

WEEKLY NEWS

May 19-25, 2024

Kunming-Montreal Global Biodiversity Framework



Investigation of Meta Platforms




HIGHLIGHTS

- Green Hydrogen Summit
- Avian Influenza
- Zero Debris Charter

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Bacteria Priority Pathogens List (BPPL)

● Why in News?

- ➔ The updated BPPL list for 2024 has been published, which includes 15 families of antibiotic-resistant (ABR) pathogens. This list is essential for guiding research and public health initiatives to combat AMR.

● About BPPL

- ➔ **Publication History:** The BPPL has been published since 2017.
- ➔ **Purpose:** It serves as a global tool for surveillance and control of AMR.
- ➔ **Categories:** Pathogens are classified into critical, high, and medium categories based on their priority for research and development (R&D) and public health measures.

● AMR (Antimicrobial Resistance)

- ➔ **AMR Definition:** AMR occurs when microbes such as bacteria, fungi, parasites, and viruses evolve to resist the effects of antimicrobial drugs, making treatments less effective.
- ➔ **Superbugs:** The evolved pathogens that are harder to treat due to AMR are referred to as “superbugs”.

➔ Causes for the Spread of AMR

Biological Causes: Gene transfer and mutations in microbes can lead to resistance.

Societal Causes: Factors include the inappropriate use of antibiotics, inadequate diagnostics, and poor infection control practices, all contributing to the spread of AMR.

➔ Challenges in Controlling AMR

Over-the-Counter Sales: Unregulated sales of antibiotics without prescriptions lead to misuse and overuse.

Lack of Surveillance and Monitoring: Inadequate systems for tracking AMR trends and infections hinder effective control measures.

Limited R&D: Insufficient investment in developing new antibiotics and alternative treatments exacerbates the AMR problem.



● **Initiatives to Control AMR**

➡ **Global Initiatives**

One Health Approach: Integrates efforts across human, animal, and environmental health sectors to combat AMR.

Global Action Plan on AMR: A comprehensive strategy coordinated by the World Health Organization (WHO) to address AMR worldwide.

World AMR Awareness Week: An annual campaign to raise awareness about AMR and encourage best practices among the public, health workers, and policymakers.

➡ **India's Initiatives**

National Action Plan on AMR: A strategic plan by the Indian government to tackle AMR through coordinated actions.

AMR Surveillance Network (ICMR): A network established by the Indian Council of Medical Research (ICMR) to monitor AMR trends in the country.

Banning Inappropriate Fixed-Dose Combination Drugs: Regulatory measures to prohibit the sale of irrational fixed-dose combinations of antibiotics that contribute to AMR.

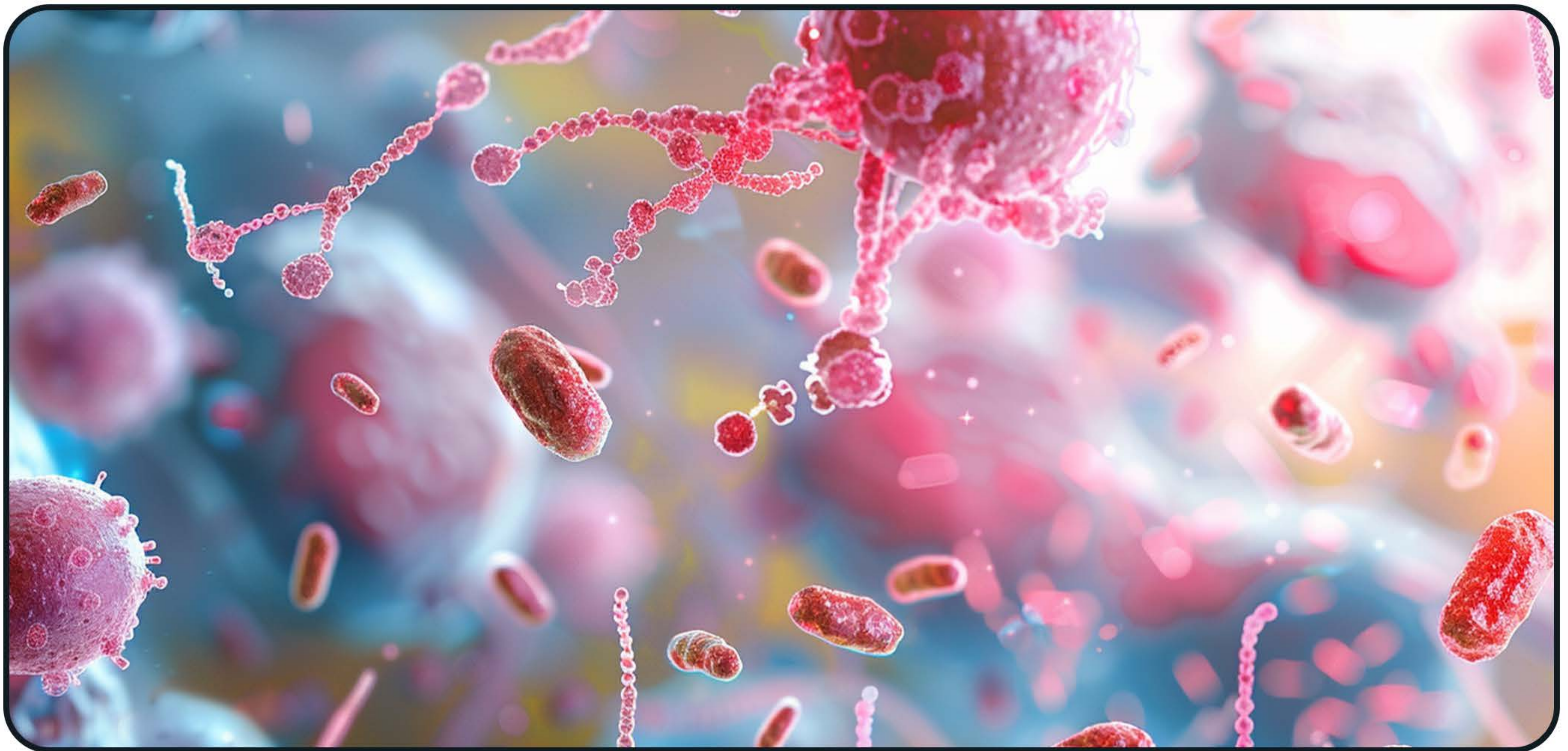
● **Priority Pathogen Categories (2024)**

<i>Category</i>	<i>Description</i>
Critical	<i>Pathogens with the highest priority for research and public health measures due to their severe impact and resistance.</i>
High	<i>Pathogens with significant priority requiring substantial R&D and public health interventions.</i>
Medium	<i>Pathogens with moderate priority needing focused R&D and health measures.</i>



● **Way Forward**

- ➔ **Strengthen Surveillance:** Improve global and national systems for tracking AMR and antibiotic use.
- ➔ **Promote Appropriate Use of Antibiotics:** Encourage responsible prescribing and use of antibiotics to prevent misuse.
- ➔ **Enhance R&D:** Increase investment in the development of new antimicrobial drugs and alternative treatments.
- ➔ **Infection Control Practices:** Implement and enforce strict infection control measures in healthcare settings.
- ➔ **Public Awareness:** Educate the public about the risks of AMR and the importance of proper antibiotic use.



India-UAE Talks on Shipping Hubs

● Why in News?

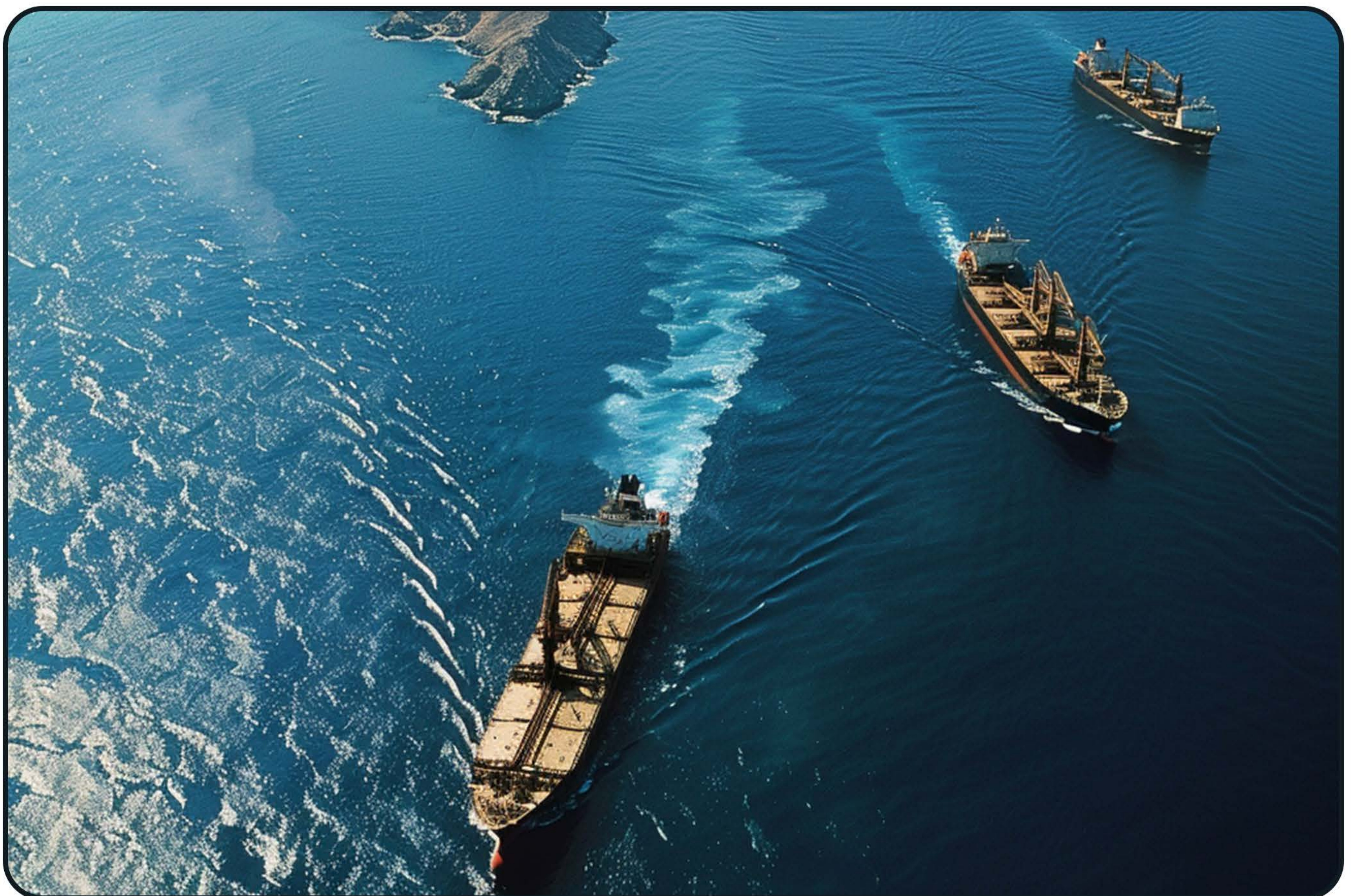
- ➔ A high-level Indian delegation concluded talks with UAE focusing on developing major shipping hubs.
- ➔ **India-UAE Inter-Governmental Framework Agreement (IGFA):** Approved for exploring potential future joint investment and collaboration on IMEC.

● About IMEC

- ➔ **IMEC:** Proposed transit network integrating Asia, the Middle East, and Europe.
- ➔ **Components:** Railroad, ship-to-rail, and road transport routes and networks.

● Key Participants in IMEC

- ➔  India,  European Union,  France,  Germany,  Italy,  Saudi Arabia,  UAE,  USA



● **Significance of IMEC**

Significance	Description
Recognition of Rising Powers	<i>Recognition by the US and EU of rising non-Western powers</i>
Increased Flow	<i>Enhance the flow of energy and digital communications</i>
Trade and Strategic Engagement	<i>Speeds up trade between India and Europe; boosts India's strategic ties with the Arab world.</i>
Resilient Supply Chain	<i>Make the global supply chain more resilient</i>
Alternative to BRI	<i>Provides an alternative to China's Belt and Road Initiative.</i>

● **Challenges**

Challenges	Description
Geopolitical Complexity	<i>Issues such as the Israel-Hamas-Iran crisis.</i>
Diplomatic Relations	<i>Lack of official diplomatic ties between Saudi Arabia and Israel.</i>
Financial Commitments	<i>Securing necessary financial investments</i>

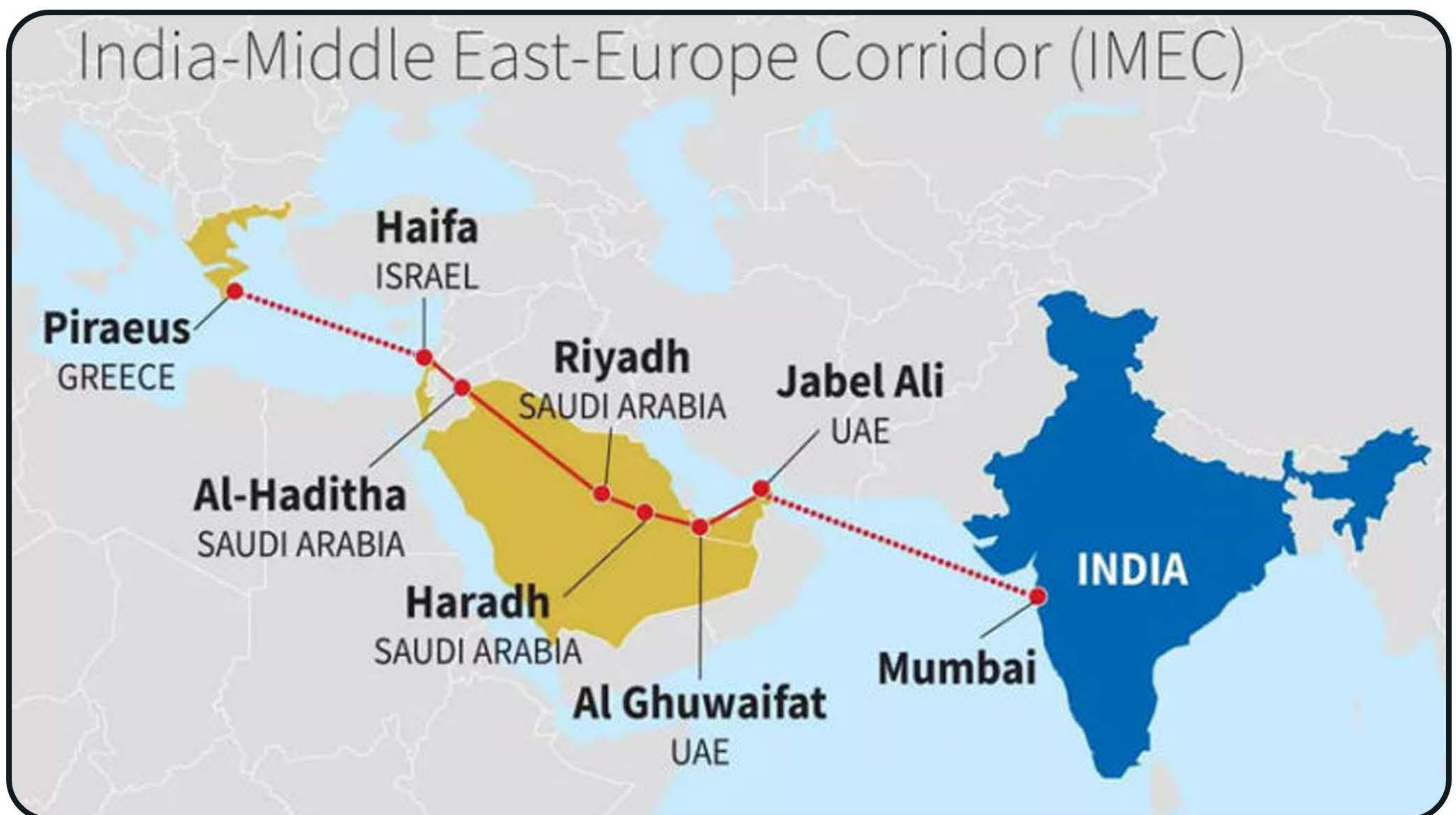


● **Way Forward**

- ➡ Investment in robust surveillance systems essential for disease detection and monitoring.
- ➡ Continued surveillance necessary even after elimination to prevent reintroduction of pathogens.

● **Regional Approach to Elimination**

- ➡ **Strengthening Diplomatic Ties:** Work towards resolving geopolitical tensions.
- ➡ **Securing Financial Investments:** Ensure financial commitments for the project's success.
- ➡ **Strategic Collaborations:** Foster stronger collaboration among member nations.
- ➡ **Infrastructure Development:** Focus on building and integrating transport networks.



Kunming-Montreal Global Biodiversity Framework (KMGBF)

● ***Why in News?***

- ➔ Adopted at the 15th Conference of Parties (COP) to the Convention on Biological Diversity (CBD) in Montreal (December 2022).
- ➔ **Aim:** Halt and reverse biodiversity loss by 2030.

● ***Targets (By 2030)***

- ➔ **Conservation:** 30% conservation of land, sea, and inland water.
- ➔ **Restoration:** 30% restoration of degraded ecosystems.
- ➔ **Additional Targets:** 23 specific targets set to be met by 2030.

● ***Goals (By 2050)***

- ➔ **Ecosystem & Species Health:** Halt human-induced species extinction.
- ➔ **Sustainable Use:** Ensure sustainable use of biodiversity.
- ➔ **Equitable Sharing:** Promote equitable sharing of benefits.
- ➔ **Implementation & Finance:** Close the biodiversity finance gap of \$700 billion per year.

● ***Key Recommendations by the Scientific Body***

- ➔ **New Areas of Work:** Advance biodiversity-inclusive spatial planning and sustainable biodiversity-based activities.
- ➔ **Financial Resources & Capacity-Building:** Support adequate financial resources and capacity-building.
- ➔ **Rights of Indigenous Peoples:** Ensure respect for the rights of indigenous peoples and local communities.



● **Convention on Biological Diversity (CBD)**

➡ **About:** International treaty adopted at the United Nations Conference on Environment and Development (the Rio "Earth Summit") in 1992.

➡ **Headquarters:** Montreal, Canada.

➡ **Members:** 196 countries (including India).

➡ **India's Involvement**

National Biodiversity Strategy: Required for all member countries.

Legislation: India enacted the Biological Diversity Act, 2002.

● **Way Forward**

<i>Focus Area</i>	<i>Actions</i>
Implementation	<i>Focus on achieving set targets and goals</i>
Funding	<i>Secure and allocate financial resources</i>
Capacity Building	<i>Enhance capabilities for effective biodiversity management</i>
Community Involvement	<i>Ensure active participation and rights protection of indigenous peoples and local communities</i>

IAEA's Incident and Trafficking Database (ITDB) Report 2023

● Why in News?

➡ The ITDB reported 168 incidents by 31 states in 2023.

● About ITDB

➡ **Established:** 1995

➡ **Purpose:** Provides information on illicit trafficking and unauthorized activities involving nuclear and radioactive materials outside regulatory control.

● Challenges Caused by Nuclear Theft

➡ **Elevated Risk:** Co-existence of terrorism and weapons of mass destruction.

➡ **Arms Race:** Potential to trigger arms race between nations.

➡ **Radiological Dispersal:** Improper dispersal or exposure can lead to injury and loss of life.

➡ **Transnational Crime:** May promote illicit activities such as drug trafficking, money laundering, and illegal arms trade.



● **IAEA and Its Role in Nuclear Safety**

➡ **Overview**

Name: International Atomic Energy Agency (IAEA)

Established: 1957 (autonomous organization)

Reporting: Annually to the UN General Assembly and UN Security Council.

➡ **Functions**

Research and Development: Encourages and assists in the peaceful application of atomic energy.

Verification: Provides independent, international verification of commitments to peaceful nuclear technology use.

Incident Response: Enhances capacities to respond to nuclear and radiological incidents.

● **Treaties to Stop Nuclear Proliferation**

➡ **Non-Proliferation Treaty (NPT):** Aims for disarmament by nuclear-weapon states.

➡ **Missile Technology Control Regime (MTCR):** Limits proliferation risks of weapons of mass destruction.

➡ **Nuclear Suppliers Group (NSG):** Prevents nuclear exports for commercial and peaceful purposes from being used to make nuclear weapons.

➡ **Treaty on the Prohibition of Nuclear Weapons:** Bans the use, possession, testing, and transfer of nuclear weapons.

● **Way Forward**

➡ **Strengthen Monitoring:** Enhance monitoring and regulatory controls to prevent illicit trafficking.

➡ **International Cooperation:** Foster global cooperation to address nuclear theft and proliferation.

➡ **Capacity Building:** Invest in technologies and training for rapid response to nuclear incidents.

➡ **Public Awareness:** Increase awareness about the dangers of nuclear theft and the importance of nuclear security.



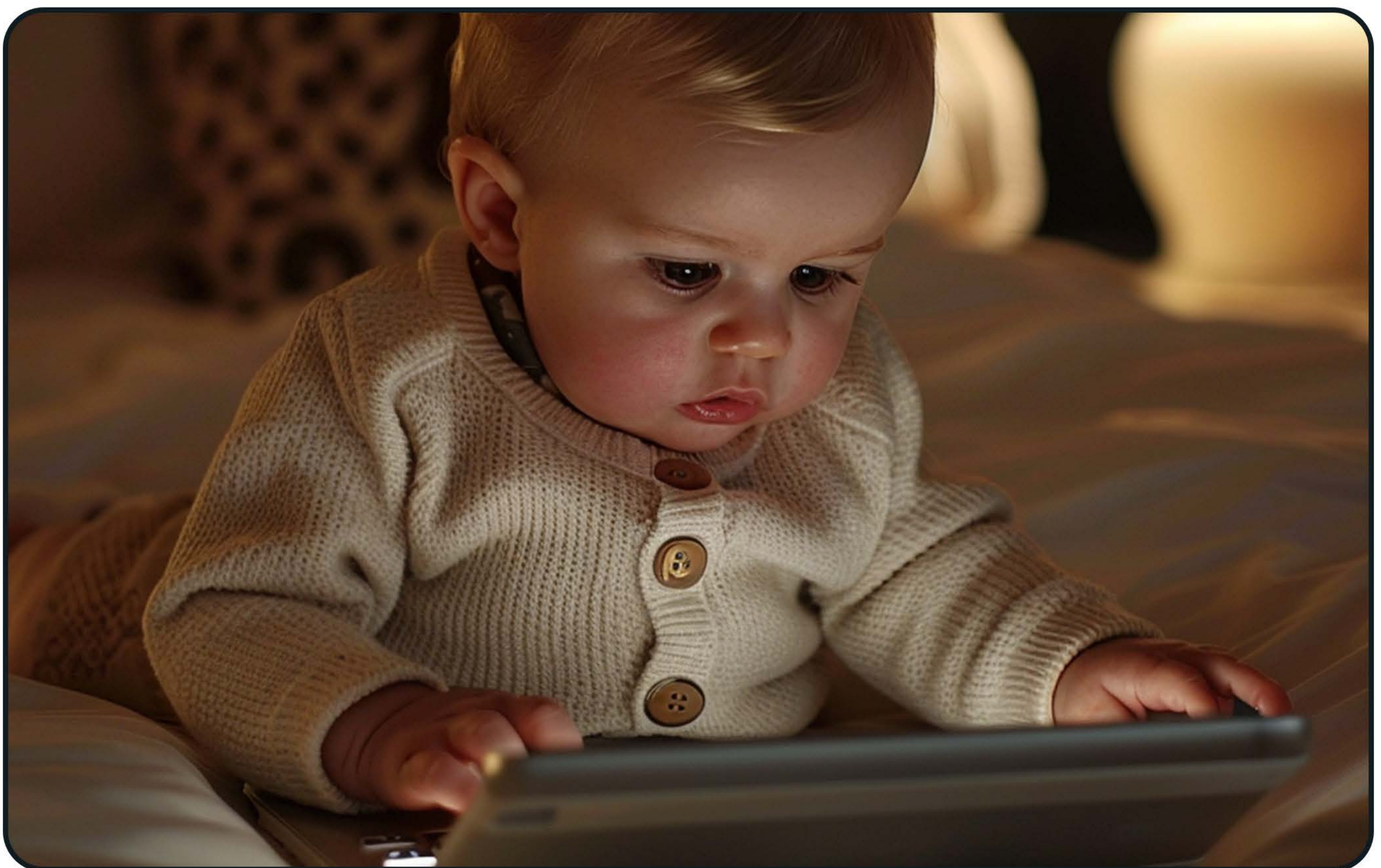
Investigation of Meta Platforms for DSA Breaches

● Why in News?

- ➔ Meta platforms (Facebook and Instagram) may have breached the Digital Services Act (DSA).
- ➔ The DSA was enacted by the EU to make digital companies liable for disinformation, shopping scams, child abuse, and other online harms.

● Reasons for Investigation

- ➔ Concerns regarding the platform's age-verification tools.
- ➔ Users are supposed to be at least 13 years old to use Facebook or Instagram.
- ➔ Potential to exploit the weaknesses and inexperience of children and stimulate addictive behavior.
- ➔ Risk of children being exposed to increasingly disturbing content (Rabbit hole effect).



● **Social Media's Impact on Children**

➡ **Negative Impacts**

Cyberbullying and Online Harassment: Leads to emotional distress, anxiety, and depression.

Reduced Physical Interaction: Phones replacing child cuddling, which releases 'Bonding hormone Oxytocin' helping children manage stress.

Excessive Screen Time: Leads to reduced physical activity, poor sleep patterns, and other health issues like obesity and diabetes.

Distorted Sense of Reality: Children may struggle to distinguish what is normal and what is not.

➡ **Positive Impacts**

Enhancing Creativity: Social media allows children to express creativity, share ideas, and showcase talents through art, writing, or video content.

● **Indian Government Initiatives to Protect Children Online**

➡ **Section 67B of the Information Technology (IT) Act, 2000:** Provides stringent punishment for publishing, transmitting, or viewing child sexual abuse material online.

➡ **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021:** Empowers users to make social media platforms accountable for their safety.

➡ **Digital Personal Data Protection Act, 2023:** Requires verifiable consent from a legal guardian before processing a child's personal data.

● **Way Forward**

➡ Strengthen age-verification tools to prevent underage use of social media platforms.

➡ Increase awareness among parents and guardians about the potential harms and benefits of social media.

➡ Implement and enforce stricter regulations to protect children online.

➡ Encourage healthy and balanced use of digital platforms to prevent addiction and exposure to harmful content.

● **Key Points**

➡ **Investigation:** Focus on age-verification tools and potential harms to children.

➡ **Impacts:** Both negative (cyberbullying, screen time) and positive (creativity) effects on children.

➡ **Regulations:** Various Indian laws and guidelines aimed at protecting children online.

➡ **Recommendations:** Strengthen verification tools, raise awareness, enforce regulations, and promote balanced digital use.



Green Hydrogen Summit

● Why in News?

- ➔ Organized by the Sustainable Energy Council in partnership with the Netherlands government.
- ➔ The **Ministry of New & Renewable Energy** set up an Indian pavilion showcasing the country's advancements in green hydrogen technology.

● Green Hydrogen (GH₂)

➔ Definition

Hydrogen produced by splitting water into hydrogen and oxygen using renewable electricity.

Methods include solar or wind-powered photo-catalysis and electro-catalysis of water.

➔ Uses

Fuel for internal combustion engines.

Blend of H₂ and natural gas can generate heat with lower emissions.

Used in H₂ fuel cells to run vehicles.

● Bureau of Energy Efficiency

- ➔ Nodal Authority for accreditation of agencies for monitoring, verification, and certification of processes for GH₂ production projects.



● **India's Steps to Promote GH2**

➔ **National Green Hydrogen Mission (NGHM), 2023**

Goal: Achieve GH2 production capacity of 5 MMT (Million Metric Tonnes) by 2030.

Strategic Interventions for Green Hydrogen Transition Programme (SIGHT): Provides financial incentives for manufacturing electrolysers and GH2 production.

Dedicated Portal for NGHM: A one-stop location for information on the mission.

➔ **Department of Science and Technology**

Hydrogen Valley Innovation Clusters: Fosters innovation and promotes the GH2 ecosystem in India.



About Hydrogen

● **Characteristics**

Colourless, odourless, tasteless, and flammable gas.

Most abundant element in the universe and third most abundant on Earth's surface.

Resembles alkali metals and halogens.

● **Why India Needs H2-Based Fuel**

Alternative to Fossil Fuels: To meet India's National Energy Security.

Emission Reduction: Reduce emissions intensity by 45% by 2030.

Reduce Import Bill: India imports 80% of its crude oil (3rd in the world) and 54% of its natural gas.

● **Concerns with H2-Based Fuel**

Lack of infrastructure for production, transportation, and storage of hydrogen.

Flammability and high cost.



Report on Water and Shared Prosperity

● Why in News?

➡ Released at the 10th World Water Forum in Bali, Indonesia.

● Definition of Shared Prosperity by World Bank

➡ **Objective:** Boosting prosperity for the poorest to achieve more equitable societies.

● Key Findings

➡ Building Blocks of Prosperity

Health and Education (human capital): Essential for developing a skilled and healthy population.

Jobs and Income: Key for economic stability and personal well-being.

Peace and Social Cohesion (social capital): Important for a harmonious and cooperative society.

Environment (natural capital): Critical for sustainable living and the well-being of future generations.

➡ Challenges

Disparity in Water Access: Population growth, urbanization, and climate change are exacerbating inequalities in global water access.

Lack of Safe Drinking Water: In 2022, 197 million people lacked safe drinking water.

Lack of Basic Sanitation: In 2022, 211 million people lacked basic sanitation.

High-Poverty and Low-Water-Access Hotspots: Approximately 450 million people live in these challenging areas.

Water Access in Schools: Less than half of schools in low-income countries have access to water services.

Impact on Childhood Development: Inadequate and unsafe water negatively affects early childhood development.

Climate Change Effects: Extreme weather events like floods and droughts disrupt education, damage crops, and increase conflicts.



● **Recommendations for Inclusive Water Security**

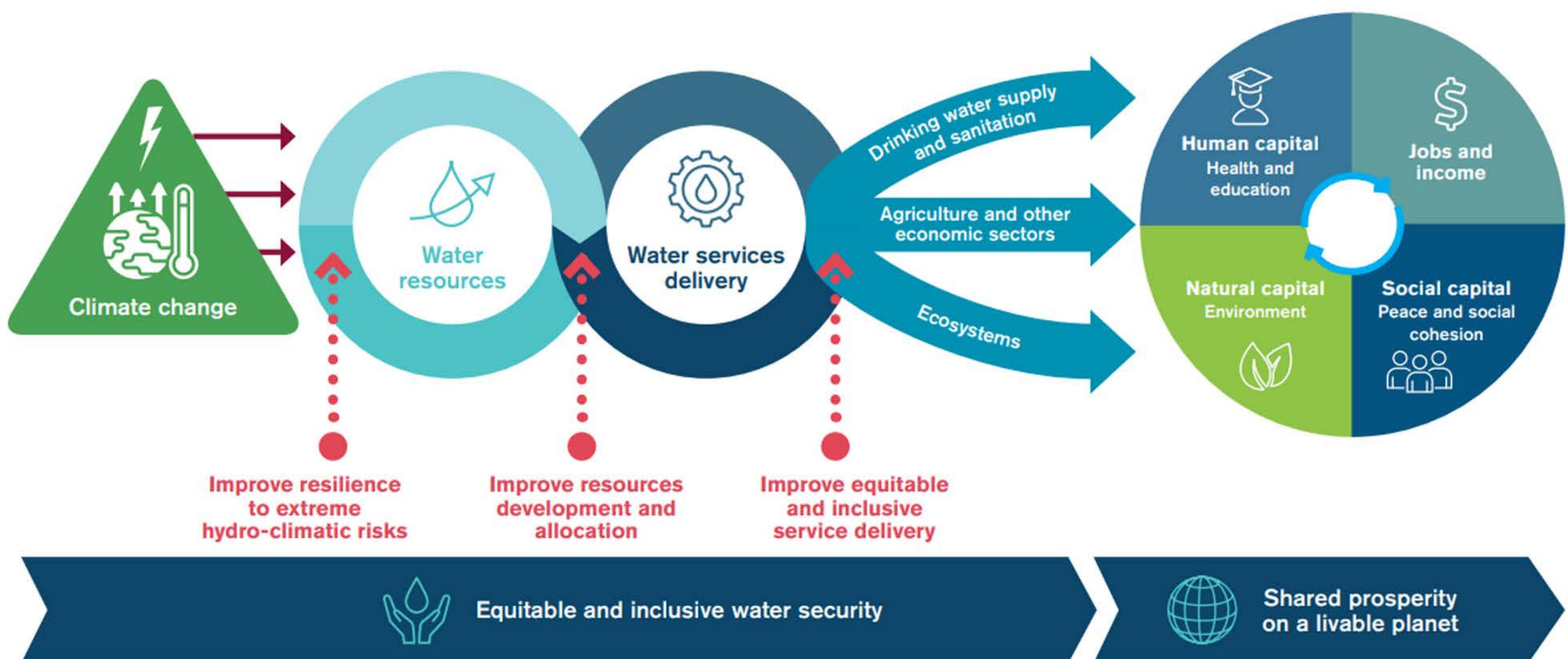
- ➔ **Resilience to Hydro-Climatic Risks:** Set up early warning systems to better manage and respond to extreme weather events.
- ➔ **Water Resources Development and Allocation:** Integrate nature-based solutions and adopt water accounting methods to optimize water use and distribution.
- ➔ **Managed Water Supply and Sanitation:** Reform water information systems to ensure they effectively target and support poor communities.



World Water Forum

- **Frequency:** Held every three years.
- **Co-hosts:** World Water Council and a host country.
- **Objectives:**
 - Raise the importance of water on the political agenda.
 - Support discussions towards the resolution of international water issues.

FIGURE ES.1 Equitable and inclusive water security for shared prosperity on a livable planet



Source: World Bank.
 Note: Water security is defined as the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems, and production, coupled with an acceptable level of water-related risks to people, environments, and economies (Grey and Sadoff 2007). Water services include irrigation, water supply, and sanitation.



Microplastics in Human and Canine Testes

● Findings of the Study

- ➔ **Quantification of Microplastics:** Researchers identified 12 types of microplastics.
- ➔ **Presence in Male Reproductive System:** Both humans and canines showed similar proportions of major polymer types, with Polyethylene (PE) being dominant.
- ➔ **Impact on Male Fertility:** The study highlights potential consequences on male fertility, including a possible reduction in sperm count.

● Understanding Microplastics

- ➔ **Definition:** Microplastics are small plastic pieces less than five millimetres long, harmful to living organisms.
- ➔ **Types:**
 - Primary Microplastics:** Tiny particles designed for commercial use, such as cosmetics and textiles, and microfibres shed from textiles.
 - Secondary Microplastics:** Particles that result from the breakdown of larger plastic items.

● Impacts of Microplastics

➔ Human Health Risks:

Trophic Transfer and Biomagnification: Microplastics enter the human body through food and water, leading to health issues such as endocrine disruption, weight gain, insulin resistance, decreased reproductive health, and cancer.

Presence in Biological Systems: Microplastics have been found in human blood, lungs, breast milk, and placentas.

➔ Harm to Wildlife:

Toxic and Mechanical Effects: Ingested microplastics can harm wildlife, causing reduced food intake, suffocation, behavioral changes, and genetic alteration.

➔ Environmental Pollution:

Ecosystem Disturbance: Microplastics contribute to environmental pollution, disrupting ecosystems and reducing biological activity due to their ubiquitous and non-biodegradable nature.

● **Steps Taken to Reduce Microplastics**

➡ **Indian Initiatives:**

Plastic Waste Management Rules, 2016: Notified under the Environment (Protection) Act, 1986.

Project REPLAN (REducing PLAstic from Nature): Launched by Khadi and Village Industries Commission (KVIC).

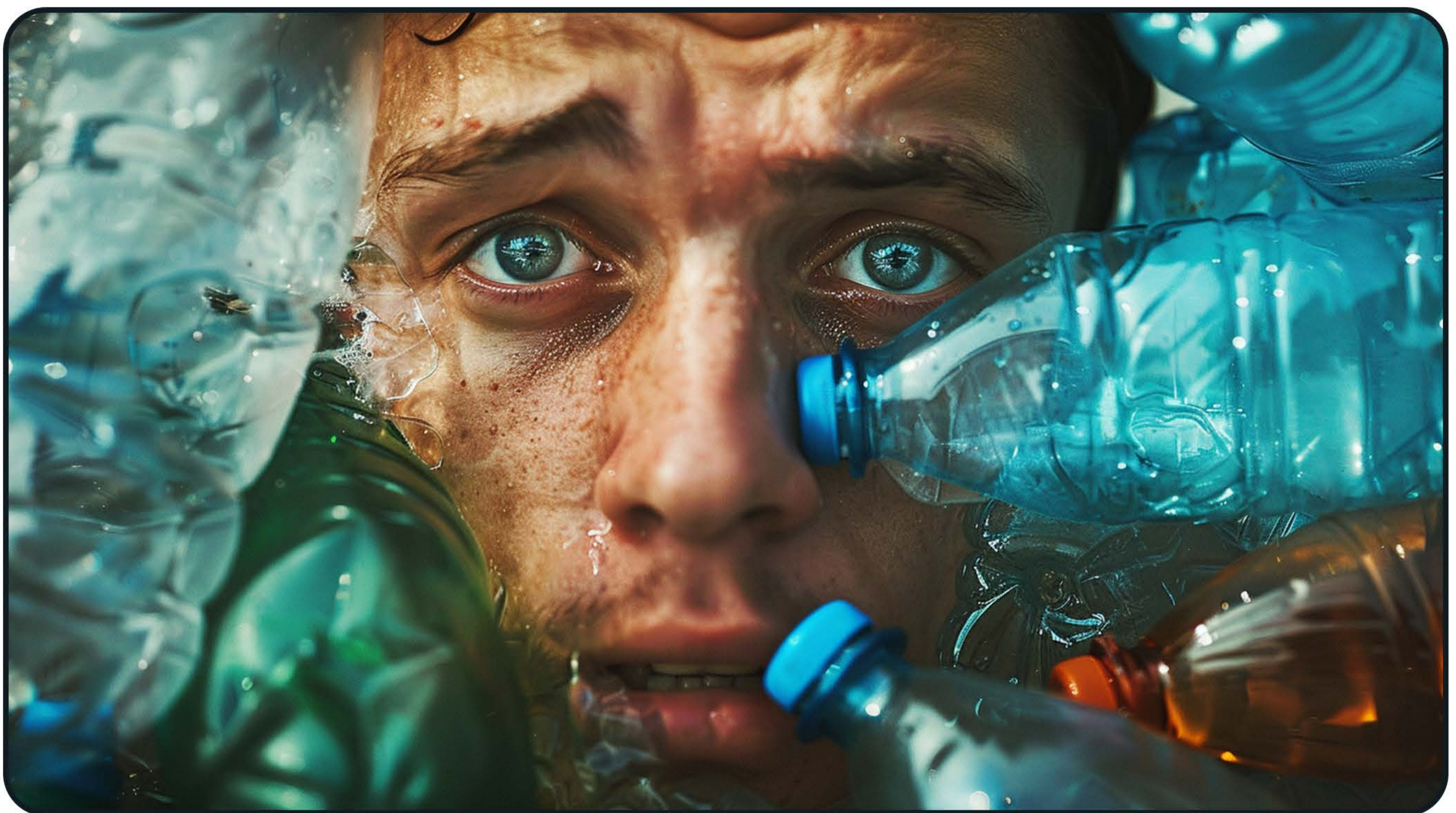
LiFE Mission: Aimed at preserving the environment.

➡ **Global Initiatives:**

CounterMEASURE II Project: Focuses on studying and mitigating microplastic pollution in marine environments.

Global Partnership on Plastic Pollution and Marine Litter (GPML): Aims to address the challenges of plastic pollution in oceans through international collaboration and action.

UNEP Plastics Initiative: Led by the United Nations Environment Programme, this initiative works to reduce plastic pollution globally by promoting sustainable practices and policies.



Integrated Commands Structure Plan

- **Theaterisation of Armed Forces**

- ➔ Concept aims to integrate capabilities of the army, air force, and navy.
- ➔ Seeks to optimally utilize resources for wars and operations.
- ➔ Each command is assigned a specific geographical region for operational roles.

- **Current Command Structure in India**

- ➔ India has 17 single service commands and 2 tri-service commands.

- ➔ **Single service commands:**

Army: 7 commands

Air Force: 7 commands

Navy: 3 commands

- ➔ **Tri-service commands:**

Andaman and Nicobar Command

Strategic Force Command (handles nuclear weapons)

- **Proposed Organisational Structure**

- ➔ **Vice CDS:**

Likely rank: General or equivalent

Responsibilities: Strategic planning, capability development, and procurement

- ➔ **Deputy CDS:**

Likely rank: Lieutenant General or equivalent

Responsibilities: Operations, intelligence, and coordination of asset allocation between theatres



● **Creation of commands**

➡ **Western Theatre Command HQ:**

Location: Jaipur (where Army's South Western Command is located)

➡ **Northern Theatre Command HQ:**

Location: Lucknow

➡ **Maritime Theatre Command HQ:**

Likely Location: **Coimbatore**

Involves: IAF's Prayagraj-headquartered Central Command and Southern Air Command in Thiruvananthapuram

➡ **Overall Plan:**

Create three adversary-based theatre commands:

One facing Pakistan

One opposite China

One maritime theatre command to address threats beyond coastal borders



Report by UN Convention to Combat Desertification (UNCCD)

● Why in News?

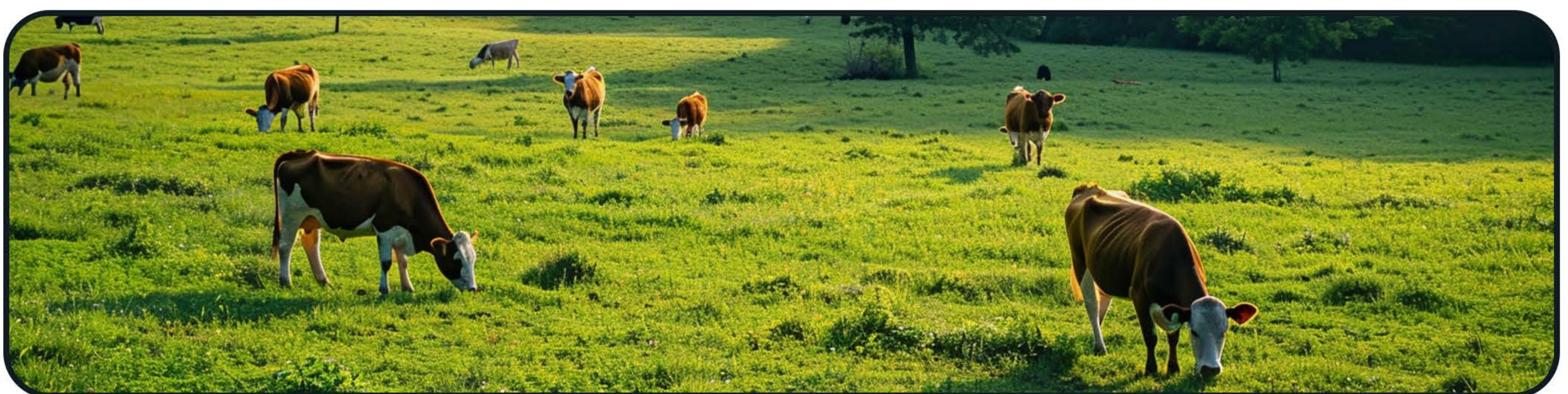
- ➔ UNCCD report focuses on the relationship between rangelands and their human communities, particularly pastoralists, to identify approaches for rangeland protection.

● Key Highlights of the Report

- ➔ **Definition of Rangelands:** Natural or semi-natural ecosystems grazed by livestock and/or wild animals, comprising various ecosystems such as grasslands, savannahs, shrublands, etc.
- ➔ **Global Coverage:** Rangelands cover over 54% of the terrestrial surface, with around 78% occurring in drylands.
- ➔ **Degradation:** Up to 50% of rangelands are estimated to be degraded, showing signs of diminished soil fertility, erosion, salinization, alkalinization, and soil compaction.
- ➔ **Drivers of Degradation:** Land use changes due to population growth, urban expansion, rising demands for food, fiber, and fuel, excessive grazing, abandonment, and policies incentivizing overexploitation.

● Rangeland Status in India

- ➔ **Extent:** Indian rangelands occupy about 121 million hectares, with approximately 100 million hectares considered underutilized.
- ➔ **Marginalization of Pastoralists:** Pastoralists in India face marginalization in public policies, resulting in insecure tenure rights and restricted access to common resources.
- ➔ **Restrictions:** In many states, pastoralists have been banned from forests and protected areas. Additionally, mining and energy projects limit their access to critical rangeland resources.



● **Key Recommendations**

- ➡ **Integrated Climate Change Strategies:** Implement strategies that enhance the resilience of pastoralist communities to climate change.
- ➡ **Land Use Management:** Reduce rangeland conversion and other land use changes that diminish the diversity and multifunctionality of rangelands.
- ➡ **Support for Pastoralism:** Adopt and support pastoralism-based strategies and practices that mitigate harms to rangeland health.

● **Way Forward**

- ➡ Strengthen policies to protect the rights and access of pastoralists to rangeland resources.
- ➡ Enhance collaboration between government agencies, local communities, and international organizations to implement sustainable rangeland management practices.
- ➡ Invest in research and innovation to develop solutions for rangeland conservation and pastoralist livelihood improvement.



Avian Influenza

● Why in News?

- ➔ A child was infected by H5N1, a type of avian influenza A virus, raising concerns as this virus primarily infects animals.

● About Avian Influenza (Bird Flu)

- ➔ **Definition:** Disease caused by infection with Avian Influenza Type A viruses.
- ➔ **Virus Subtypes:** Influenza A viruses are divided into subtypes based on two surface proteins:
 - Hemagglutinin (HA)**
 - Neuraminidase (NA)**
- ➔ **Subtypes:** Examples include H5N3, H5N8, and H5N1.
- ➔ **Severity:** Categorized into Low Pathogenicity and High Pathogenicity Avian Influenza. H5N1 is a High Pathogenicity Avian Influenza.

● Carrier and Transmission

- ➔ **Natural Reservoirs:** Migratory wild birds, especially waterfowl.
- ➔ **Transmission:** Can spread through direct contact with infected birds or contaminated environments.

● Associated Concerns

- ➔ **Climate Change:** May alter bird migration patterns, increasing bird flu cases.
- ➔ **Virus Mutation:** Mutations can create new subtypes, posing new threats.
- ➔ **Trade:** Infected poultry and poultry products can spread the disease if not properly regulated.



● **Impacts**

- ➡ **Economic Loss:** Due to the culling of birds.
- ➡ **Production Costs:** Increase due to the implementation of bird flu control measures.

● **Steps Taken**

➡ **Global Initiatives**

Global Influenza Surveillance and Response System (GISRS):

Managed by WHO.

Monitors and identifies circulating influenza virus strains.

Provides advice on risks to human health and control measures.

➡ **World Organisation for Animal Health (WOAH):**

International collaboration to enhance animal health.

➡ **India's Initiatives**

National Action Plan for Prevention, Control, and Containment of Avian Influenza (Revised 2021): Outlines steps to manage confirmed Notifiable Avian Influenza (NAI) outbreaks.

WOAH Declaration (2023): India declared freedom from Highly Pathogenic Avian Influenza (HPAI) in specific poultry compartments.



Coastal Regulation Zone (CRZs)

● Why in News?

- ➡ The Southern Bench of the National Green Tribunal (NGT) has directed to halt the Chennai Shoreline Renourishment and Revitalization Project, which includes activities like cycle tracks and food courts, in the Coastal Regulation Zone (CRZ) II, where such activities are prohibited.
- ➡ The project aims to achieve Blue Flag certification for beaches.

● About Blue Flag Certification

- ➡ **Definition:** A voluntary, globally recognized eco-tag given to environment-friendly and clean beaches, marinas, and boats.
- ➡ **Awarded by:** Foundation for Environmental Education (FEE).

● NGT's Directive

- ➡ Authorities must obtain approval from the State Coastal Zone Management Authority before carrying out any activities on the beaches, aside from cleaning and removing encroachments.

● About Coastal Regulation Zone (CRZ)

➡ CRZ Notification

Issued by: Ministry of Environment, Forest and Climate Change (MoEF&CC) under the Environment Protection Act, 1986.

Evolution:

CRZ Notification, 1991.

Replaced by CRZ Notification, 2011 (reviewed by Shailesh Nayak Committee).

Current: CRZ Notification, 2019.

Requirement: States must update Coastal Zone Management Plans (CZMPs) as per the 2011 notification.

➡ Institutional Mechanism

National Level: National Coastal Zone Management Authority (NCZMA).

State/UT Level: State/Union Territory Coastal Zone Management Authorities (SCZMAs/UTCZMAs).

District Level: District Level Committees (DLCs) in every district with a coastal stretch.



● **Classification of CRZs**

- ➔ Investment in robust surveillance systems essential for disease detection and monitoring. Continued surveillance necessary even after elimination to prevent reintroduction of pathogens.

CRZ Category	Description
CRZ-IA	<i>Ecologically Sensitive Areas like Mangroves, Salt Marshes, etc.</i>
CRZ-IB	<i>Intertidal zone (area between Low Tide Line and High Tide Line).</i>
CRZ-II	<i>Developed land areas up to or close to the shoreline within existing municipal limits or other designated urban areas.</i>
CRZ-III	<i>Relatively undisturbed land areas (e.g., rural areas) that do not fall under CRZ-II.</i>
CRZ-IVA	<i>Area between Low Tide Line up to 12 nautical miles on the seaward side.</i>
CRZ-IVB	<i>Tidal influenced water bodies.</i>



Potential of the Indian Space Sector

● Why in News?

➡ The Indian SpaceTech sector received \$62 million in funding in 2023, a 60% increase from the previous year.

➡ Current Space Economy

Value: ₹6,700 crore (\$8.4 billion)

Export Market Share: ₹2,400 crore (\$0.3 billion)

➡ Future Projections

IN-SPACE projects the space economy to reach ₹35,200 crore (\$44 billion) by 2033, capturing about 8% of the global share.

● Indian Regulatory Framework for Private Space Companies

➡ New Space India Limited (NSIL)

Established: **2019**

Objective: Scale up **private sector participation** in Indian space programs.

➡ Indian National Space Promotion and Authorization Center (IN-SPACE)

Function: **Single-window, independent agency** to authorize, promote, and supervise private space activities.

➡ National Geospatial Policy

Aim: Promote private sector participation in **geospatial data collection**.

➡ Indian Space Policy

Focus: Transition ISRO from manufacturing to **R&D in advanced technologies**.

➡ Amended FDI Policy (2024)

Satellite Manufacturing and Operation: **Up to 74% FDI**

Launch Vehicles, Spaceports, and Associated Systems: **Up to 49% FDI**

Components and Systems/Subsystems for Satellites, Ground, and User Segments: **100% FDI**



● **Benefits of Private Sector in Space Activities**

➡ **Enhancing ISRO's Capabilities**

Helps meet the **high demand for satellites**, aiming for 18-20 launches annually.
 Allows ISRO to focus on **research and deep-space missions** by offloading manufacturing tasks.

➡ **Technological and Economic Advancements**

Provides access to the **latest technology**, innovations, and trends.
Reduces taxpayer burden on space endeavors.
 Fosters **job creation** in a high-skilled labor market.
 Ensures **business continuity** through distributed space capabilities among satellites.

➡ **Driving Digitalization**

Private sector partnership addresses **evolving technological needs**.
 Essential for driving **India's digital transformation**.

● **Way Forward**

- ➡ Continue promoting **private sector involvement** in space activities.
- ➡ **Strengthen international collaborations** to enhance technological advancements.
- ➡ **Focus on sustainable growth** and development within the space sector.

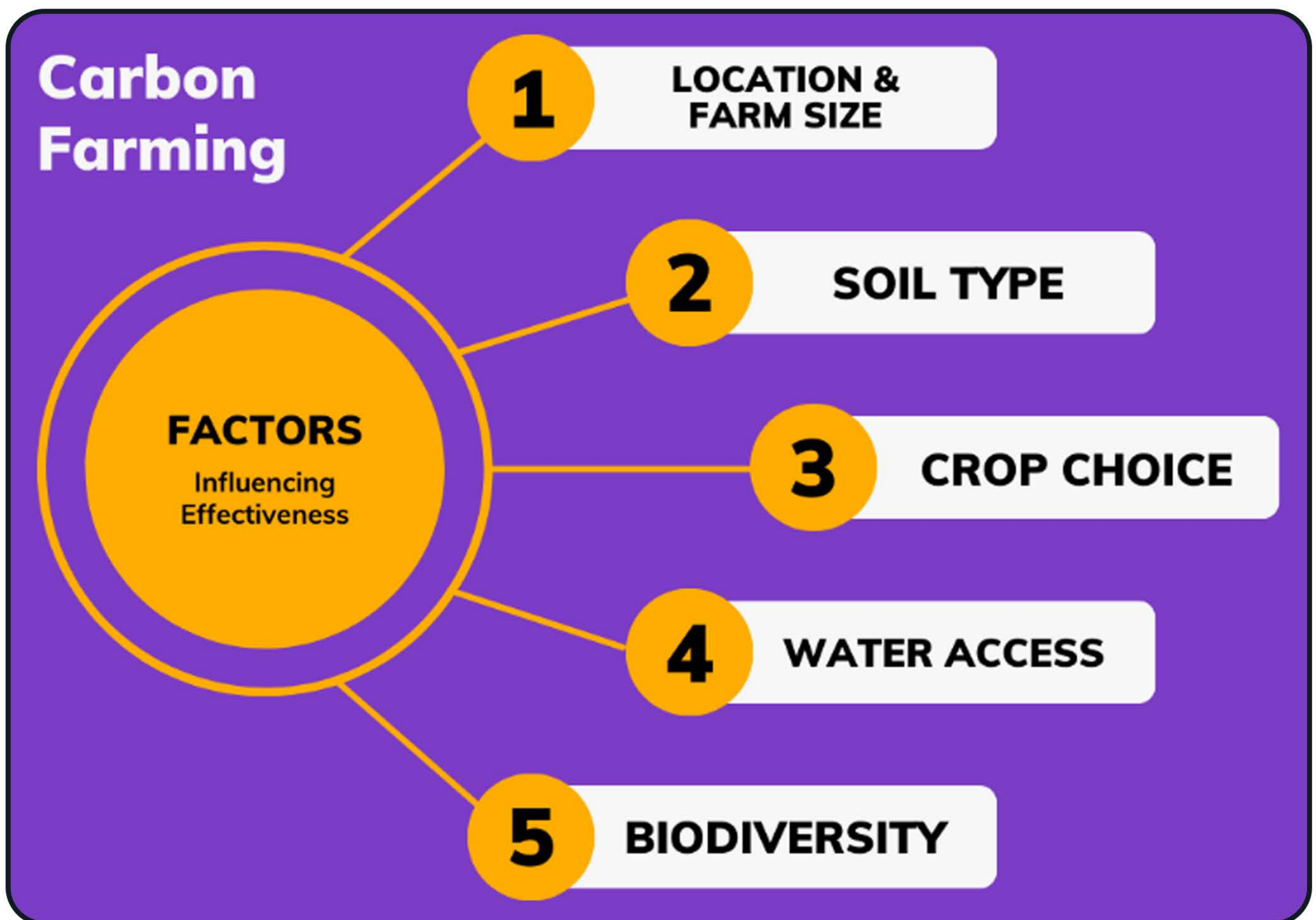


Carbon Farming

- **What is Carbon Farming?**

- ➔ A set of agricultural practices aimed at storing carbon in soil, plant material, wood, and leaves.
- ➔ Simple implementation example: **Rotational grazing.**

- **Challenges to Carbon Farming**



- ➔ **Key Challenges**

Land Management: Requires effective practices and policy support.

Community Involvement: Essential for widespread adoption.

Arid Regions: Water scarcity limits carbon sequestration potential.

Plant Selection: Not all species are equally effective in sequestering carbon.

Financial Aid: Necessary for small-scale farmers to adopt carbon farming practices.



● **Opportunities for Carbon Farming**

➡ **Economic Potential**

Agro-ecological practices in India could generate \$63 billion from 170 million hectares. Offers farmers ₹5,000-6,000/acre annually.

➡ **Ideal Regions**

Indo-Gangetic Plains and Deccan Plateau: Extensive agricultural land suitable for carbon farming.

Coastal Areas: Limited potential due to salinization and resource constraints.

➡ **Environmental Impact**

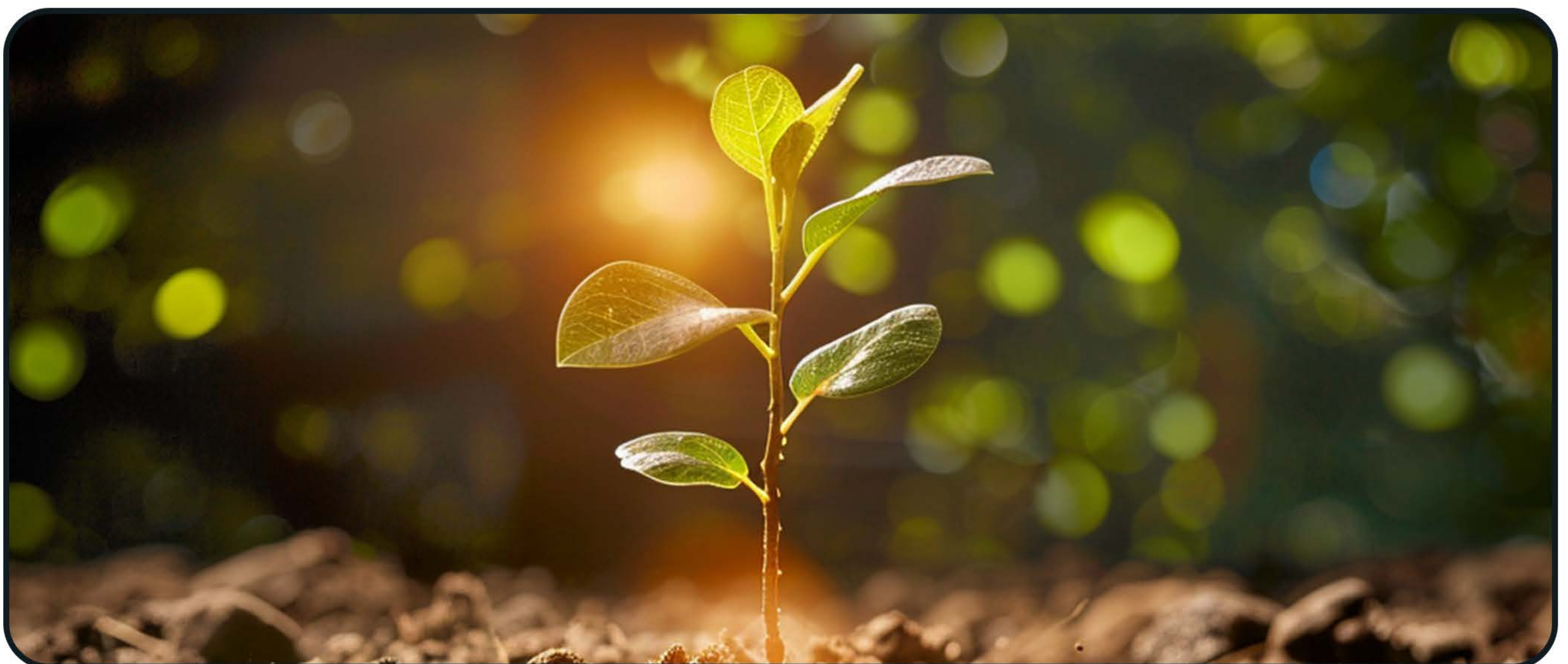
Agricultural soils in India can absorb 3-8 billion tonnes of CO₂ annually, **aiding climate stabilization.**

➡ **Financial Incentives**

Carbon credit systems provide farmers with **extra income through environmental services.**

● **Way Forward**

- ➡ Promote **effective land management and policy support** for carbon farming.
- ➡ **Enhance community involvement** and provide financial aid to farmers.
- ➡ **Focus on suitable regions** like Indo-Gangetic Plains and Deccan Plateau.
- ➡ **Develop carbon credit systems** to incentivize farmers.
- ➡ **Continue research on plant selection and agricultural practices** to maximize carbon sequestration.



Zero Debris Charter

● Why in News?

- ➔ The Zero Debris Charter (ZDC) was signed at the 11th ESA/EU Space Council, an event first established in 2004 under the framework agreement between the European Space Agency (ESA) and the European Union (EU).

● About Zero Debris Charter (ZDC)

- ➔ **Objective:** To become debris-neutral in space by 2030.
- ➔ **Contents:** Includes high-level guiding principles and ambitious, jointly defined targets to achieve the Zero Debris goal.
- ➔ **Signatories:** Austria, Belgium, Cyprus, Estonia, Germany, Lithuania, Poland, Portugal, Romania, Slovakia, Sweden, and the United Kingdom.

● Space Debris

➔ Definition

Refers to all non-functional, man-made objects in Earth orbit or re-entering into Earth's atmosphere.

Includes decommissioned satellites, spent rocket bodies, fragments from spacecraft breakups or collisions, and debris from anti-satellite weapon tests.

➔ Concerns with Space Debris

Threat to Space Infrastructure: Collisions with operational satellites can disrupt navigation and communications systems on Earth.

Kessler Syndrome: Uncontrolled growth of debris can lead to an escalating cascade of collisions.

Risk on Earth: Large space debris re-entering the atmosphere uncontrollably poses a risk to the population on the ground.

Increased Costs: Costly collision avoidance maneuvers need to be performed to protect space assets.



● **Initiatives for Space Debris Mitigation**

➡ **India**

Debris-Free Space Missions (DFSM): Aiming for debris-free missions by 2030, implemented by ISRO.

ISRO System for Safe & Sustainable Space Operations Management (IS40M): Ensures safe and sustainable space operations.

Project NETRA (NETwork for space object TRacking and Analysis): For space situational awareness.

➡ **Global**

Inter-Agency Space Debris Coordination Committee (IADC): Facilitates worldwide coordination of space debris-related activities.

Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space: Provides guidelines for mitigating space debris.

● **Way Forward**

➡ **Strengthen International Collaboration:** Enhance global cooperation in space debris monitoring and mitigation efforts.

➡ **Develop Advanced Technologies:** Invest in technologies for active debris removal and improved collision avoidance systems.

➡ **Promote Sustainable Practices:** Encourage adherence to space debris mitigation guidelines and best practices among all spacefaring entities.



SKAMPI: Prototype Telescope of SKA Observatory (SKAO)

● Why in News?

⇒ SKAMPI, a prototype telescope of the SKA Observatory (SKAO), constructed in **South Africa**, achieved first light, demonstrating its potential.

⇒ **First light:** The first use of a new astronomical instrument that results in an image.

● Square Kilometre Array Observatory (SKAO)

⇒ Intergovernmental organization with members and partners from five continents

⇒ Headquarters: United Kingdom

⇒ Member Countries

Current Members: Australia, China, Italy, Netherlands, Portugal, South Africa, Spain, Switzerland, UK

Prospective Members: Canada, France, Germany, India, Japan, South Korea, Sweden

⇒ Objectives

Build and operate **cutting-edge radio telescopes**

Two telescopes under construction in Australia's Murchison Shire and South Africa's Karoo

Cover different frequency ranges and located in radio quiet zones to avoid ground interference

Designed to work as a **single enormous virtual telescope** using **interferometry**

⇒ Technology

Interferometry: Uses large numbers of smaller antennas connected by optical fiber networks

⇒ Science Goals

Explore the **evolution** of the universe

Track **gravitational waves**

Study **cosmic magnetism**



● **India and SKAO**

➔ **India's Participation in SKAO**

In the process of becoming a member

Funding support: ₹1250 crores for the construction phase, jointly funded by the Department of Atomic Energy and the Department of Science and Technology

➔ **Contributions and Opportunities**

Active contribution to the pre-construction phase of SKA telescopes

Development of niche skills in modern antenna design and high-performance supercomputing technologies

● **Way Forward**

➔ **For SKAO:** Continue construction and development of telescopes, enhance international collaboration.

➔ **For India:** Finalize membership, continue active contributions, and leverage opportunities for technological advancements.






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