

# WEEKLY NEWS

September 01-07, 2024

## *Mitochondrial Dynamics and Parkinson's Disease Treatment*



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## *AgriSURE Fund and Krishi Nivesh Portal*




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## HIGHLIGHTS

- India - Brunei
- Report on Road Safety
- Swachh Bharat Mission

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# Telecommunications (Administration of Digital Bharat Nidhi) Rules, 2024

## ● Why in News?

- ➔ The Department of Telecommunications (DoT) has notified rules under the Telecommunications Act, 2023 to operationalize the **Digital Bharat Nidhi (DBN)**.

## ● About Digital Bharat Nidhi (DBN)

- ➔ **Establishment:** Created through the Telecommunications Act, 2023 to fund telecom schemes in underserved and remote/rural areas at affordable prices.
- ➔ **Replacement:** DBN replaces the Universal Service Obligation Fund (USOF), which was established under the Indian Telegraph Act, 1885.
- ➔ **Funding Source:** Previously, USOF was funded by a Universal Access Levy, 5% of the Adjusted Gross Revenue from DoT licensees.

## ● Key Highlights of the Notified Rules

### ➔ Criteria for Schemes and Projects:

Provisioning telecom services in underserved rural, remote, and urban areas.

Introduction of next-gen telecom technologies.

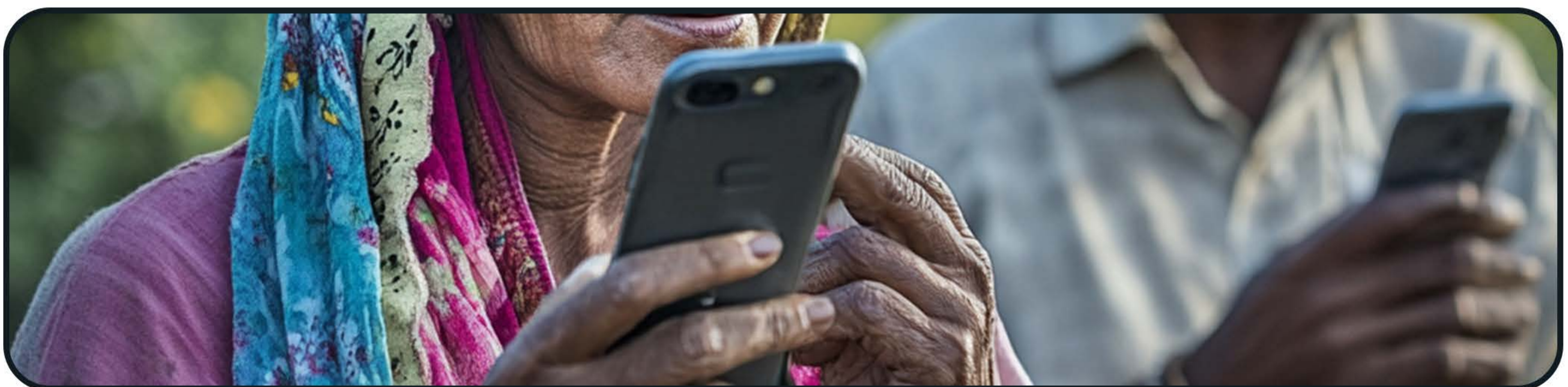
Encouraging startups and promoting sustainable and green technologies.

- ➔ **Network Sharing:** Networks established under DBN must be shared and made available on an open and non-discriminatory basis.

### ➔ Fund Allocation Process:

- ➔ **Bidding:** To support telecommunication services in underserved areas.

- ➔ **Selection by Application:** To support R&D in emerging telecommunication technologies through co-funding, Viability Gap Funding (VGF), etc.





● **Way Forward**

- ➔ **Focus on Expanding Connectivity:** Strengthening the telecom infrastructure in remote and rural areas to bridge the digital divide.
- ➔ **Encouraging Innovation:** Promoting R&D and startup involvement in next-gen and sustainable telecom technologies.





# Mitochondrial Dynamics and Parkinson's Disease Treatment

## ● Why in News?

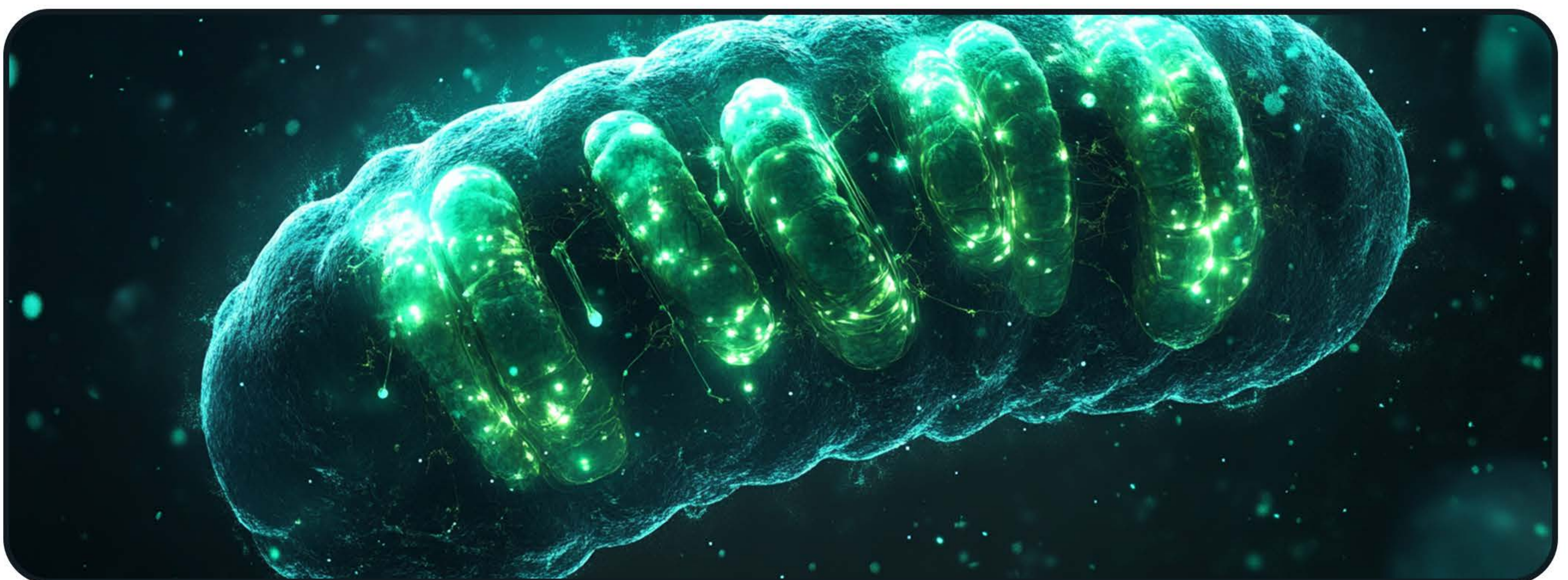
- ➔ Recent research explored mitochondrial dynamics for treating Parkinson's disease, a **neurodegenerative disorder** caused by the **death of brain cells**.
- ➔ Researchers found that inhibiting **Dynamin-related protein (Drp1)** could restore mitochondrial function and provide a potential treatment pathway.

## ● Parkinson's Disease and Mitochondrial Dysfunction

- ➔ Parkinson's disease is linked to **environmental toxins** and **toxic proteins**, leading to mitochondrial fragmentation and dysfunction.
- ➔ Example: **Manganese-induced Parkinsonism** disrupts mitochondrial activity, causing impaired cellular functions.

## ● Key Findings on Drp1 Protein

- ➔ **Drp1** is a naturally occurring protein involved in mitochondrial division.
- ➔ **Normal Function:** Drp1 travels to mitochondria, aiding in their division into smaller, mobile units for quality control.
- ➔ **Problem:** Excessive Drp1 activity leads to too many mitochondrial divisions, causing fragmented and dysfunctional mitochondria.
- ➔ **Inhibition of Drp1:** Reducing Drp1 activity restores mitochondrial function, offering a potential treatment for Parkinson's.





## ● About Mitochondria

### ➡ Structure & Function

Mitochondria are membrane-bound organelles, crucial for energy production in the form of **ATP (adenosine triphosphate)**.

Known as the "powerhouses of the cell," they are essential for aerobic respiration.

### ➡ Key Functions

**Energy Production:** Main sites of ATP production via aerobic respiration.

**Genetic Material:** Contains circular mitochondrial DNA (mtDNA), RNA, and ribosomes.

**Mitochondrial DNA (mtDNA)** is inherited from the mother and is used in genetic tracing.

### ➡ Mitochondrial Diseases

Mitochondrial diseases result from genetic mutations in **mtDNA** or **nuclear DNA**.

These diseases are maternally inherited as mtDNA is passed from mother to child.

**Mitochondrial Replacement Therapy (MRT):** A technique that prevents transmission of mitochondrial diseases from mother to offspring.

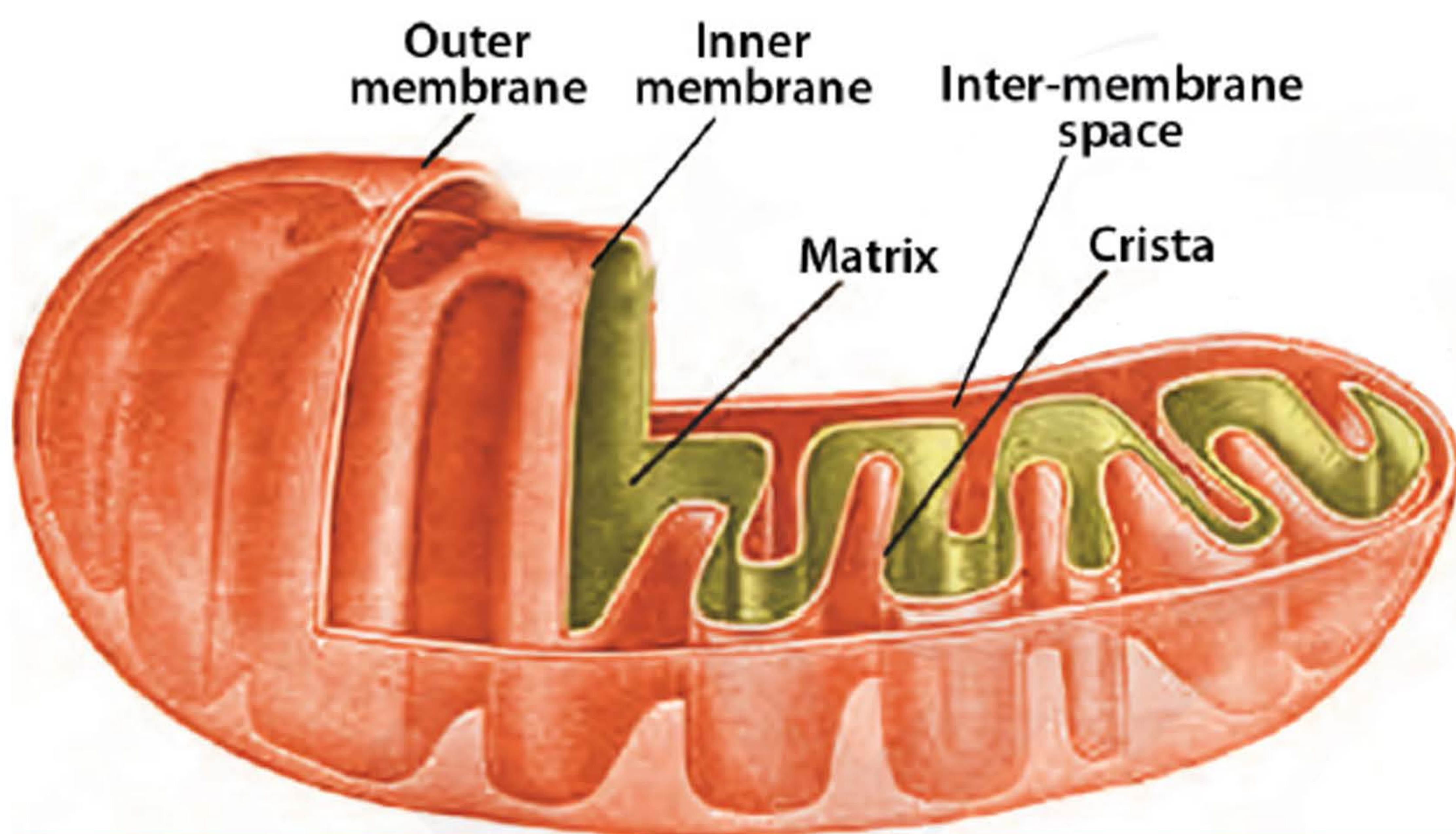
## ● Way Forward

➡ Continued research on mitochondrial dynamics and protein inhibition could lead to new **therapeutic avenues for neurodegenerative diseases** like Parkinson's.

➡ Greater focus on mitochondrial health may open doors to treating other diseases linked to mitochondrial dysfunction.

➡ The visit and financial package reflect the EU's efforts to engage strategically with neighbouring countries to address shared challenges and promote stability in the region.

### Structure of mitochondrion (Longitudinal section)





# Draft Rules for Protection of Critical Telecom Infrastructure

## ● Why in News?

⇒ The Department of Telecommunications (DoT) recently notified two new rules under the Telecommunications Act, 2023:

1. Telecommunications (Critical Telecommunication Infrastructure) Rules, 2024
2. Telecommunications (Telecom Cyber Security) Rules, 2024

## ● About Critical Telecommunication Infrastructure (CTI)

⇒ CTI refers to any telecom network or part of it that is designated by the Central Government as critical to national security, the economy, public health, or safety.

⇒ Disruption to CTI can lead to severe impacts on these sectors.

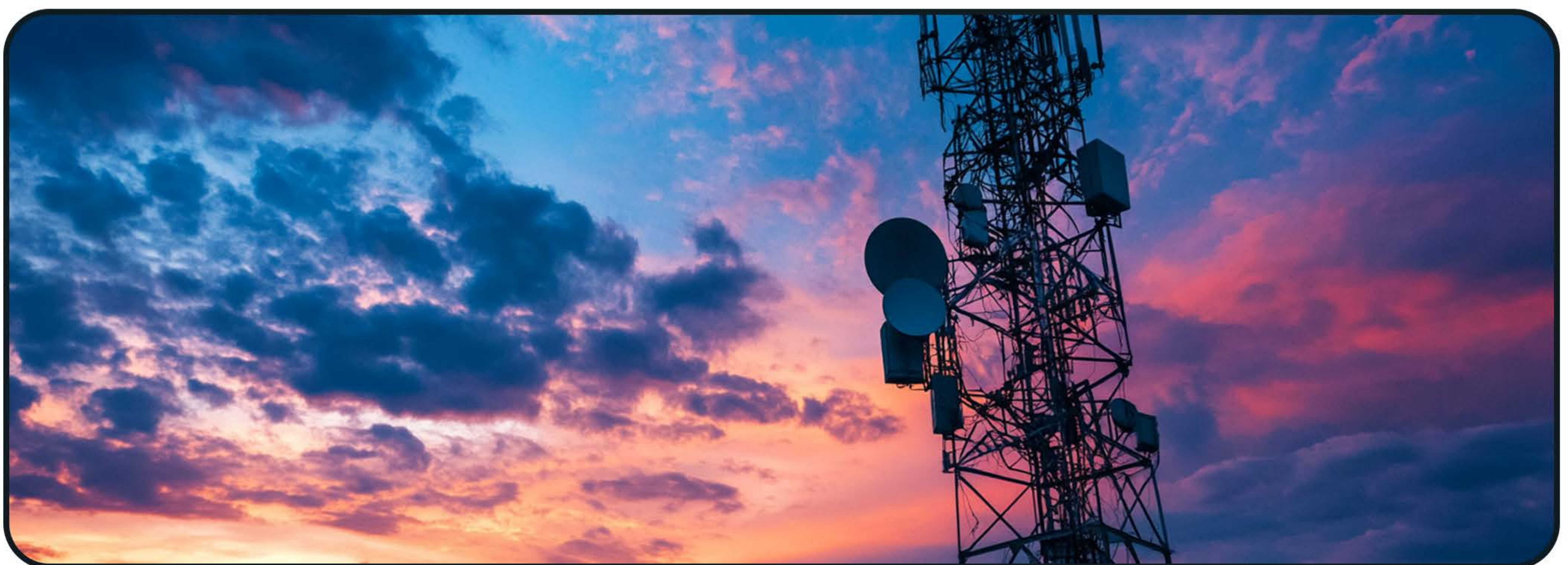
## ● Threats to Critical Telecommunication Infrastructure (CTI)

⇒ **Cyberattacks and Espionage:** Examples include targeted malware, ransomware, Distributed Denial of Service (DDoS) attacks.

⇒ **Physical Threats:** Includes vandalism from terrorist groups, natural disasters, and other destructive actions.

⇒ **Supply-chain Vulnerabilities:** Dependence on foreign hardware and software raises concerns over hidden backdoors, while geopolitical tensions disrupt supply chains.

⇒ **Technological Complexity:** Increased interconnectivity through the rollout of 5G, Internet of Things (IoT), etc., makes infrastructure more vulnerable.





## ● **Key Highlights of the Draft Rules**

- ➔ **Obligations of Telecom Entities:** Telecom entities are required to maintain security measures, document supply-chain records, and periodically assess vulnerabilities.
- ➔ **Upgradation of CTI:** Any CTI upgrade requires certification from the Central Government or an authorized body.
- ➔ **Telecom Cyber Security Policy:** Telecom companies must develop and implement a cybersecurity policy, which includes security safeguards, risk management, forensic analysis, and incident reporting.

## ● **Way Forward**

- ➔ Focus on **enhancing cybersecurity measures** and upgrading CTI to address emerging threats.
- ➔ **Strengthen domestic manufacturing** to reduce reliance on foreign supply chains.
- ➔ Ensure **regular assessments and updates of security protocols**, especially with the introduction of 5G and IoT technologies.





# Digital Agriculture Mission (DAM)

## ● Why in News?

- ➔ The Digital Agriculture Mission (DAM) has been conceived as an umbrella scheme to support various digital agriculture initiatives, enhancing the efficiency and effectiveness of the sector.

## ● About DAM

- ➔ **Objective:** DAM is aimed at supporting digital agriculture initiatives, including the creation of Digital Public Infrastructure (DPI) and the implementation of the Digital General Crop Estimation Survey (DGCEs).

- ➔ **Digital Public Infrastructure (DPI):**

DPI is a set of digital systems that enables countries to provide economic opportunities and deliver social services efficiently and safely.

DAM includes three DPIs to be developed:

**AgriStack:** Consists of foundational registries/databases: farmers' registry, geo-referenced village maps, and crop sown registry. Farmers will receive a digital identity like Aadhaar, linked to state land records, livestock ownership, etc.

**Krishi Decision Support System:** Leverages geospatial data, weather and satellite data, drought and flood monitoring, and groundwater availability information to assist farmers in making informed decisions.

**Soil Profiling:** Detailed Soil Profile Maps on a 1:10,000 scale are planned for approximately 142 million hectares of agricultural land across the country.

## ● Significance

- ➔ **Efficient Service Delivery:** The initiative will enable more efficient, easier, and faster services and scheme delivery to farmers.
- ➔ **Employment Generation:** The mission is expected to create employment opportunities for approximately 2.5 lakh trained local youth and Krishi Sakhis.
- ➔ **Enhanced Agricultural Value Chains:** The development of efficient value chains for agricultural inputs and post-harvest processes will be facilitated through DAM.





● **Way Forward**

- ➡ **Expanding Digital Infrastructure:** Continue expanding digital public infrastructure to cover more regions and integrate more data for enhanced decision-making in agriculture.
- ➡ **Training and Capacity Building:** Invest in the training of local youth and Krishi Sakhis to ensure effective implementation and sustainability of the mission.
- ➡ **Farmer Awareness and Adoption:** Focus on educating farmers about the benefits of digital agriculture to ensure widespread adoption of the technologies provided by DAM.





# 7 Major Schemes to Enhance Farmers' Lives and Livelihoods

## ● Why in News?

- ➡ The Union Cabinet has approved seven key schemes aimed at improving agriculture, farmers' livelihoods, and research. These schemes have a total outlay of ₹14,235 crore.

## ● Key Schemes Approved

### ➡ Digital Agriculture Mission

Focused on leveraging Digital Public Infrastructure (DPI) for agriculture.  
Utilizes AI, big data, and remote sensing for precision agriculture.

### ➡ Crop Science for Food and Nutritional Security

Pillars include research and education, genetic crop improvement, and management of plant genetic resources.

Special focus on improving pulse, oilseed, fodder, and commercial crops.

### ➡ Strengthening Agricultural Education, Management, and Social Sciences

Led by ICAR, aligned with New Education Policy 2020.

Emphasis on natural farming, climate resilience, and adopting latest technologies such as AI, DPI, and big data.

### ➡ Sustainable Livestock Health and Production Programme

Includes initiatives for animal health management, dairy technology, animal genetics, and nutrition.

Aims at improving the income of farmers from livestock and dairy production.

### ➡ Sustainable Development of Horticulture

Covers tropical, sub-tropical, and temperate horticultural crops.

Focus on vegetables, floriculture, mushroom, root, tuber, and bulbous crops.

### ➡ Strengthening of Krishi Vigyan Kendra (KVK)

Supports research, innovation, and outreach for farmers at the grassroots level.

### ➡ Natural Resource Management

Focus on sustainable management of soil, water, and other natural resources for long-term agricultural productivity.





## ● **Significance of the Schemes**

- ➡ **Climate Resilience:** Prepares farmers to adapt to changing climate conditions.
- ➡ **Food Security:** Ensures food and nutritional security by 2047.
- ➡ **Modernizing Agriculture:** Enhances agricultural education and research to meet contemporary challenges.
- ➡ **Increased Farmer Income:** Boosts income through livestock, dairy, and horticulture sectors.

## ● **Way Forward**

- ➡ Focus on building agricultural climate resilience.
- ➡ Prepare future generations of students and researchers to tackle emerging challenges in agriculture.
- ➡ Leverage cutting-edge technologies for research, education, and farm-level productivity improvements.





# South-East Asia Regional Status Report on Road Safety

## ● Why in News?

- ➔ WHO launched the “South-East Asia Regional Status Report on Road Safety” at the 15th World Conference on Injury Prevention and Safety Promotion.
- ➔ The report highlights that the South-East Asia region accounts for 28% of global road traffic deaths, with an estimated 330,222 fatalities.

## ● Key Findings Related to India

### ➔ Road Traffic Deaths (2021):

Estimated deaths: 216,618 (a 2.1% increase since 2010).

Officially reported deaths: 153,972.

### ➔ High-risk Group:

Two-three wheeler drivers and riders make up the highest share of fatalities at **45.1%**.

### ➔ Deaths per 100,000 Population:

India: 15.4 (2021), higher than the global average of 15.

## ● Issues Related to Road Safety in South-East Asia

➔ **Fragmented Efforts:** Absence of an effective lead agency with the necessary expertise and resources.

### ➔ Poor Quality Infrastructure:

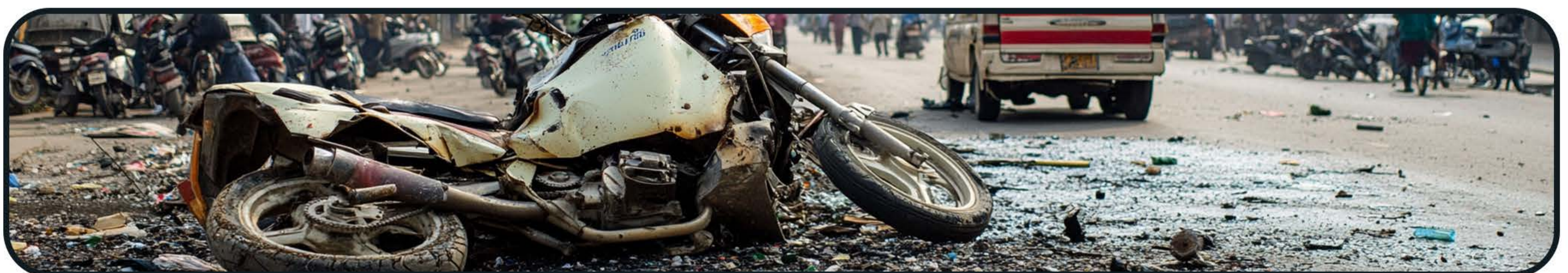
Lack of budgetary allocations for road safety.

No structured system for road safety audits.

### ➔ Other Challenges:

Non-compliance with vehicle safety standards.

Inadequate emergency and trauma care systems.





## ● **Recommendations from the Report**

- ➔ **Integrate Road Safety:** Incorporate road safety measures into urban planning, environment policies, and other processes.
- ➔ **Improve Road Design:** Align road designs with star ratings based on International Road Assessment Programme (iRAP) standards.
- ➔ **Other Suggestions:**
  - Implement **time-bound road safety targets**.
  - Strengthen **post-crash care systems**.
  - Create dedicated **data surveillance departments** for road safety.

## ● **Road Safety Measures in India**

- ➔ **National Road Safety Policy (2010):** Establish road safety databases and promote safer infrastructure.
- ➔ **Motor Vehicle (Amendment) Act, 2019:**
  - Creation of the Motor Vehicle Accident Fund.
  - Implementation of the Cashless Treatment Scheme during the Golden Hour.
- ➔ **Integrated Road Accident Database (IRAD):** Ministry of Road Transport and Highways initiative to improve accident data collection.
- ➔ **Other Measures:** Road safety audits and the constitution of the National Road Safety Council.

## ● **Way Forward**

- ➔ **Adopt Global Standards:** Enhance road safety through better infrastructure and compliance with global safety ratings.
- ➔ **Stronger Institutions:** Establish a lead agency with dedicated resources and expertise.
- ➔ **Emergency Preparedness:** Improve trauma care and emergency response systems.





# Constitution of the 23rd Law Commission Approved

## ● Why in News?

- ⇒ The President has approved the formation of the **23rd Law Commission of India**.
- ⇒ The Commission will operate from **September 1, 2024, to August 31, 2027**.

## ● Mandate and Composition

- ⇒ **Mandate:** Review and recommend legal reforms to improve the Indian legal system.
- ⇒ **Composition:**
  - A full-time chairperson.
  - Four members.
  - Additional ex-officio and part-time members.

## ● Terms of Reference (ToR)

- ⇒ **Review/Repeal of Obsolete Laws:**
  - Develop a Standard Operating Procedure (SOP) for periodic law reviews.
  - Recommend repealing or amending laws based on relevance and current needs.
- ⇒ **Law and Poverty:**
  - Examine laws impacting the poor.
  - Conduct post-enactment audits of socio-economic legislation.
- ⇒ **Review of Judicial Administration:**
  - Address case delays and clear arrears.
  - Simplify processes and harmonize high court rules.
- ⇒ **Directive Principles of State Policy (DPSPs):** Evaluate laws and suggest reforms to effectively implement DPSPs.
- ⇒ **Gender Equality:** Strengthen laws related to gender equality through amendments.
- ⇒ **Revision of Central Acts:** Address anomalies and inequities in existing Central Acts.
- ⇒ **Impact of Globalization:**
  - Assess effects on food security and unemployment.
  - Recommend measures to protect marginalized communities.





● **About the Law Commission of India (LCI)**

- ➡ **Nature:** A non-statutory body formed by the Ministry of Law and Justice.
- ➡ **Aim:** Reform laws to enhance justice and promote good governance.
- ➡ **History:** First constituted in **1834** by **Lord Macaulay** under the **Charter Act of 1833**.

● **Way Forward**

- ➡ **Implement Reforms:** Focus on reviewing and updating outdated laws.
- ➡ **Enhance Justice Delivery:** Improve judicial administration to address delays and case backlog.
- ➡ **Promote Equity:** Ensure laws contribute to social justice, gender equality, and protection of marginalized groups





# AgriSURE Fund and Krishi Nivesh Portal

## ● Why in News?

- ➔ Union Agriculture Minister has launched two key initiatives: **AgriSURE Fund** and **Krishi Nivesh Portal**.

## ● AgriSURE Fund

- ➔ **Objective:** Boost **farm-sector startups** through equity and debt support.

### ➔ Details:

Announced in the **2022-23 Budget**.

Established as a **₹750 crore Category-II Alternative Investment Fund (AIF)**.

**Contributions:** ₹250 Crores from NABARD, ₹250 Crores from the Ministry of Agriculture, and ₹250 Crores from other institutions, including private investors.

Managed by **NABVENTURES Ltd.**, a subsidiary of NABARD.

### ➔ Schemes:

- ➔ **AgriSURE – FoF Scheme:** Provides funding to Category I and Category II AIFs investing in startups.

- ➔ **AgriSURE – Direct Scheme:** Offers direct equity investments in early-stage startups.

### ➔ Significance:

Fosters innovation in agriculture.

Enhances the value chain of farm produce.

Creates and improves rural infrastructure.

Generates employment opportunities.

Supports IT-based solutions.





## ● **Krishi Nivesh Portal**

- ➔ **Objective:** Serve as a centralized platform for agri-investors to access various government schemes.
- ➔ **Functionality:** Integrated portal to streamline benefits and resources for agricultural investments.

## ● **Challenges for Rural Startups**

### ➔ **Financial Accessibility:**

- Reluctance of financial institutions to lend.
- Limited banking services in rural areas.

### ➔ **Logistical Constraints:** Difficulty in procuring raw materials and resources due to connectivity issues.

### ➔ **Technological Barriers:** Lack of awareness, training programs, and comprehensive services.

## ● **Way Forward**

- ➔ **Support Rural Innovation:** Utilize the AgriSURE Fund to address financial and logistical challenges faced by rural startups.
- ➔ **Leverage the Krishi Nivesh Portal:** Ensure effective utilization of government schemes to support agri-investors.
- ➔ **Enhance Infrastructure and Training:** Focus on improving connectivity and providing technological training to boost rural entrepreneurship.





# Black Coat Syndrome

## ● Why in News?

- ➡ The President highlighted the growing anxiety among citizens due to delays in justice delivery, using a term analogous to “**White Coat Hypertension**” – where ordinary people experience stress in court settings.
- ➡ Judicial delays, particularly in cases of serious crimes like rape, contribute to public perception of insensitivity in the system.

## ● Reasons for Perceived Judicial Anxiety

- ➡ **High Pendency:** As of August 31, 82,887 cases are pending in the Supreme Court (National Judicial Data Grid).
- ➡ **Frequent Adjournments:** Causes significant mental and financial stress, especially for those traveling from rural areas.
- ➡ **District Judiciary Issues:** Only 6.7% of court infrastructure at the district level is female-friendly, impacting public perception of the judiciary.

## ● Steps Taken to Address the Issues

- ➡ **Modernisation Efforts:** Initiatives like e-Courts Integrated Mission Mode Project and Tele-Law programme aim to speed up judicial processes.
- ➡ **Alternative Dispute Resolution:** Promotion of pre-litigation mechanisms such as Lok Adalat to resolve cases early.
- ➡ **Infrastructure Development:** Addressing court infrastructure gaps through schemes like the Centrally Sponsored Scheme for Judicial Infrastructure.
- ➡ **Reforming Laws to Reduce Pendency:** Supreme Court applied Section 479 of Bharatiya Nagarik Suraksha Sanhita retroactively to allow first-time offenders easier access to bail.
- ➡ **Institutionalisation of Pro Bono Culture:** Promoting free legal services through programs like Nyaya Bandhu.

## ● Way Forward

- ➡ **Strengthening Legal Infrastructure:** Focus on making district-level courts more citizen and female-friendly.
- ➡ **Reducing Case Backlog:** Continued efforts to streamline judicial processes and modernize court infrastructure.
- ➡ **Public Engagement:** Building public trust through timely justice delivery and better communication on legal rights.





# India-Brunei Darussalam

## ● Why in News?

- ➔ India and Brunei have elevated their relationship to an 'Enhanced Partnership,' marking a new phase of cooperation and shared strategic interests.
- ➔ The Indian Prime Minister's visit to Brunei was the first of its kind.

## ● Key Highlights of the Visit

- ➔ **Defence Cooperation:** Expansion of joint exercises and training programs.
- ➔ **Strategic Policy:** Both nations emphasized development over expansionism in Southeast Asia, seen as a counter to Chinese influence.
- ➔ **Multilateralism:** Agreement to enhance multilateralism to reflect contemporary realities.
- ➔ **Technical Collaboration:** Cooperation on Telemetry, Tracking, and Telecommand for satellite and launch vehicles.
- ➔ **Economic Cooperation:** Leveraging strengths in technology, finance, manufacturing, and processing.

## ● Significance of Brunei Darussalam for India

### ➔ Strategic Importance:

Key partner in India's Act East Policy and Indo-Pacific Vision.  
Member of ASEAN.

### ➔ Indian Diaspora: Home to approximately 14,000 Indians.

### ➔ Energy Security: Major importer of Brunei's crude oil, valued at USD 500-600 million annually.

### ➔ Global South Summit (VOGSS): Brunei's active participation in the Indian-led initiative.





● **Way Forward**

- ➡ **Strengthen Defence Ties:** Continue enhancing defence cooperation through joint programs and strategic initiatives.
- ➡ **Promote Development Policies:** Collaborate on development-focused policies in Southeast Asia.
- ➡ **Expand Multilateral Cooperation:** Work together on global multilateral frameworks and initiatives.
- ➡ **Enhance Technical and Economic Collaboration:** Build on cooperation in technology and economic sectors to achieve mutual benefits.





# Vishvasya (BaaS) and Blockchain Technology

## ● Why in News?

- ➔ Launch of **Vishvasya**, offering **Blockchain-as-a-Service (BaaS)** to support permissioned Blockchain applications.
- ➔ Part of the broader **National Blockchain Framework (NBF)** under the **National Strategy on Blockchain**.

## ● About Blockchain Technology

- ➔ Blockchain is a Distributed Ledger Technology (DLT), a shared, irreversible ledger to record transactions and track assets across a network.
- ➔ It can be compared to Google Docs, where the document is distributed rather than copied or transferred.

## ● Features of Vishvasya (BaaS)

Feature	Description
Rapid end-to-end Permissioned Blockchain	Security Audited Application Development & Deployment
Ready-to-use Security Audited Blockchain Containers	Suitable for production setup
Blockchain-specific Security Audit Guidelines & Best Practices	Provides guidelines and best practices specific to blockchain security
Geographically Distributed Infrastructure	Distributed across three data centers (Hyderabad, Pune, Bhubaneswar)
Framework Augmented with Documentation	Facilitates easy onboarding of stakeholders
NBF Lite	Lightweight platform for rapid prototyping, research, and learning





● **National Blockchain Framework (NBF)**

- ➡ NBF aims to effectively leverage Blockchain technology across various domains.
- ➡ Addresses adoption challenges for Blockchain involving **Infrastructure Providers** and **Smart Contract Developers**.

● **Significance**

- ➡ Enhances **trust, transparency, and security** in digital transactions.
- ➡ Potential for wide-scale applications in **public services** and **private sector innovation**.

● **Way Forward**

- ➡ Promote wider **Blockchain adoption** across industries.
- ➡ Ensure the development of smart contracts and standardized infrastructure to meet the growing demand for secure digital services.





# Galathea Bay Trans-shipment Port

## ● Why in News?

- ➔ The Central Government has notified the development of **Galathea Bay** in **Andaman & Nicobar** as an **International Container Trans-shipment Port (ICTP)**.
- ➔ The port was notified under **Section 5** of the **Indian Ports Act, 1908**.

## ● Key Features of the Project

- ➔ **Trans-shipment Port:** A hub where cargo is transferred from one vessel to another for further transportation to the final destination.
- ➔ **Economic Boost:** Located on an international shipping route, this port will facilitate EXIM trade and reduce dependence on foreign ports like Colombo, Singapore, and Klang for trans-shipped cargo.
- ➔ **Strategic Location:** Proximity to key maritime chokepoints such as the Malacca Strait and the East-West shipping route, connecting Europe, Africa, and Asia.

## ● Economic Significance

- ➔ **Forex Savings:** Reduced reliance on foreign ports for trans-shipment will lead to significant foreign exchange savings.
- ➔ **Foreign Direct Investment (FDI):** The project is expected to attract FDI, creating increased economic activity.
- ➔ **Impact on Indian Ports:** The development will enhance economic activities in other Indian ports through better connectivity and shipping efficiency.

## ● Strategic Significance

- ➔ **Proximity to Key Routes:** The port's location near the Malacca Strait ensures strategic control over crucial maritime chokepoints, enhancing India's influence in global shipping routes.
- ➔ **Enhanced Security:** Strengthens India's maritime security and trade control in the Indo-Pacific region.





● **Ports in India**

- ➔ **Major Ports:** India has 12 major ports regulated under the **Major Ports Authority Act, 2021**, under the Ministry of Ports, Shipping, and Waterways.
- ➔ **Non-Major Ports:** There are over 200 minor ports governed by State Maritime Boards under respective State Governments.

● **Way Forward**

- ➔ **Strategic Development:** The ICTP will further India's influence in global maritime trade.
- ➔ **Regional Economic Growth:** The project is expected to spur local economic development and enhance India's standing as a trans-shipment hub.





# Swachh Bharat Mission (SBM)

## ● Why in News?

- ➔ Prime Minister highlighted a recent study published in Nature magazine demonstrating the positive impact of the **Swachh Bharat Mission (SBM)** on infant and child mortality rates.
- ➔ The research shows SBM has significantly improved public health outcomes in India.

## ● Key Findings from Research

- ➔ **Infant and Child Mortality:** The study revealed that areas with over 30% toilet construction under SBM saw a **reduction** in Infant Mortality Rate (IMR) by **5.3** and Under-Five Mortality Rate (U5MR) by **6.8**.
- ➔ **Health Program Utilization:** Higher SBM coverage was associated with increased use of health and nutrition programs, such as antenatal care (ANC) and institutional deliveries.
- ➔ **Disease Reduction:**
  - WHO reported a reduction of 300,000 diarrheal deaths in 2019 compared to 2014, attributable to improved sanitation.
  - Higher rates of childhood wasting observed in non-Open Defecation Free (ODF) areas.
- ➔ **Student Enrolment and Attendance:** Improved WASH facilities have been linked to higher school enrolment and attendance, particularly among girls.
- ➔ **Safety and Violence Against Women:** 93% of women reported feeling safer at home due to better access to sanitation facilities.

## ● Success Factors of SBM

- ➔ **Integrated Approach:** Combines toilet construction with community engagement and substantial investments in Information, Education, and Communication (IEC) to promote behavioral change.
- ➔ **Capacity Building:** Investment in training programs for government officials, frontline workers, and volunteers.
- ➔ **Waste Management Systems:** Establishment of waste segregation, collection, transportation, disposal systems, treatment plants, and recycling centers.
- ➔ **Citizen Engagement:** Introduction of mobile and web applications for monitoring and engaging citizens.
- ➔ **Progress Assessment:** Evaluation through the National Annual Rural Sanitation Survey (NARSS).





● **Way Forward**

- ➔ **Expand SBM Initiatives:** Continue to scale up SBM efforts to further improve sanitation coverage and public health outcomes.
- ➔ **Strengthen Community Engagement:** Enhance community involvement and behavior change strategies.
- ➔ **Enhance Infrastructure:** Invest in further development of waste management and sanitation infrastructure.
- ➔ **Monitor and Evaluate:** Maintain rigorous assessment through surveys and data collection to ensure continued effectiveness and identify areas for improvement.





# WHO Launches Global Framework for Understanding Origins of Pathogens

## ● Why in News?

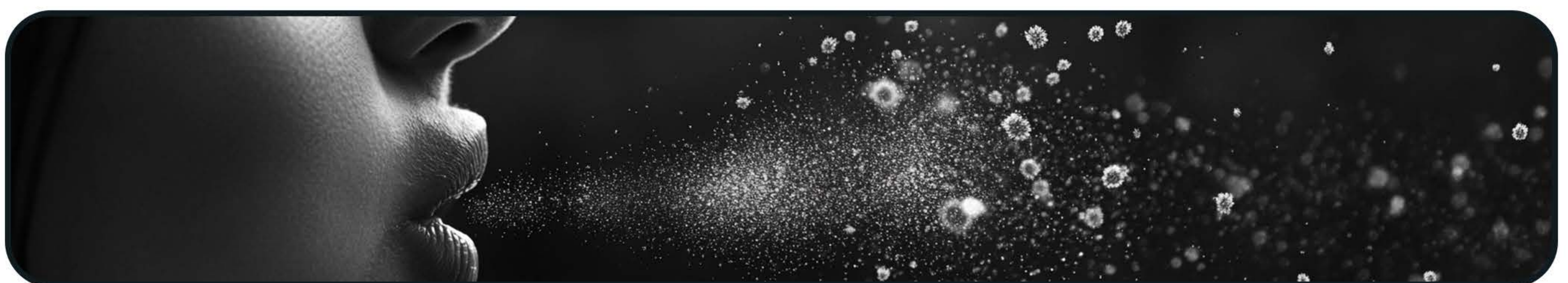
- ➡ The World Health Organization (**WHO**) has introduced its first global framework to understand the origins of new or re-emerging pathogens.
- ➡ Developed by the **Scientific Advisory Group for the Origins** of Novel Pathogens (**SAGO**), the framework aims to address gaps in pathogen origin investigations.

## ● About the Framework

- ➡ **Developed By:** The framework was created by SAGO, established by WHO in 2021, consisting of independent global experts.
- ➡ **Key Principles**
  - International Health Regulations (IHR):** A legally binding framework adopted by WHO in 2005 to manage the international spread of disease.
  - One Health Approach:** An integrated approach balancing and optimizing health across people, animals, and ecosystems.

## ● Significance of the Framework

- ➡ **Curtailing Pathogen Risks:** Helps address the risks associated with known pathogens (e.g., Ebola, Nipah) and novel pathogens with epidemic or pandemic potential (e.g., novel influenza, SARS-CoV-1).
- ➡ **Timely Investigations:** Facilitates comprehensive investigations to prevent and manage global health crises.
- ➡ **Confirming Lab Safety:** Assists in verifying or ruling out potential laboratory biosafety and biosecurity breaches.
- ➡ **Historical Context:** If implemented during COVID-19, the framework could have made the investigation of the virus's origins less controversial and more effective (according to WHO).





## ● **Framework's Technical Elements**

- ⇒ **Early Investigations:** Examine first identified cases, clusters, and outbreaks.
- ⇒ **Human Studies:** Understand epidemiology and transmission patterns.
- ⇒ **Human/Animal Interface Studies:** Identify potential animal reservoirs and sources of infection.
- ⇒ **Insect Vector Studies:** Determine insect vectors or other sources of infection.
- ⇒ **Genomics and Phylogenetics:** Analyze precursor strains and genomic characteristics.
- ⇒ **Biosafety/Biosecurity Studies:** Investigate if a laboratory breach contributed to the emergence of the pathogen.

## ● **Way Forward**

- ⇒ **Implement Framework:** Adopt and integrate the framework into global health protocols for pathogen investigations.
- ⇒ **Strengthen Collaboration:** Enhance international collaboration and data sharing to support the framework's effectiveness.
- ⇒ **Ongoing Monitoring:** Continuously monitor and update the framework based on emerging scientific evidence and global health needs.





# Multi-Drug Resistant Tuberculosis (MDR-TB)

## ● Why in News?

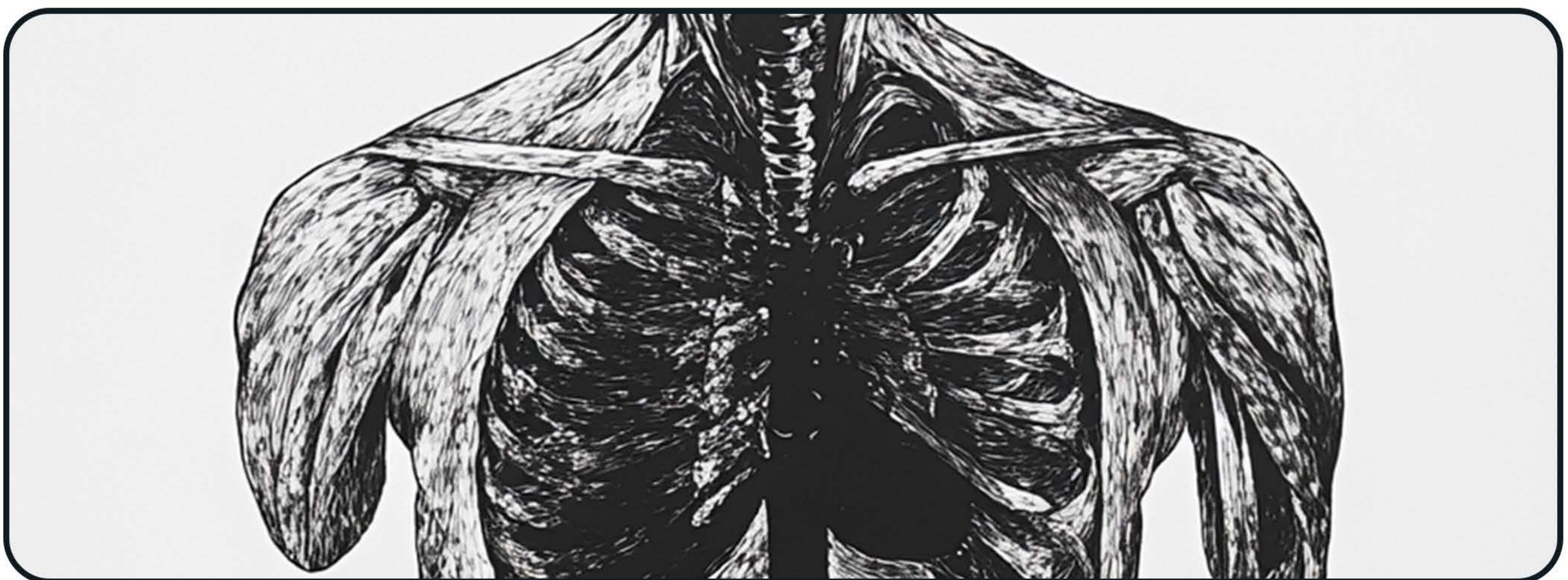
- ➔ Ministry of Health and Family Welfare has approved a new treatment regimen for **Multi-Drug Resistant Tuberculosis (MDR-TB)**.
- ➔ The **BPaLM regimen**, consisting of four drugs—**Bedaquiline, Pretomanid, Linezolid, and Moxifloxacin**—offers a faster and more effective treatment option than earlier approaches.

## ● Key Features of the BPaLM Regimen

- ➔ **BPaLM Regimen:** This new combination reduces treatment duration to 6 months, compared to the previous 20-month treatment.
- ➔ **Approval and Implementation:** Pretomanid has been approved by the CDSCO for use in India.
- ➔ **Introduction:** It has been introduced under the National TB Elimination Programme and is expected to accelerate progress towards India's goal of ending TB by 2025.

## ● About Tuberculosis (TB)

- ➔ **Cause:** TB is caused by the bacterium *Mycobacterium tuberculosis*, primarily affecting the lungs.
- ➔ **Vaccine:** Bacille Calmette-Guerin (**BCG**) vaccine provides immunity.
- ➔ **India's TB Burden:** According to the India TB Report 2024, 25.52 lakh TB cases were notified in 2023.





## ● **Challenges in TB Eradication**

- ⇒ **Social Stigma:** Leads to delayed diagnosis and treatment.
- ⇒ **High Costs:** Treatment is expensive, especially in rural areas.
- ⇒ **Comorbidities:** HIV and diabetes complicate treatment.
- ⇒ **Lack of Diagnostics:** Rural areas lack adequate diagnostic facilities.

## ● **Other Initiatives for TB Eradication**

- ⇒ **Pradhan Mantri TB Mukh Bharat Abhiyan:** Provides patient support and increases community involvement.
- ⇒ **Ni-kshay Mitra:** Offers diagnostic and nutritional support to TB patients.
- ⇒ **Nikshay Poshan Yojana:** Provides financial support for nutrition to TB patients.

## ● **Types of Drug-Resistant TB**

- ⇒ **Multidrug-Resistant TB (MDR-TB):** Resistant to Isoniazid and Rifampicin.
- ⇒ **Extensively Drug-Resistant TB (XDR-TB):** Resistant to Isoniazid, Rifampin, any fluoroquinolone, and at least one injectable second-line drug.
- ⇒ **Totally Drug-Resistant TB (TDR-TB):** Resistant to all first- and second-line TB drugs.

## ● **Way Forward**

- ⇒ **Awareness and Education:** Increase awareness to reduce social stigma and encourage early diagnosis.
- ⇒ **Strengthen Rural Healthcare:** Improve access to diagnostics and treatment in rural areas.
- ⇒ **Focus on Nutrition:** Continue financial and nutritional support to ensure patients complete their treatment.








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