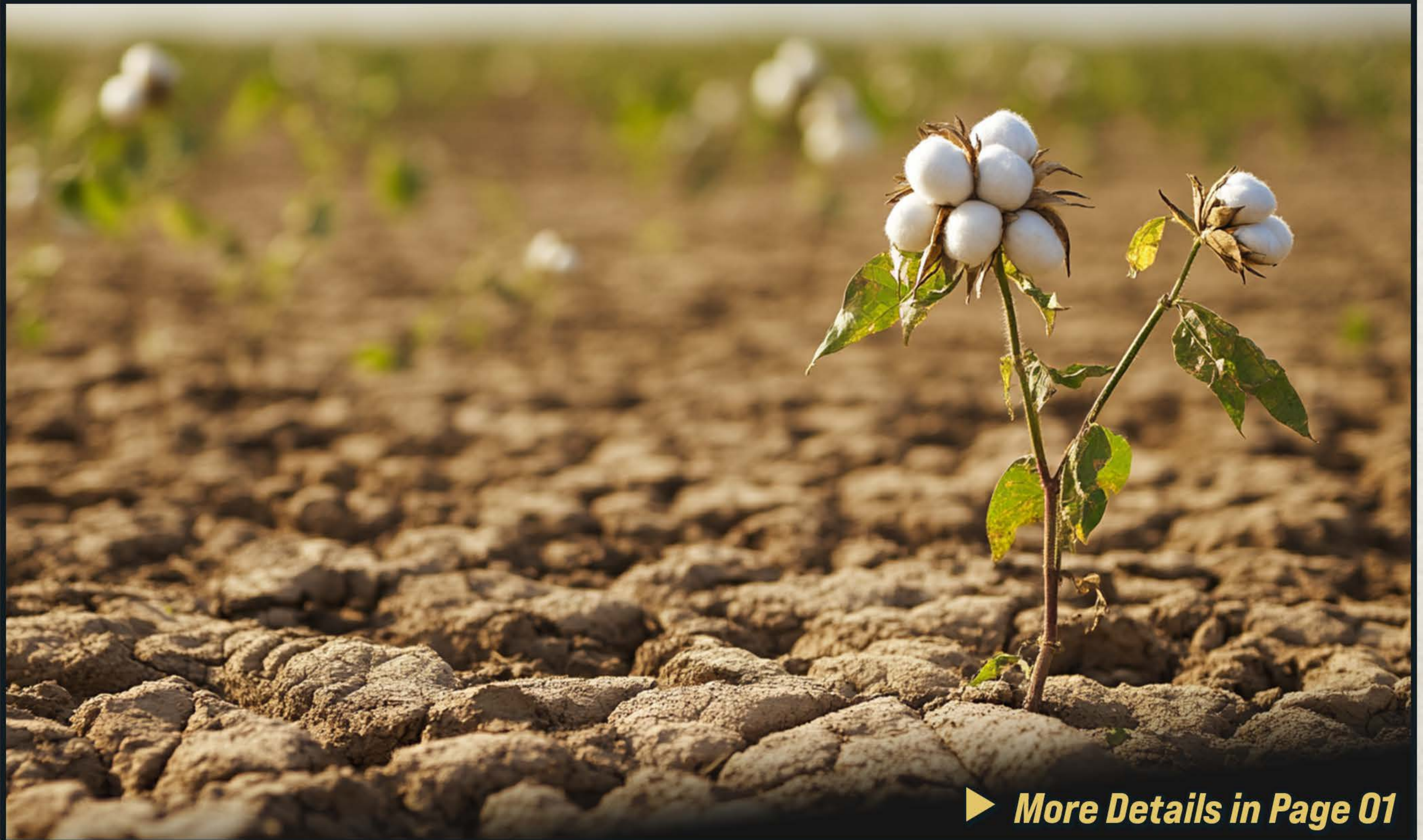


WEEKLY NEWS

August 11-17, 2024

'Lab to Land' Program



Model Solar Village




HIGHLIGHTS

- UNSC Reforms
- Greener Tug Transition Program (GTTP)

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'Lab to Land' Program

● Why in News?

- ➔ The Indian Council of Agricultural Research (ICAR) has developed new crop varieties, exemplifying the "lab to land" program.

● About ICAR's Crop Improvement Program

- ➔ ICAR focuses on developing new crop varieties and hybrids with wider adaptability and higher yield.
- ➔ The program utilizes various strategies, including:
 - Genomics-assisted selection**
 - Phenomics:** Systematic measurement and analysis of traits.
 - Conventional breeding** and **Biotechnology-based approaches** like genetic engineering and genome editing.

● Need for Crop Improvement

➔ Managing Impact of Climate Change

Climate-resilient seeds can thrive in adverse conditions like heat waves and droughts (e.g., Bt cotton).

Reduces crop losses from diseases and pests.

➔ Food Security

Agricultural yields could drop by 16% by 2030 (World Economic Forum), making crop improvement vital.

➔ Nutritional Security

Biofortified crops, linked with government programs like the Mid-Day Meal (PM Poshan Scheme), can combat malnutrition.

These crops are cost-effective, requiring no additional expenses for enriched food grains (e.g., vitamin-A rich maize).

➔ Raising Farmers' Income

High-yielding and adaptable crop varieties can boost farmers' incomes.

● **About Biofortification**

- ⇒ **Biofortification** enhances the nutritional quality of food crops, such as iron and zinc-rich wheat grains.
- ⇒ Unlike conventional fortification, biofortification increases nutrient levels during plant growth.

● **About the Lab to Land Program**

- ⇒ This program promotes the **transfer of improved technology** from agricultural universities and research institutions to farmers.

● **Way Forward**

- ⇒ **Continued research and development** in crop improvement to address climate change, food, and nutritional security while raising farmers' incomes.



PM JI-VAN Yojana

● Why in News?

- ➔ The Union Cabinet has approved changes to the **Pradhan Mantri JI-VAN Yojana**, aiming to strengthen efforts toward achieving ethanol blending targets and advancing innovative biofuel technologies.

● Key Changes Approved

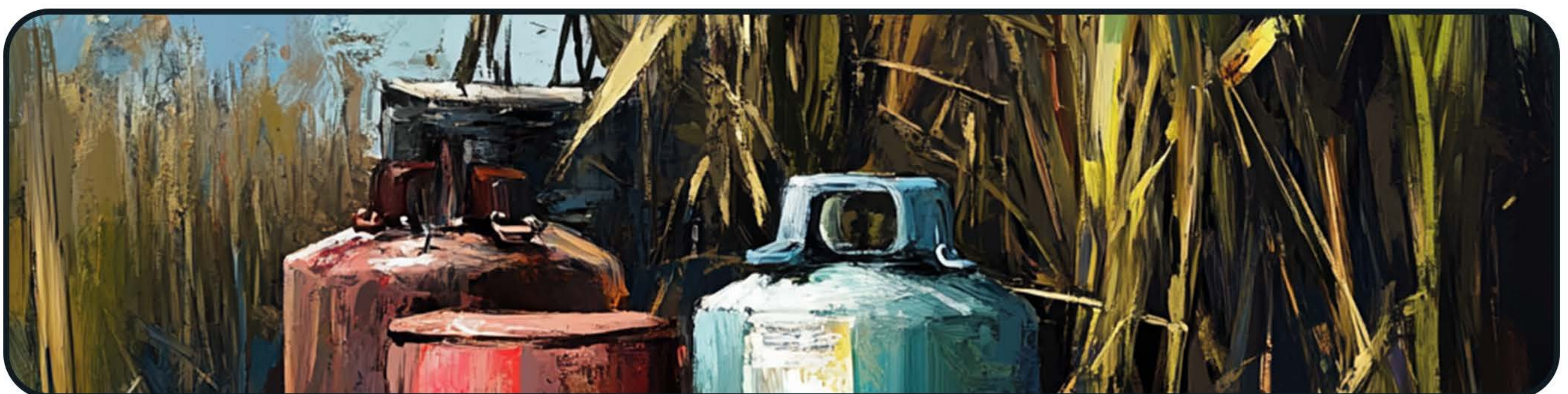
- ➔ **Extension of Implementation Period:** The scheme's duration has been extended by 5 years, until 2028-29.
- ➔ **Broadening of Scope:** Now includes biofuels from lignocellulosic feedstocks such as agricultural residues, forestry waste, industrial by-products, and algae.
- ➔ **Expanded Eligibility:** "Bolt-on" plants and "brownfield projects" are now eligible for support under the scheme.

● Background

- ➔ **Launch:** PM JI-VAN Yojana was launched in **2019** to provide financial assistance for the development of **2nd Generation (2G) ethanol** from surplus biomass and agricultural waste.
- ➔ **Milestone:** Supported the establishment of India's first 2G ethanol plant by Indian Oil Corporation at Panipat.

● Significance of the Changes

- ➔ **Financial Support Across Sectors:** Provides stable income for farmers through the sale of agricultural residues.
- ➔ **Environmental Benefits:** Helps mitigate environmental pollution.
- ➔ **Energy Security:** Strengthens India's energy security and self-reliance.
- ➔ **Alignment with National Goals:** Supports India's commitment to net-zero greenhouse gas emissions by 2070 and promotes the Make in India initiative.



● **Ethanol Blending Targets**

- ➔ **Current Status:** Over 500 crore litres of ethanol were blended with petrol in 2022-23, with a current blending rate exceeding 15%.
- ➔ **Future Goal:** The government aims to achieve a 20% ethanol blending target by the end of 2025-26.

● **Types of Biofuels**

- ➔ **1st Generation:** Derived from edible materials, posing potential food security issues.
- ➔ **2nd Generation:** Produced from non-edible materials like agricultural and forest residues.
- ➔ **3rd Generation:** Generated from aquatic biomass such as algae.
- ➔ **4th Generation:** Developed from engineered plants and microorganisms.

● **Way Forward**

- ➔ **Focus on Innovation:** Continued emphasis on developing novel technologies and feedstocks for biofuel production.
- ➔ **Enhanced Implementation:** Strengthening efforts to meet and exceed ethanol blending targets to boost energy security and environmental sustainability.



India-Maldives Visit

● Why in News?

- ⇒ Key developments and projects were highlighted during a recent high-level visit between India and the Maldives.

● Key Outcomes

- ⇒ **MoU Exchange on UPI Introduction:** Memorandum of Understanding (MoU) on the introduction of Unified Payments Interface (UPI) in the Maldives was exchanged.
- ⇒ **Project Inaugurations:** Inaugurated the **Addu Reclamation and Shore Protection Project**. Inaugurated the **Addu Detour Link Bridge Project**.
- ⇒ **Greater Male Connectivity Project (GMCP):** Reviewed progress on the India-assisted GMCP development project, which aims to connect Male with the adjoining islands of **Villingili, Gulhifalhu, and Thilafushi**.

● Significance of Maldives for India

⇒ Geo-Economics

Strategically located along major Sea Lines of Communication (SLOC), critical for trade. About 50% of India's external trade and 80% of energy imports transit through SLOC in the Arabian Sea.

⇒ Geopolitical Importance

Vital for maintaining peace, stability, and prosperity in the Indian Ocean Region. Enhances India's Vision 'SAGAR' (Security and Growth for All in the Region). Key partner in India's 'Neighbourhood First' policy.

⇒ Defence Cooperation

Includes joint exercises like Ex Ekuverin and Maritime Domain Awareness initiatives.

⇒ Historical Ties

Shared ethnic, linguistic, cultural, and religious links between India and the Maldives.



● **Key Challenges in Bilateral Relations**

- ➡ **Rising Chinese Influence:** Examples include the construction of the Sinamale bridge and a military assistance pact with the Maldives.
- ➡ **Anti-India Sentiments:** Growing anti-India sentiments under the current regime, including demands for the withdrawal of Indian troops and the 'India-out' campaign.
- ➡ **Religious Radicalism:** The rise of religious radicalism in the Maldives, including the presence of Pakistan-backed terror groups.

● **Way Forward**

- ➡ **Strengthening strategic and economic ties** while addressing emerging challenges like Chinese influence and religious radicalism.
- ➡ **Continued focus on cooperative projects and initiatives** to maintain stability in the Indian Ocean Region.



Model Solar Village

● Why in News?

- ➔ The **Ministry of New & Renewable Energy (MNRE)** has issued guidelines for the implementation of the '**Model Solar Village**' component under the **PM-Surya Ghar: Muft Bijli Yojana**.

● About Model Solar Village

- ➔ **Objective:** Establish one Model Solar Village in each district across the country.
- ➔ **Purpose:** Empower village communities to achieve greater energy self-reliance.
- ➔ **Eligibility:** Villages with a population exceeding 5,000 as per the Census.
- ➔ **Financial Support:** Each Model Village will receive a grant of Rs 1 crore.
- ➔ **Implementation Agency:** State Renewable Energy Development Agency or another entity nominated by the State/UT Government.

● About PM-Surya Ghar: Muft Bijli Yojana (2024)

- ➔ **Aim:** Install rooftop solar (RTS) systems and provide free electricity up to 300 units per month to 1 crore households.
- ➔ **Subsidy Structure:**
 - 60% subsidy on solar unit costs** for systems up to 2 kW capacity.
 - 40% subsidy on additional costs** for systems between 2 to 3 kW capacity.
- ➔ **Potential Benefits:**
 - Savings of Rs 15,000 crore annually for 1 crore families.
 - Opportunity for families to earn income by selling surplus power to electricity distribution companies (DISCOMs).

● Way Forward

- ➔ **Implementation:** Efficient execution of the Model Solar Village projects to ensure effective community empowerment.
- ➔ **Support and Awareness:** Increase awareness and support for PM-Surya Ghar: Muft Bijli Yojana to maximize the installation of rooftop solar systems.
- ➔ **Monitoring and Evaluation:** Regular monitoring and evaluation of the project's impact on energy savings and income generation for beneficiaries.

Impact Assessment Report on PM Mudra Yojana

● Why in News?

- ➔ **NITI Aayog** and **KPMG** have released a report assessing the impact of the Pradhan Mantri Mudra Yojana (**PMMY**), evaluating its performance and contribution to Micro, Small, and Medium Enterprises (**MSMEs**).

● Key Findings of the Study

- ➔ **Overall Performance:** Since its launch in 2015, PMMY has provided credit support to 35 crore micro and small entrepreneur accounts.
- ➔ **Financial Inclusion:** Women hold approximately 71% of the total accounts as of FY 2022. The sanctioned amount for new entrepreneurs has also increased.
- ➔ **Encouragement for Small Businesses:** A majority (80%) of loan accounts fall under the Shishu category (FY 2021).
- ➔ **Regional Variation:** The Northeast region has the lowest number of accounts and sanctioned amounts, which is also decreasing.

● Challenges Associated with the Scheme

➔ Scheme Design:

Lack of collateral raises concerns about Non-Performing Assets (NPA) among banks.
High refinancing rates.

The ceiling of 15% on payouts under the Credit Guarantee Fund for Micro Units (**CGFMU**) is considered impractical and limits bank benefits.

➔ Institutional Mechanism:

Poor credit penetration to weaker sections and remote areas.

Absence of a centralized database for collecting customer information.



● **Key Recommendations for the Scheme**

- ➡ **Real-Time Data Portal:** Implement a portal for real-time upload of beneficiary data.
- ➡ **Increased Digitization:** Enhance digitization, including the use of chatbots for query resolution.
- ➡ **Recognition Mechanism:** Develop a recognition mechanism for different Micro Lending Institutions (MLIs) based on their operational scale and performance.

● **About PM Mudra Yojana**

- ➡ **Type:** Central Sector Scheme
- ➡ **Purpose:** To foster an inclusive, sustainable, and value-based entrepreneurial culture.
- ➡ **Loan Categories:**
 - Shishu:** Loans up to INR 50,000
 - Kishore:** Loans above INR 50,000 and up to INR 5 lakhs
 - Tarun:** Loans above INR 5 lakhs and up to INR 20 lakhs
- ➡ **Credit Guarantee:** Provided to eligible micro units through CGFMU.



Tungabhadra Dam

● Why in News?

- ➡ The crest gate of the Tungabhadra Dam collapsed due to rising water pressure following heavy rainfall.
- ➡ This incident has heightened concerns about potential floods and overall dam safety in Karnataka.

● About Tungabhadra Dam

- ➡ **Purpose:** A multipurpose dam completed in 1958, located in Hospet, Ballari district, Karnataka.
- ➡ **Engineering:** The construction was overseen by M. Visvesvaraya, who served as the chairman of the board of engineers.

● About Tungabhadra River

- ➡ **Origin:** Formed by the confluence of the Tunga and Bhadra streams, originating in the Western Ghats.
- ➡ **Tributary:** It is a significant tributary of the Krishna River.

● Concerns Over Dam Safety in India

- ➡ **Aging Infrastructure:** 80% of large dams in India are over 25 years old.
- ➡ **Seismic Risks:** Examples include the 2001 Bhuj earthquake, which caused foundation issues in Chang Dam.
- ➡ **Flooding and Excessive Rainfall:** Chungthang Dam in Sikkim, the highest dam in the region, was washed away during flash floods in October 2023.
- ➡ **Other Issues:** Overtopping, sedimentation, and structural erosion.



● **Steps Taken for Dam Safety**

- ➡ **Dam Safety Act 2021:** Enacted to establish comprehensive safety protocols.
- ➡ **Dam Rehabilitation and Improvement Project (DRIP):** Focuses on the rehabilitation of dams.
- ➡ **Dam Health and Rehabilitation Monitoring Application (DHARMA):** A web-based tool for monitoring dam health.

● **Dam Statistics in India**

- ➡ **National Register of Large Dams (2023):** Lists 6,138 completed and operational specified dams.
- ➡ **Aging Dams:** 234 large dams are more than 100 years old.

● **Dam Failure Examples**

- ➡ **Machchu Dam, Gujarat (1979):** A significant dam failure resulting in major loss.
- ➡ **Tiware Dam, Maharashtra (2019):** Another instance of dam failure due to structural issues.

● **Way Forward**

- ➡ **Strengthening Monitoring:** Enhance the use of technology for real-time monitoring of dams.
- ➡ **Timely Rehabilitation:** Prioritize the repair and reinforcement of aging dams.
- ➡ **Community Awareness:** Increase public awareness regarding dam safety and emergency preparedness.



Global Employment Trends for Youth 2024

● Why in News?

- ➔ The International Labour Organization (ILO) has released the “**Global Employment Trends (GET) for Youth 2024**” report, marking the 20th anniversary of its publication. This report focuses on the achievements, challenges, and future outlook for youth employment.

● Key Highlights of the Report

➔ Post-COVID Recovery:

The global youth unemployment rate in 2023 stands at 13%, the lowest in 15 years. There are 64.9 million unemployed youth, the lowest number since 2000.

➔ NEET Status:

20.4% of youth were classified as NEET (Not in Employment, Education, or Training) in 2023, reflecting broader labor market exclusion.

Two-thirds of NEET youth are women.

➔ Global Challenges:

Inequalities of Opportunity: 80% of young workers in high-income countries are in regular paid jobs, compared to just 20% in low-income countries.

Regional Disparities: Africa is expected to see growth in its youth labor force by 2050, while other regions are likely to face a decline. 33% of youth in Arab states and North Africa are unemployed.

Youth Well-being: Many young people are concerned about job security, economic conditions, and lack of social mobility.

Educational Mismatch: Two-thirds of young workers in developing economies hold qualifications that do not align well with their jobs.



● **Recommendations from the Report**

- ➡ **Enhance Education and Training:** Improve school-to-work transitions and address skill mismatches.
- ➡ **Targeted Labour Market Policies:** Support disadvantaged youth through tailored policies.
- ➡ **Promote Entrepreneurship:** Encourage self-employment and entrepreneurial ventures among young people.
- ➡ **Job Creation Focus:** Implement gender-responsive macroeconomic and sectoral policies to boost job creation.
- ➡ **Youth Inclusion:** Involve youth in policymaking, strengthen international cooperation, and foster public-private partnerships.

● **Way Forward**

- ➡ **Invest in education** and training programs.
- ➡ Develop **inclusive labor market policies**.
- ➡ **Support youth entrepreneurship** and self-employment initiatives.
- ➡ Enhance efforts to **address educational mismatches** and regional disparities in employment opportunities.



Spintronics

● Why in News?

- ⇒ Researchers have developed a transparent conducting interface between two insulating materials using **spintronics**.
- ⇒ This innovation has the potential to significantly enhance data transfer speeds in electronic devices and increase data storage capacity in quantum devices.

● About Spintronics

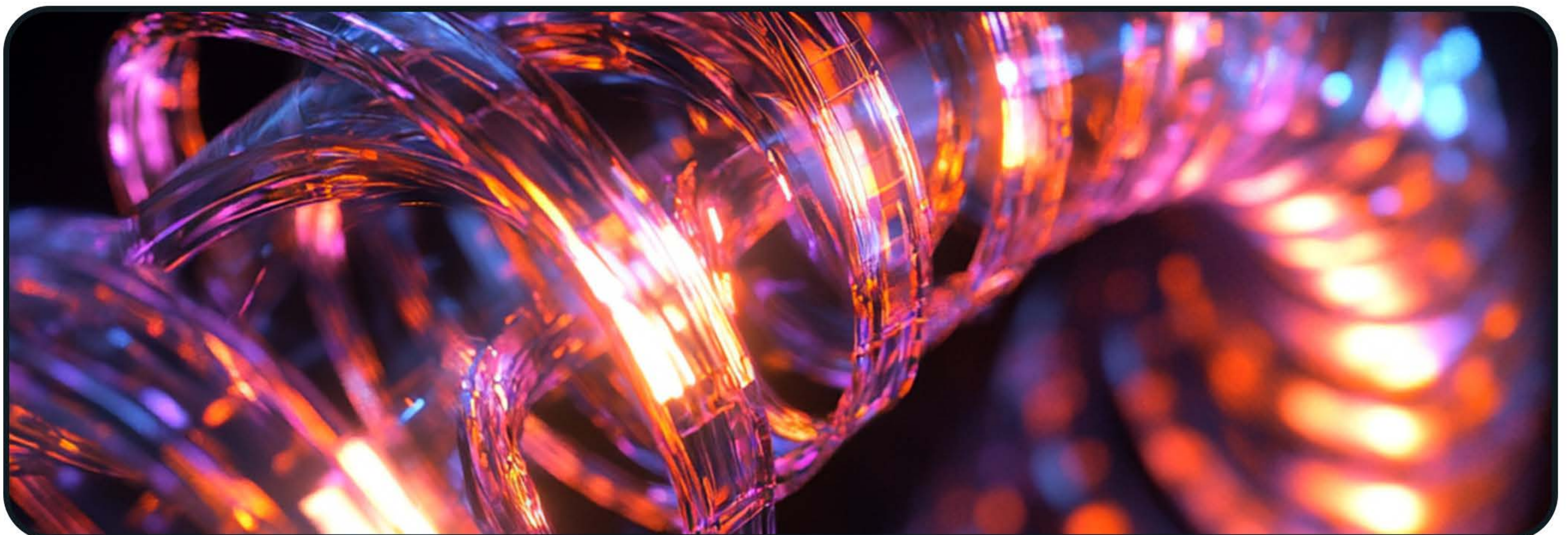
- ⇒ **Technology Overview:** Spintronics is a field that exploits both the intrinsic spin of electrons and their charge for use in transport devices.
- ⇒ **Applications:** Spintronic systems are particularly valuable in quantum computing, nano-electronic devices, and modern electronic storage devices.

● Significance of the Development

- ⇒ **Enhanced Data Transfer:** The breakthrough can drastically speed up data transfer between different parts of electronic devices.
- ⇒ **Increased Data Storage:** It also holds promise for expanding the amount of data that can be stored in quantum devices.

● Way Forward

- ⇒ **Research and Development:** Continued exploration in spintronics could lead to ground-breaking advancements in electronic and quantum technologies. As researchers refine this technology, it may result in devices that are not only faster and more powerful but also more energy-efficient, leading to a new era of computing power and technological innovation.



UNSC Reforms: A Call from G4 Nations

● Why in News?

- ➔ India, representing the G4 Nations (**Japan, Brazil, Germany, and India**), has emphasized the urgent need for reforms in the United Nations Security Council (**UNSC**) to effectively address global challenges such as extremism and cyber-security threats.

● About G4 Nations

- ➔ **Membership Aspirations:** G4 Nations, consisting of Japan, Brazil, Germany, and India, are united in their quest for permanent seats on the UNSC.
- ➔ **Reform Proposal:** The group advocates increasing the Council's membership from 15 to 25, including the addition of six permanent and four non-permanent members.

● Need for UNSC Reform

- ➔ **Lack of Representation:** Current permanent membership excludes regions like Africa, Latin America, the Caribbean, and underrepresents the Asia-Pacific.
- ➔ **Declining Credibility:** The UNSC has been criticized for its failure to resolve major conflicts, such as the Russia-Ukraine war.
- ➔ **Interest-based Decision Making:** The veto power held by permanent members is often used to serve national interests. For example, China vetoed India's resolution to designate certain individuals as global terrorists.
- ➔ **For India:** India seeks greater influence in global policymaking, particularly on issues relevant to the Global South, such as terrorism.

● Challenges in Implementing Reforms

- ➔ **UN Charter Amendments:** Reforms would require amendments to the UN Charter, which is a complex process.
- ➔ **Opposition from Uniting for Consensus (UfC):** Groups like the "Coffee Club," led by countries such as Italy and Pakistan, oppose the G4 and L.69 Group's reform proposals.
- ➔ **Stalled Negotiations:** The Intergovernmental Negotiations (IGN) on Council reform have made little substantive progress.



● **About the United Nations Security Council (UNSC)**

- ➡ **Genesis:** Established by the UN Charter in 1945, the UNSC is one of the six principal organs of the United Nations.
- ➡ **Function:** Its primary responsibility is the maintenance of international peace and security.
- ➡ **Structure:** The UNSC comprises 15 members: 5 permanent members (the US, China, the United Kingdom, Russia, and France) and 10 non-permanent members elected for two-year terms.

● **Way Forward**

- ➡ **Broaden Representation:** Include more regions in the permanent membership to reflect current global dynamics.
- ➡ **Enhance Transparency:** Ensure that the UNSC’s decision-making process is more transparent and less influenced by the national interests of a few members.
- ➡ **Strengthen Negotiations:** Push for more substantive progress in the Intergovernmental Negotiations (IGN) on UNSC reform.



Women and Men in India 2023 Report

● Why in News?

- ➔ The National Statistical Office (NSO), under the Ministry of Statistics and Programme Implementation (MoSPI), has released the 25th edition of the "Women and Men in India 2023" report.

● Key Findings

➔ Population

Projected Growth: By 2036, India's population is expected to reach **152.2 crore**.

Improved Female Percentage: The female percentage is projected to rise to **48.8%** (up from 48.5% in 2011).

Sex Ratio: Expected to increase from 943 (2011) to **952 by 2036**.

Working-Age Population: The percentage of working-age individuals (15-59 years) is projected to rise from 60.7% (2011-12) to **64.9% by 2036**.

➔ Health

Life Expectancy: Expected to improve from 68.6 years for males and 71.4 years for females (2016-20) to **71.2 years and 74.7 years**, respectively (2031-36).

Non-Institutional Deliveries: Reduced to **8.2%** (2019-21).

➔ Employment

Labour Force Participation Rate (LFPR): For **males**, it has increased from 75.8% (2017-18) to **78.5%** (2022-23), while for **females**, it has risen from 23.3% to **37%** during the same period.

➔ Other Key Points

Women's Voter Turnout: In the 2019 national elections, women's voter turnout (67.2%) surpassed that of men for the first time.

Women in Startups: **47.6%** of the total recognized startups by DPIIT are led by women.

● Way Forward

- ➔ Continued focus on **improving gender parity** in various sectors, including employment and education.
- ➔ Policies aimed at **sustaining and enhancing** these positive trends.

National Pest Surveillance System (NPSS)

● Why in News?

- ➔ NPSS (National Pest Surveillance System) is set to provide accurate pest management advisories and promote **Integrated Pest Management**.
- ➔ It operates under the Directorate of Plant Protection, Quarantine & Storage, **Ministry of Agriculture**.

● Need for NPSS

- ➔ To reduce farmers' reliance on pesticide retailers and address the overuse of pesticides.
- ➔ Pest attacks can cause up to 20% loss in food production.

● AI & Agriculture

- ➔ AI offers viable solutions for tackling food inadequacy, climate change, and low yield.

● Applications of AI in Agriculture

- ➔ **Diagnostic:** Identifies water stress, pest, and disease infestations.
- ➔ **Prescriptive:** Soil health analysis and fertilizer recommendations (e.g., SENSAGRI: Sensor-based Smart Agriculture).
- ➔ **Advisory:** Provides weather updates and irrigation scheduling.
- ➔ **Predictive:** Forecasts yield and pest attacks, offering early warnings (e.g., BharatAgri App).



● **Challenges in Adopting AI in India**

- ➡ **Policy Issues:** Incomplete data governance, rights, enforcement, and regulations.
- ➡ **Farmers' Attitude:** Risk-aversion, resistance to change, and lack of trust in technology.
- ➡ **Marginalization and Digital Divide:** Lack of digital infrastructure prevents smallholders from accessing advanced technologies.
- ➡ **High Initial Investment:** Creates a barrier for small-scale farmers.

● **Way Forward**

- ➡ Continued investment in research and infrastructure.
- ➡ Financial support and subsidies for research institutions to develop region-specific AI models and applications.

● **Initiatives Promoting AI in Agriculture**

- ➡ **Kisan e-Mitra:** An AI-powered chatbot assisting farmers with the PM Kisan Samman Nidhi scheme.
- ➡ **AI for Agriculture Innovation (AI4AI):** Launched by the World Economic Forum, including the 'Saagu-Baagu' initiative in Telangana to promote agricultural innovation.
- ➡ **AI-Based Analytics:** For crop health monitoring using **satellite datasets** for rice and wheat crops.



The Human Cost of Declining Vulture Populations

● Why in News?

- ➔ A recent study has revealed that the functional extinction of vultures in India may have led to half a million premature human deaths between 2000 and 2005.

● Key Findings of the Study

- ➔ **Keystone Species:** Vultures play a critical role in the ecosystem by cleaning up disease-ridden carcasses, which helps control populations of other scavengers, such as feral dogs, and reduce the spread of pathogens.
- ➔ **Human Health Crisis:** The decline in the vulture population has led to a 4% increase in human mortality due to the negative impact on sanitation, resulting in a rise in pathogens.
- ➔ **Economic Costs:** The public health crisis caused by the loss of vultures has led to an estimated annual economic damage of nearly \$70 billion.

● Vultures in India

- ➔ **Species:** Vultures are large carrion-eating birds predominantly found in the tropics and subtropics. India is home to nine species of vultures, including three migratory species: the Cinereous vulture, Griffon vulture, and Himalayan vulture.
- ➔ **Conservation Status:** Vultures are protected under Schedule I of the Wildlife Protection Act, 1972.
- ➔ **Threats:** Vultures face multiple threats, including loss of natural habitats due to human activities, food scarcity, exposure to harmful drugs like diclofenac, and risks like electrocution.



● **Vulture Conservation Initiatives**

- ➔ **Ban on Harmful Drugs:** The veterinary use of diclofenac was banned in 2006, followed by the ban on ketoprofen and aceclofenac in 2023.
- ➔ **Action Plan for Vulture Conservation (2020-25):** A comprehensive plan has been implemented to protect and restore vulture populations in India.
- ➔ **Conservation Breeding:** The Vulture Conservation Breeding Centre in Pinjore, Haryana, is a key facility for breeding and reintroducing vultures into the wild.
- ➔ **Vulture Restaurants:** Special feeding stations, known as vulture restaurants, have been established in places like Koderma and Raigad to provide safe food sources for vultures.



ISRO Launches Earth Observation Satellite EOS-08

● Why in News?

- ➡ The Indian Space Research Organisation (ISRO) successfully launched the Earth Observation Satellite **EOS-08** as part of the **SSLV-D3/EOS-08** mission.

● Mission Details

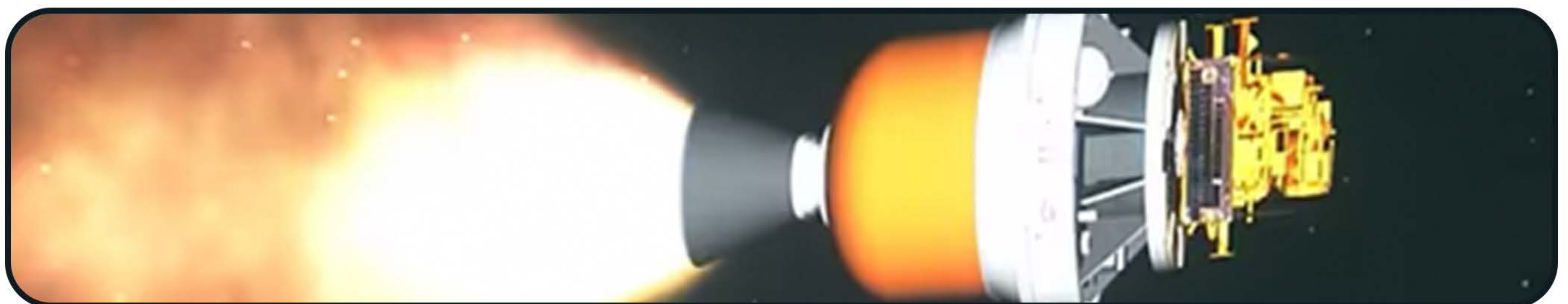
- ➡ **Launch Vehicle:** The satellite was launched using the Small Satellite Launch Vehicle (SSLV)-D3 from the Satish Dhawan Space Centre in Sriharikota.
- ➡ **Orbit and Lifespan:** The satellite will operate in a circular Low Earth Orbit at an altitude of 475 km with an inclination of 37.4°, and has a mission life of 1 year.
- ➡ **Additional Payload:** SR-0 DEMOSAT, developed by Space Kidz India, was also onboard the mission.

● Objectives of EOS-08 Mission

- ➡ **Microsatellite Development:** Designing and developing a microsatellite platform.
- ➡ **Payload Integration:** Creating payload instruments compatible with the microsatellite bus.
- ➡ **Technological Advancement:** Incorporating new technologies for future operational satellites.

● Payloads of EOS-08 Mission

- ➡ **Electro Optical Infrared Payload (EOIR):** Captures images in the Mid-Wave and Long-Wave Infrared bands for applications like disaster monitoring and environmental monitoring.
- ➡ **Global Navigation Satellite System-Reflectometry (GNSS-R):** Uses remote sensing to measure ocean winds, soil moisture, and monitor the Himalayan cryosphere.
- ➡ **SiC UV Dosimeter:** Monitors UV irradiance at the Gaganyaan mission's crew module viewport, acting as a high-dose alarm sensor for astronaut safety.



● **About Earth Observation Satellites (EOS)**

- ➔ **Function:** EOS or Earth remote sensing satellites are designed to observe and collect data on Earth's natural and artificial activities, including physical, chemical, biological, and human systems.
- ➔ **Applications:** Used in early warning systems, environmental impact monitoring, and more.

● **About Small Satellite Launch Vehicle (SSLV)-D3**

- ➔ **Developmental Flight:** SSLV-D3 is the third developmental flight of the SSLV.
- ➔ **Capabilities:** The SSLV is designed to launch Mini, Micro, or Nano satellites (ranging from 10 to 500 kg) into a 500 km planar orbit.
- ➔ **Technical Specifications:** The vehicle uses three solid fuel-based stages and a final liquid-fuel-based stage.
- ➔ **Benefits:** Low cost, quick turnaround time, flexibility in launching multiple satellites, launch on demand feasibility, and minimal launch infrastructure requirements.



Greener Tug Transition Program (GTTP)

● Why in News?

- ➔ The Union Minister of **Port Shipping and Waterways** launched the **Standard Operating Procedure (SOP)** for the **Greener Tug Transition Program (GTTP)** to promote sustainable alternatives to conventional fuel-based harbor tugs.
- ➔ This initiative is part of India's commitment to green shipping, aligning with global efforts to reduce carbon emissions in the maritime sector.

● About GTTP

- ➔ **Introduction:** GTTP, announced in 2023, is a central initiative under the '**Panch Karma Sankalp**' aimed at replacing conventional fuel-based harbor tugs in Indian Major Ports with green tugs.
- ➔ **Panch Karma Sankalp:** Includes five major initiatives, such as 30% financial support for promoting green shipping and the development of a Single Window Portal for monitoring river and sea cruises.

● Need for Green Shipping

- ➔ **Environmental Impact:** The shipping sector is responsible for approximately 3% of global CO2 emissions. In India, maritime greenhouse gas (GHG) emissions contribute 1% of the overall transport sector emissions.
- ➔ **Sustainability Goal:** Transitioning to green shipping is essential to mitigate climate change and reduce the environmental impact of maritime activities.

● Challenges in Decarbonization of Shipping

- ➔ **High Dependency on Fossil Fuels:** Around 99% of the energy demand in international shipping is met by fossil fuels.
- ➔ **Transition Costs:** Significant investments are required for infrastructure upgrades, such as retrofitting for LNG fuel, which demands cryogenic storage facilities.
- ➔ **Other Challenges:** Inadequate port facilities, inefficient route planning, and difficulties in enforcing regulations in international waters complicate the decarbonization process.



● Key Initiatives

➡ Global Initiatives:

IMO's Revised GHG Strategy: The International Maritime Organization (IMO) has set a target for the shipping sector to achieve net-zero emissions by or around 2050.

Green Voyage 2050: A global program supporting developing countries in reducing emissions from ships in alignment with the 2023 IMO GHG Strategy.

➡ India's Initiatives:

Sagarmala Programme: Focuses on port-led development, with a significant emphasis on green port initiatives and the development of coastal communities.

Maritime India Vision 2030: A comprehensive plan that includes the development of green ports and the promotion of green shipping practices across India.

● Way Forward

➡ **Continued Investment in Green Technologies:** Encouraging investment in green technologies and infrastructure to support the transition to sustainable maritime practices.

➡ **International Collaboration:** Strengthening global partnerships to align with international standards and benefit from shared knowledge and technology.

➡ **Regulatory Support:** Enhancing regulatory frameworks to support the adoption of green shipping technologies and practices.



Back to Cape of Good Hope

● Why in News?

- ➡ India's fuel exports to Europe, which traditionally relied on the Red Sea-Suez Canal route, have been disrupted due to escalating security concerns in the region.
- ➡ India became a key fuel supplier to Europe following the Russia-Ukraine conflict and subsequent sanctions on Russia.

● Background

- ➡ The Suez Canal is the shortest maritime route between Asia and Europe, handling **12-15%** of global maritime trade (**UNCTAD**).

● Need for Shifting Route

- ➡ **Houthi Attacks:** Increasing attacks by Iran-backed Houthi rebels around the Bab el-Mandeb strait, a key choke point leading to the Red Sea and Suez Canal.
- ➡ **Israel-Hamas Conflict:** Growing fears that the Israel-Hamas conflict might escalate into a broader Middle Eastern crisis, further jeopardizing the route.

● Consequences of Shifting Route

- ➡ **Decline in Supply to Europe:** India's petroleum fuel exports to Europe have decreased as a result of the route change.
- ➡ **Increased Shipping Time and Costs:** Shipping via the Cape of Good Hope adds around two weeks to travel time and raises container freight rates by over 30%.
- ➡ **Diversification of Export Destinations:** India's fuel exports have remained stable, with increased supplies to Asian markets and Australia offsetting the decline in exports to Europe.

● Way Forward

- ➡ **Continued monitoring of geopolitical tensions** and strategic planning to maintain stable export routes.
- ➡ **Strengthening ties** with alternative markets in Asia and Australia to sustain export levels.






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