individuals with pre-existing health conditions are particularly vulnerable.

- The World Health Organization (WHO) has highlighted the need for sustainable agricultural practices to mitigate these health risks.
 - ♦ It recommended a safe limit of **15 µg per cubic metre**.

Key Government Initiatives to Address Stubble Burning in India

- **In-Situ Crop Residue Management:** The Ministry of Agriculture and Farmers Welfare has introduced the **Crop Residue Management (CRM) Scheme**, which supports in-situ management of crop residues.
 - ♦ It includes the procurement of CRM machines, setting up **Custom Hiring Centers (CHCs)**, and promoting the use of bio-decomposers.
 - ♦ Financial assistance is provided to farmers and cooperative societies to purchase machinery for residue management.
- **Ex-Situ Crop Residue Management:** The government is also promoting the ex-situ use of crop residues.
 - ♦ It involves utilizing paddy straw for biomass power projects, co-firing in thermal power plants, and as feedstock for 2G ethanol plants and compressed biogas plants.
 - ♦ These initiatives aim to provide alternative uses for crop residues, reducing the need for burning.
- **Prohibition and Monitoring:** The Commission on Air Quality Management (CAQM) has developed a framework for the effective prevention and control of stubble burning.
 - ♦ It includes statutory directions to state governments for implementing action plans, monitoring fire counts, and enforcing prohibitions on stubble burning.
- **Information, Education, and Communication (IEC) Activities:** The government has focused on creating awareness about the ill effects of stubble burning through IEC activities.
 - ♦ These efforts aim to educate farmers about sustainable practices and the benefits of using CRM machinery and bio-decomposers.

HIKE IN THE MINIMUM SUPPORT PRICE (MSP) FOR RAW JUTE

Context

- The Union government announced a 6% increase in the minimum support price for raw jute, to Rs 5,650 per quintal for the 2025-26 marketing season.
- It came to boost jute production, which has dropped by over 29% in the past decade, as

per advanced estimates of the Union Ministry of Agriculture and Farmers Welfare.

Key Details of the MSP Hike

- **New MSP:** The MSP for raw jute has been increased to ₹5,500 per quintal, up from 5,300 per quintal in the previous season.
- **Reason for Increase:** The hike is based on the recommendations of the **Commission for Agricultural Costs and Prices (CACP)**, which takes into account factors such as the cost of production, market price trends, and the need to provide a fair return to farmers.
- **Impact on Farmers:** The increase in MSP is expected to benefit jute farmers by providing them with better financial returns, thereby incentivizing the cultivation of jute and ensuring the sustainability of this crop.

Government Initiatives

- **Jute Packaging Materials (Compulsory Use in Packaging) Act, 1987:** This act mandates the use of jute packaging materials for certain commodities, thereby creating a stable demand for jute.
- **Jute Development Programs:** The government has launched several programs to improve jute cultivation techniques, enhance productivity, and provide financial assistance to farmers.
- **Promotion of Jute Products:** Efforts are being made to promote the use of jute products in various sectors, including packaging, textiles, and handicrafts.

For more details, please follow the link: <https://www.nextias.com/ca/current-affairs/23-01-2025/cabinet-announces-6-percent-hike-in-jute-msp>

PASTORALIST RIGHTS OVER GRAZING LANDS

Context

- Recently, the Himachal Pradesh Forest Department issued a notification identifying traditional pastoral routes and halt sites, directing officials to avoid afforestation in these areas.
- It is the first official recognition of pastoralist rights over grazing lands.

Background and Significance

- Pastoral communities in **Himachal Pradesh**, such as the **Gaddi, Gujjar, Kinnaura, Lahaula, and Pangwala**, have practiced seasonal migration for generations.

- These communities move their livestock between different climatic zones in search of year-round fodder.
- However, afforestation efforts have often disrupted these migratory routes, threatening the livelihoods of pastoralists.

Pastoralist Communities in India

- Pastoralists contribute to the economy through livestock rearing and milk production. India accounts for 20% of the world's livestock population.
- The livestock sector of the economy contributes 4% of GDP and 26% of agricultural gross domestic product.
- Population: About 20 million, comprising groups such as Maldharis, Van Gujjars and Rabaris, among others.

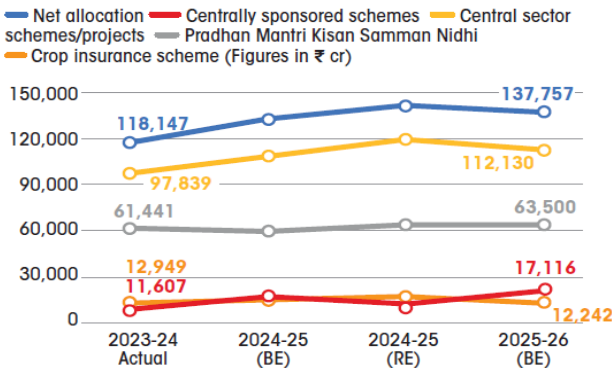
Impact on Pastoral Communities

- The notification is expected to provide significant relief to pastoral communities by safeguarding their traditional grazing lands.
- It will mobilize departments and civil society organizations to ensure that division and block-level entities act based on this decision.

About

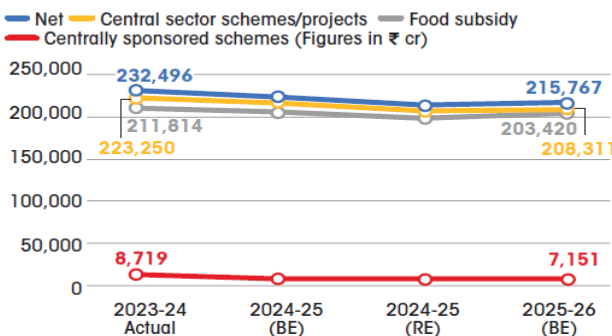
Ministry of Agriculture and Farmers Welfare

The 2025-26 allocation is lower than 2024-25, with cuts in key schemes. Crop insurance sees sharp drop



Ministry of Consumer Affairs, Food and Public Distribution

The overall allocation for food subsidy sees a reduction from BE 2024-25



- It is seen as a step towards recognizing pastoralists as legitimate users of these lands and protecting their livelihoods.

Challenges and Future Directions

- While the notification is a positive step, experts have raised concerns about its implementation.
- Some argue that the notification does not use any existing legal framework, such as the **Forest Rights Act**, to guarantee the rights of pastoralists.
- A more comprehensive order that makes the consent of gram sabha and graziers mandatory before carrying out plantations would be more effective.

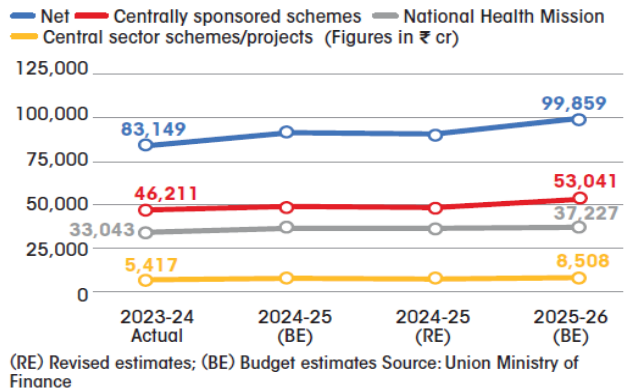
KEY WELFARE SCHEMES: UNION BUDGET 2025-26

Context

- The **Union Budget 2025-26** cuts corners on key welfare schemes, offering little for climate adaptation and decarbonisation, poised to woo the middle class and tame fiscal deficit.
 - ◆ Rs 5,41,850 cr for Centrally sponsored schemes
 - ◆ Rs 16,21,899 cr for Central schemes/projects

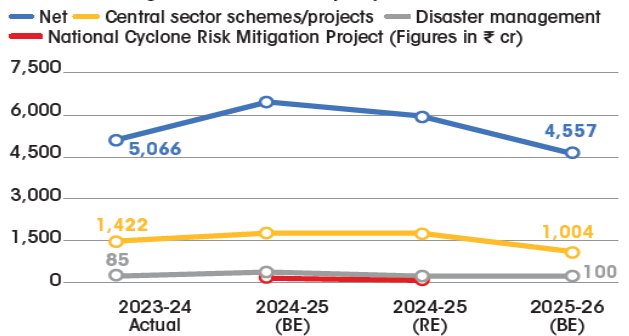
Ministry of Health and Family Welfare

While the overall budget increased by 14%, the National Health Mission received only a modest 3.4% rise



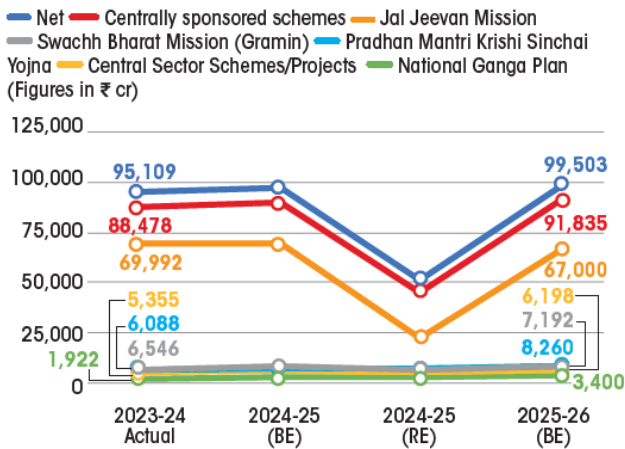
Ministry of Home Affairs

Overall budget sees a 29% cut from last year; allocation for the disaster management scheme drops by 65%



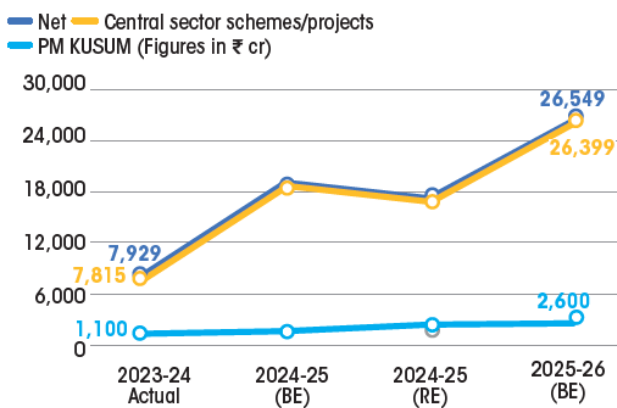
Ministry of Jal Shakti

Jal Jeevan Mission faces a 5% cut from BE 2024-25



Ministry of New and Renewable Energy

Budget for the ministry has been increased by 39%



(RE) Revised estimates; (BE) Budget estimates
Source: Union Ministry of Finance

GENOME INDIA PROJECT

Context

- Recently, the Prime Minister of India hailed the completion of the **Genome India Project**, calling it a 'historic step in the world of research' at **Genome India Data Conclave**, held at Vigyan Bhavan, New Delhi.

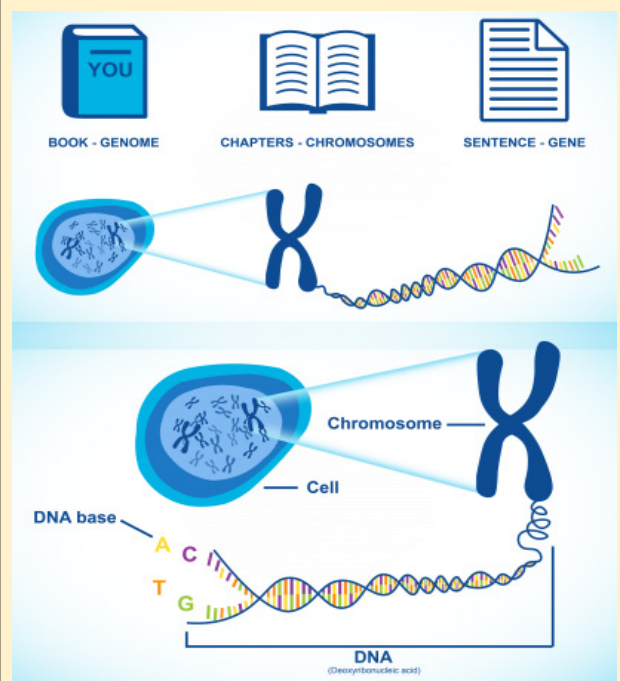
About the Genome India Project

- It was launched in 2020 by the **Department of Biotechnology (DBT)** and coordinated by the Indian Institute of Science (IISc), Bengaluru, aimed at **mapping the genetic diversity** of India's vast population.
- It involved sequencing the genomes of individuals from 99 distinct populations across the country.
- To create a comprehensive reference database of the genetic variations present in the Indian population. It aims to serve as a crucial resource for researchers and scientists, enabling them to:
 - ◆ **Understand Genetic Diversity:** India is

home to over 4,600 population groups, many of which are endogamous. It is reflected in the unique genetic variants found within these groups.

- ◆ **Improve Healthcare:** By identifying genetic predispositions to various diseases, the project aims to enhance diagnostic methods, develop personalized medicine, and improve gene therapy.
- ◆ **Advance Research:** The data generated will aid in understanding the genetic basis of diseases, leading to better-targeted clinical interventions and advancing precision medicine.

Understanding Genomes



- A genome is the complete set of **deoxyribonucleic acid (DNA)** in an organism, **containing all the genetic information** necessary for the **development, functioning, and reproduction** of that organism.
 - ◆ In living organisms, the genome is stored in long molecules of DNA called **chromosomes**.
- In humans, the genome is composed of **approximately 3.05 billion base pairs** of DNA, which are **organized into 23 pairs of chromosomes**.

Key Components of a Genome

- **DNA:** The genome is made up of DNA, a double-stranded molecule consisting of four types of bases: Adenine (A), Cytosine (C), Guanine (G), and Thymine (T).

Do You Know?

- The **discovery that DNA is structured as a 'double helix' by James Watson and Francis Crick in 1953, for which they won a Nobel Prize in 1962.**

- ♦ These bases pair specifically (A with T and C with G) to form the rungs of the DNA ladder.
- **Genes:** Segments of DNA that code for proteins or functional RNA molecules.
 - ♦ **Genes are the functional units** of heredity and play a crucial role in determining an organism's traits.
- **Non-coding Regions:** Parts of the genome that do not code for proteins but have regulatory functions, such as controlling gene expression.

Genome Sequencing

- It is the process of determining the precise order of the base pairs in a DNA molecule.
- It allows scientists to decode the genetic information contained within an organism's genome.

Key Achievements of Genome India Project

- **Completion of Genome Sequencing:** The project has successfully sequenced the **genomes of 10,000 individuals (archived at the Indian Biological Data Centre Portals)**, covering 99 ethnic groups.
 - ♦ It accounts for about 2% of India's population groups.
- **Creation of a Biobank:** A biobank housing 20,000 blood samples has been established at the Centre for Brain Research, IISc.
 - ♦ This biobank aims to support future research endeavors.
- **Phase 1 Analysis:** Detailed quality checks and joint genotyping of 5,750 samples have uncovered rare genetic variations unique to Indian populations.
- **Data Availability:** The genome data is now available at the **Indian Biological Data Center (IBDC) in Faridabad, Haryana.**
 - ♦ Researchers worldwide can access this data for further investigations.

Impact on Biotechnology and Healthcare

- **Empowering Global Research:** The launch of the **IBDC Portals** and the **Framework for**

Exchange of Data Protocols (FeED) ensures seamless access to valuable genetic information.

- ♦ It is set to position India as a leader in genomics, enabling the development of genomic chips tailored to the Indian demographic.
- ♦ Such advancements will enhance the precision of genetic studies and contribute to innovations in areas such as mRNA-based vaccines, protein manufacturing, and genetic disorder treatments.
- **Boost Public Healthcare:** By providing a genetic basis for disease prevention and treatment, the project will significantly improve public healthcare systems.
- **Promote Innovation:** The data will facilitate the development of genomic chips tailored to the Indian demographic, enhancing the precision of genetic studies.
- **Support Policy Making:** The genetic information will assist policymakers in planning and implementing health strategies tailored to the unique needs of India's diverse population.
- **Boosting Bioeconomy:** India's bioeconomy has seen impressive growth, surging from **\$10 billion in 2014** to over \$130 billion in 2024, with **projections to hit \$300 billion by 2030.**
 - ♦ This growth is a testament to the country's increasing capabilities and contributions to the global scientific community.

Key Concerns

- **Medical Ethics:** The project's stated aim is to create a genetic information database, not gene modification.
 - ♦ Gene modification remains a globally sensitive issue due to potential misuse, as seen in the case of the Chinese scientist He Jiankui, who used **CRISPR-Cas9 to create gene-edited babies.**
- **Data & Storage:** Ensuring anonymity of genetic data and addressing its possible misuse is crucial.
 - ♦ Storing data on cloud platforms raises ownership and security concerns.
 - ♦ India lacks a comprehensive **Data Privacy Bill**, creating risks for the Genome India Project.
- **Social Issues:** Genetic studies could reinforce stereotypes and fuel divisive politics, particularly around racial purity and heredity.
 - ♦ In India, debates over 'indigenous' populations could take a genetic turn.
 - ♦ Historical controversies around eugenics and 'selective breeding' highlight the sensitive nature of this subject.

Steps to Overcome Above Challenges

- **Ethical and Secure Data Sharing:** The **Biotech-PRIDE Guidelines**, introduced in 2021, underscore India’s commitment to ethical and secure data sharing.
 - ♦ The launch of the **FeED Protocols** under these guidelines ensures that high-quality, nation-specific data will be shared transparently, fairly, and responsibly.
- **Data Privacy and Security:** Given the sensitivity of genetic data, the Department of Biotechnology has implemented stringent measures to ensure privacy and security.
 - ♦ The data is anonymized and encoded before being uploaded to the central database.
 - ♦ Researchers wishing to access the data must collaborate with the department and adhere to strict protocols.

Future Prospects

- Experts emphasize the need to sequence many more genomes **to uncover rare genetic mutations** and gain deeper insights into India’s genetic diversity.

- Expanding the database to include a million genomes could dramatically scale the understanding of genetic variations and their implications for health and disease.

CLIMATE’S UNSOLICITED PAYOUT

Context

- Rising weather extremes are destabilising the insurance industry, driving up premium prices and pushing insurers out of high-risk markets.
 - ♦ The crisis is also spurring re-invention of the insurance sector.

About

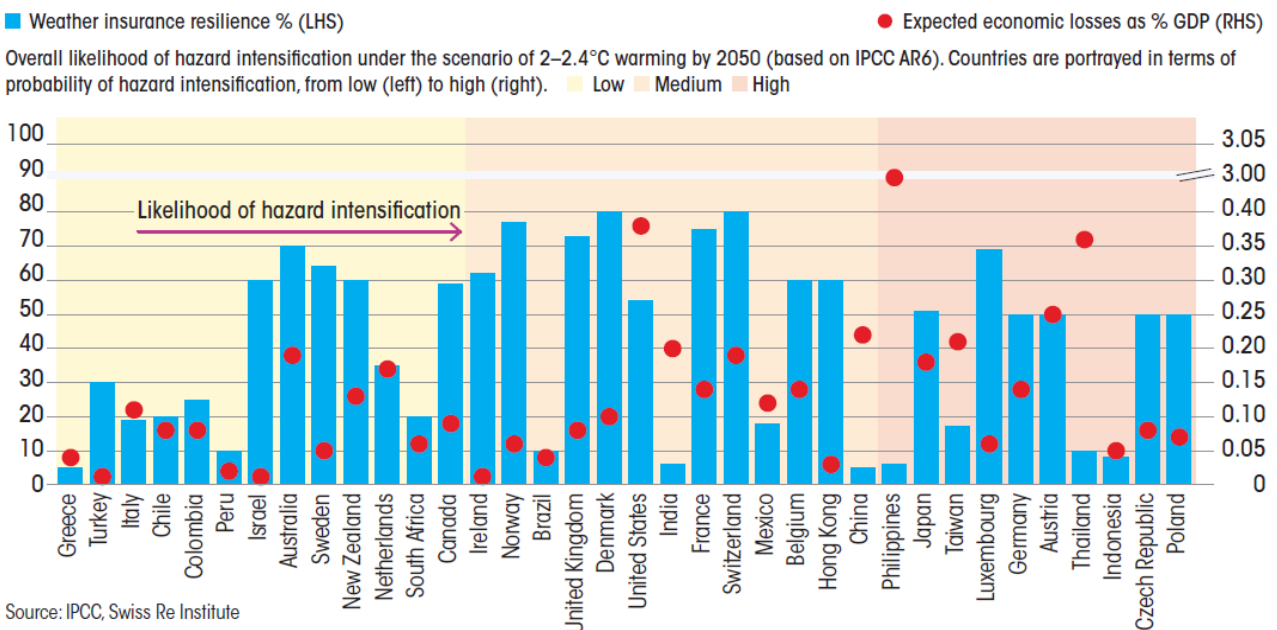
- Climate change is reshaping the insurance industry in unprecedented ways. As extreme weather events become more frequent and severe, insurers are facing a surge in claims, leading to rising premiums and even withdrawal from high-risk markets.
- This phenomenon, often referred to as ‘climate’s unsolicited payout’ is forcing the insurance sector to rethink its strategies and adapt to a new reality.

Extreme Weather Events in India

- India has been experiencing an increasing number of extreme weather events. In 2023, there were extreme weather events on 318 days out of 365, and in 2022, on 314 days.
- These events have a significant impact on agriculture, leading to crop losses and financial distress for farmers.

CHANGING RISK LANDSCAPE

Probability of hazard intensification and weather-related insurance resilience index per country



Climate Risk in Indian Districts

- Official data reveals that over half (54 percent) of the country’s 573 agriculturally relevant rural districts—or 310 districts—face ‘very high’ or ‘high’ risk due to climate change.

- Some 19% districts face 'very high' climate risk, and 35%) are in the 'high' risk category.
- Only about 10% of districts face 'low' or 'very low' climate risk.
- The remaining 36% districts face 'medium' climate risk.

Performance of Pradhan Mantri Fasal Bima Yojana (PMFBY)

- It aims to provide insurance coverage and financial support to farmers in the event of crop failure due to natural calamities, pests, and diseases.
- It covers individual farmers for localized disasters like hailstorms, landslides, floods, and wildfires, as well as post-harvest losses from cyclones, heavy rain, and hail.

Impact of Extreme Weather

- The increasing frequency of storms, cyclones, floods, and wildfires has made these events almost an annual occurrence in many regions.
- For instance, the wildfires in Los Angeles County in January 2025, which burned 23,000 hectares of land and caused significant damage, are a stark reminder of the growing insurance crisis.
- The probability of such disasters has shifted from once-in-a-decade to an expected annual event, destabilizing the insurance industry.

Rising Premiums and Market Withdrawal

- As insurers grapple with the rising number of claims, they are forced to increase premiums to cover the costs.
- It makes insurance unaffordable for many individuals and businesses, leading to a decrease in policy subscriptions.
- In some cases, insurers have decided to withdraw from high-risk markets altogether, leaving communities vulnerable and without coverage.

Reinventing the Insurance Sector

- The insurance industry is responding to these challenges by reinventing itself.
- Companies are exploring new models and technologies to better assess and manage climate-related risks.
- For example, leveraging data analytics, artificial intelligence, and blockchain technology can help insurers more accurately predict and price risks, ensuring sustainability in the face of climate change.

Role of Policy and Regulation

- Governments and regulatory bodies play a crucial role in addressing the impact of climate change on the insurance industry.
- Policies that promote climate resilience, such as improved building codes and land-use planning, can help reduce the risk of damage from extreme weather events.

- Additionally, financial incentives for adopting sustainable practices can encourage both insurers and policyholders to invest in climate adaptation measures.

===== **PRELIMS** =====

EMERGENCE OF H5N1 AVIAN INFLUENZA IN THE UK AND US

Context

- Recently, the UK confirmed its **first human case of H5N1 avian influenza** in three years.

About the Avian Influenza H5N1

- It is commonly known as **bird flu**, is a severe and highly **contagious viral disease** that poses significant threats to **both poultry and public health**.
- It is caused by **influenza A viruses** that primarily affect birds, including domestic poultry such as chickens, turkeys, and ducks, as well as wild birds.
- The virus spreads through direct contact with infected birds, their droppings, or contaminated surfaces, equipment, and clothing.
- Infected birds shed the virus in their saliva, mucus, and feces, which can contaminate the environment and facilitate further transmission.

Genomes

- Genomic analysis revealed that the infected birds carried the **D1.2 genotype**, a strain circulating in UK birds in recent months.
- It differs from the ones circulating among mammals and birds in the US, specifically the **B3.13 and D1.1 genotypes**.

About Influenza Virus

- There are four types of influenza viruses: types A, B, C and D.
 - ♦ **Influenza A** viruses infect humans and many different animals.

- ◆ **Influenza B** viruses circulate among humans and cause seasonal epidemics. Recent data showed seals also can be infected.
- ◆ **Influenza C** viruses can infect both humans and pigs but infections are generally mild and are rarely reported.
- ◆ **Influenza D** viruses primarily affect cattle and are not known to infect or cause illness in people.

US AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)

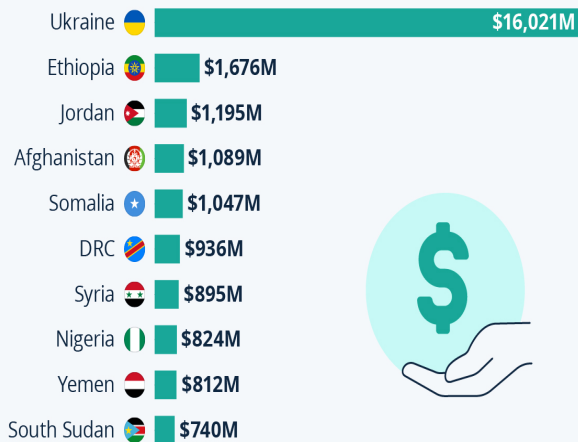
Context

- Recently, the US President announced a freeze on foreign aid funding, which has hindered global health programmes.

About USAID

Where USAID Is Going

U.S. international aid disbursed by the U.S. Agency for International Development (USAID) in FY 2023



- It is an independent agency of the US government, established in 1961 by President John F. Kennedy.
- It was created to consolidate various foreign assistance programs under one agency to administer civilian foreign aid and development assistance.
- It receives funding allocated in the U.S. federal budget.
- **Top Recipient:** Ukraine, Ethiopia, Jordan, Somalia etc.

Objectives and Areas of Work

- Economic development, Health and education, Food security and humanitarian assistance, Climate change mitigation and Democracy and governance.

- USAID collaborates with governments, NGOs, businesses, and international organizations, offering grants and assistance for development projects. Some notable initiatives include:
- **President's Emergency Plan for AIDS Relief (PEPFAR)**, addressing HIV/AIDS treatment and prevention.
- Feed the Future, tackling hunger and food security issues.
- Power Africa, expanding electricity access across Africa.
- Water for the World Act, improving water, sanitation, and hygiene services.

USAID's Role in India

- USAID's engagement with India began in 1951 under the India Emergency Food Aid Act signed by President Harry Truman.
- The funding freeze is unlikely to have a major impact on India, given its reduced dependence on USAID assistance.
- However, it may affect select ongoing projects in health and sanitation. In 2024, USAID allocated \$79.3 million for India's healthcare sector.

COAL PRODUCTION IN INDIA

Context

- Recently, Jharkhand Chief Minister has urged the Union Minister for Coal and Mines to clear the state's coal dues amounting to Rs 1.36 trillion.

About the Coal Production in India

- India is the **second largest coal producer** in the world, **after China**. The all India Production of coal during 2023-24 was 997.83 MT with a positive growth of 11.71%.
- Jharkhand is the **country's largest coal producer**, accounting for **26% of the coal reserves**.
 - ◆ In 2023, it produced nearly 157 million tonnes of coal.
- According to the Jharkhand government, the Centre owes it Rs 1.01 lakh crore for land acquisition for mining, Rs 32,000 crore for common cause judgement and Rs 2,900 crore on royalties payable on washed coal.

Key Points

- **Outstanding Dues:** The Jharkhand government highlighted the significant outstanding dues from coal mining operations in the state. These dues

have been a long-standing issue, impacting the state's financial health.

- **Land Management:** He emphasized that lands on which mining operations have been completed **should be returned** to the Jharkhand government.
 - ♦ He pointed out that **many coal projects** in the state have **abandoned lands, leading to illegal mining activities.**
- **Environmental Concerns:** He stressed the need to reduce the environmental damage caused by mining activities.
 - ♦ He suggested that coal companies take initiatives to open permanent training centres, encourage mining tourism, and shift the headquarters of Coal India to Jharkhand from West Bengal.
- **Collaboration:** Union Minister for Coal and Mines directed central government officials to collaborate with the state government to verify the authenticity of the claims and ensure proper management of coal mining, production, transportation, land acquisition, and compensation.

SANTA ANA WINDS

Context

- Climate change increased the likelihood of the wildfires in California that made it more severe with strong Santa Ana winds.

About the Santa Ana Winds

- These are katabatic winds that originate from **high-pressure air masses in the Great Basin and upper Mojave Desert**, sweeping down through mountain passes and canyons to the coastal regions
- These are often referred to as 'devil winds' due to their hot, dry, and strong nature.

Characteristics of Santa Ana Winds

- Hot and extremely dry, with low relative humidity, that can bring the hottest weather of the year to **Southern California.**
- These winds are **known for creating critical fire weather conditions**, as the combination of high wind speeds, warm air, and low humidity can fan destructive wildfires.

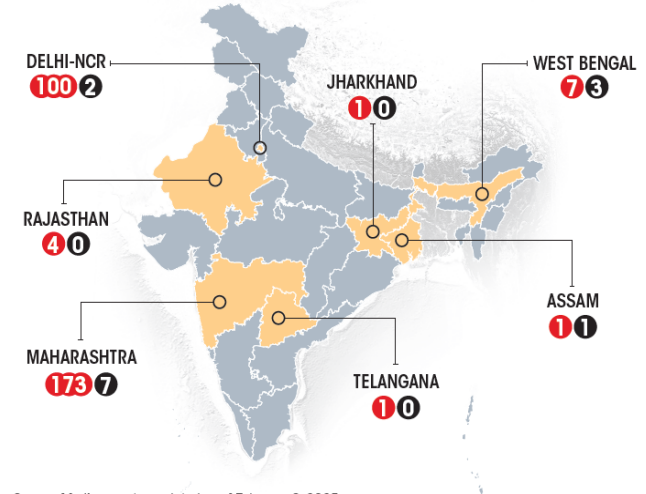
GUILLAIN-BARRÉ SYNDROME

Context

- Recently, an outbreak of Guillain-Barré syndrome was reported across different regions in India.

About the Guillain-Barré Syndrome (GBS)

● Cases confirmed ● Deaths (suspected or confirmed)



Source: Media reports (updated as of February 9, 2025)

- It is a rare autoimmune disorder in which the body's immune system mistakenly attacks the peripheral nerves.
- It can lead to muscle weakness, numbness, and even paralysis.
- The exact cause of GBS is unknown, but it is often preceded by an infection, such as respiratory or gastrointestinal infections, including COVID-19.

Symptoms and Diagnosis

- GBS typically begins with tingling and weakness in the feet and legs, which can spread to the upper body.
- Other symptoms may include difficulty walking, facial weakness, difficulty swallowing, and in severe cases, respiratory failure.
- Diagnosis is based on clinical observations and tests such as nerve conduction studies and lumbar punctures.

Treatment and Recovery

- While there is no cure for GBS, treatments such as **intravenous immunoglobulin (IVIG) and plasma exchange (plasmapheresis)** can help reduce symptoms and speed up recovery.
- Supportive care, including physical therapy and pain management, is also crucial.
- Most people recover fully, but recovery can take months or even years.

Prevention and Awareness

- Preventing infections that can trigger GBS, such as through vaccination and good hygiene practices, is key to reducing the risk.
- Raising awareness about the symptoms and early signs of GBS can also help ensure timely medical intervention and better outcomes.

DISASTER RISK TRANSFER PARAMETRIC INSURANCE SOLUTION

Context

- Nagaland became India's first state to insure its entire area under **Disaster Risk Transfer Parametric Insurance Solution (DRTPS)** to protect the state's infrastructure and reduce economic losses due to disaster in 2024.

About DRTPS

- It is an innovative financial mechanism designed to provide quick and efficient payouts to governments and organizations in the event of natural disasters.
- It is triggered by specific, pre-defined events, such as the intensity of a storm or the occurrence of an earthquake, rather than by the actual losses incurred.
- It allows for faster financial support, helping to mitigate the economic impact of disasters and accelerate recovery efforts.

Working of Parametric Insurance

- Unlike traditional insurance, which requires detailed damage assessments and can take weeks or months to process claims, parametric insurance provides **pre-determined payouts** based on the occurrence of specific events.
- It means that once the event meets the pre-defined criteria, the insured receives financial support quickly, often within days or weeks.

Significance

- The DRTPS initiative is expected to improve disaster resilience and ensure better protection for the state's people and resources.

- Providing quick payouts after disasters helps to ensure rapid recovery and reduces economic losses, making it a valuable tool for disaster risk management.

ENGAGING COMMUNITIES TO SAFEGUARD OCEAN LIFE

Context

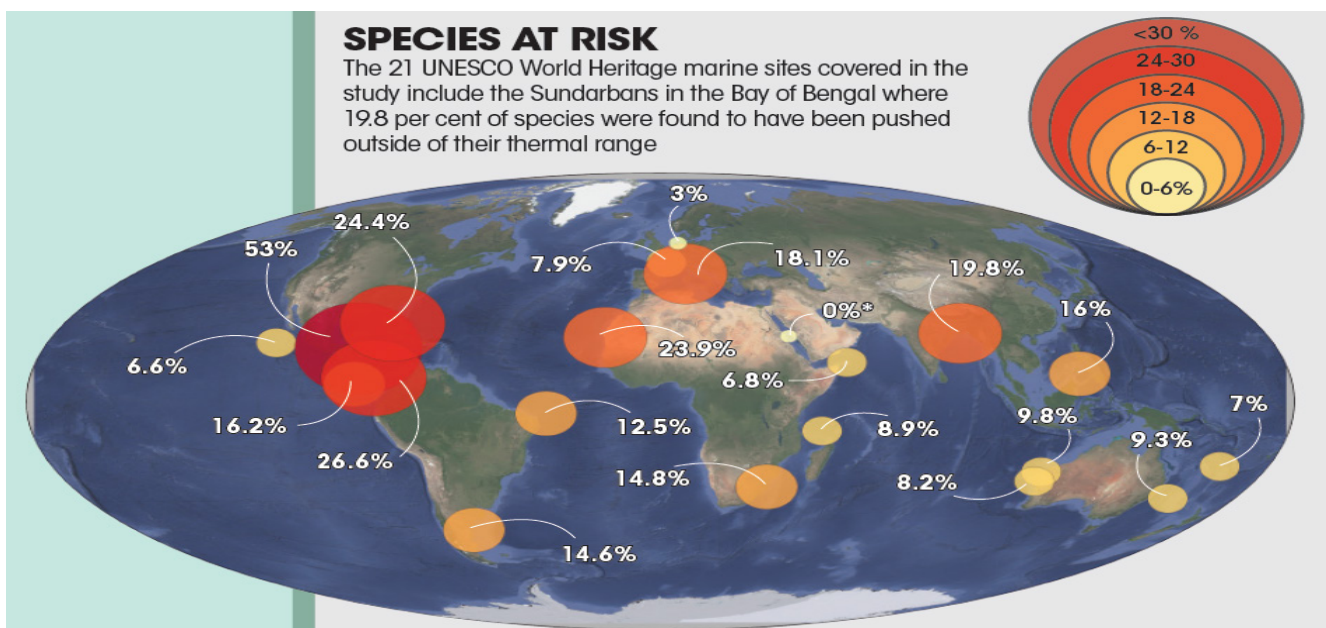
- A recent analysis by UNESCO has revealed that nearly 20% of species residing in UNESCO's World Heritage Marine Sites live in unsuitably warm waters.

Key Findings of Engaging Communities to Safeguard Ocean Life

- About 881 out of 4,406 species mapped in 21 of UNESCO's 51 World Heritage marine sites have reached or exceeded their thermal limits.
- These species include 342 fish species, 135 species of algae, and 76 species of molluscs.
- Notably, five species of mammals and seven species of sharks are also affected.

Affected Species

- Among the mammals, species such as the Atlantic bottlenose dolphin, West Indian manatee, southern elephant seal, True's beaked whale, and Crabeater seal are living in areas with unsuitable temperatures.
- The shark species affected include the lesser sandshark, Whitespotted eagle ray, Caribbean reef shark, Southern stingray, Krefft's ray, Lemon shark, and yellow stingray.



Thermal Limit Hotspots

- The **Belize Barrier Reef Reserve System** has the highest percentage of species living at their thermal limits, with 53% of its species affected.
- **Coiba National Park in Panama** follows with 26.6%, and Everglades National Park in the USA with 24.4%.
- Other notable sites include Banc d’Arguin National Park in Mauritania (23.9%) and the Sundarbans in the Bay of Bengal (19.8%).

Impact of Warming Waters

- Warming oceans impose significant stress on marine life, affecting food availability, reproduction, and overall well-being.
- Species under heat stress exhibit reduced reproductive rates and increased vulnerability to disease.
- While some species may adapt or migrate to cooler waters, many are unlikely to survive in conditions beyond their tolerance.

Ocean Heat Trends

- Global sea surface temperatures have increased by approximately 1°C since 1884, and projections suggest a potential rise of 4.4°C by the end of the century if emissions continue unchecked.
- This increase in ocean temperatures disrupts oxygen and nutrient circulation, vital for marine life, and poses a threat to marine ecosystems.

SUBJECTIVE QUESTIONS

1. Considering the multiple facets of India’s clean energy transition, including the adoption of renewable energy sources, grid modernization, and energy efficiency measures, what strategies and policies should the government prioritize to ensure a sustainable and inclusive energy future for the country?
2. Given the objectives and proposed changes in the Draft National Policy on Agricultural Marketing, what are the potential benefits and challenges of implementing this policy?
3. What strategies and policy interventions do you believe are necessary to effectively reduce stubble burning while ensuring the economic well-being of farmers?
4. In light of the recent recognition of traditional pastoral routes and the restrictions on afforestation in key grazing areas by the Himachal Pradesh Forest Department, what are the potential benefits and challenges of safeguarding pastoralist rights over grazing lands?

MCQS

1. With reference to the *India’s 500 GW of Clean Energy Capacity By 2030*, consider the following statements:
 1. It aims to replace coal with clean energy sources like solar and wind.
 2. Clean energy sources are expected to generate 44% of the country’s electricity demand by 2030.

Which of the statements given above is/are correct?

- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
2. Pastoral communities like *Gaddi, Kinnaura, Lahaula, and Pangwala* primarily located in which of the following Indian states or Union Territories?
 - (a) Uttarakhand
 - (b) Jammu & Kashmir
 - (c) Himachal Pradesh
 - (d) Ladakh
 3. Genotypes like *D1.2, B3.13 and D1.1*, sometimes appeared in the news, primarily in the context of:
 - (a) Avian Influenza (H5N1)
 - (b) Malaria
 - (c) Tuberculosis (TB)
 - (d) Swine Flu (H1N1)

4. With reference to the *Guillain-Barré Syndrome (GBS)*, consider the following statements:
 1. It is a rare autoimmune disorder in which the body’s immune system mistakenly attacks the peripheral nerves.
 2. Plasma exchange (plasmapheresis) can help reduce symptoms and speed up recovery.

Which of the statements given above is/are correct?

- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
5. Which one of the following Indian states is first to insure its entire area under *Disaster Risk Transfer Parametric Insurance Solution (DRTPS)* to protect the state’s infrastructure and reduce economic losses due to disaster in 2024?
 - (a) Sikkim
 - (b) Assam
 - (c) Arunachal Pradesh
 - (d) Nagaland

Answer key: 1. (b) 2. (c) 3. (a) 4. (c) 5. (d)

