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GST CLASSICAL EXAMPLE OF COOPERATIVE FEDERALISM: CJI

In News

- Chief Justice of India D Y Chandrachud emphasized the introduction of the Goods and Services Tax (GST) as a "classical example of cooperative federalism.

Federalism In India

- The Founding Fathers of India established a "Union Constitution" that reflects a federal structure with a strong central government.

- Federalism in India involves a **sharing of power between the central and state governments,** where both levels are empowered and co-equal.

- **Dr. Ambedkar** emphasized that India's Constitution defines it as a **Union of States,** not a loose collection of independent entities.

Co-operative Federalism and GST

- Cooperative federalism involves the Centre and states working together towards development while acknowledging the importance of both collaborative discussions and "interstitial contestation" between the two levels of government.

- Key institutions like the NITI Aayog, Finance Commission, and GST-Council play crucial roles in policy making and modern federalism in India, underpinned by principles of equity, capacity, stability, and growth.

- The **101st Amendment,** introducing the **Goods and Services Tax (GST)**, marked a significant advancement in cooperative federalism by enabling both the Centre and States to levy taxes on goods and services concurrently, thus maintaining the federal structure.

  - This cooperative approach involved the Centre relinquishing exclusive tax powers on manufacturing, while States gave up exclusive sales tax powers, facilitating uniformity in indirect taxation.

Importance

- The collaborative effort led to harmonized GST laws, common definitions, procedures, and compliance mechanisms across the country, effectively reducing compartmentalization in taxation.

- Cooperative federalism aspect of GST ensures equal representation of states in decision-making processes, with most GST Council decisions reached by consensus.

- GST significantly contributes to state revenues, with states receiving 100% of the State GST (SGST) collected and approximately 50% of the Integrated GST (IGST).

Issues and Challenges

- Over time, tensions have emerged, particularly regarding GST compensation and the Council's decision-making process.

- States began to express concerns about delayed compensation, especially during the economic downturn caused by the COVID-19 pandemic, leading to accusations against the Centre for insufficient support.

- Opposition-ruled states perceive the GST Council as dominated by the Centre, which holds one-third of the voting power.

Conclusion and Way Forward

- Healthy federalism requires negotiation and consensus, especially in a diverse country like India.

- GST intends to transform India into a true economic union, with the aim of 'One Nation, One Tax, One Market'.

- The GST reform's success depends on open dialogue and collaborative decision-making.

- The Centre must foster a consultative approach to strengthen fiscal federalism and address emerging conflicts.

- Federalism should be assessed not only on legislative powers but also on its ability to uphold democratic ideals of equality, liberty, dignity, and fraternity.

Source :ET

DIGITAL INFRASTRUCTURE GROWTH INITIATIVE FOR INDIA FRAMEWORK (DIGI FRAMEWORK)

In News

- The US, Japan, and South Korea launched the **DiGi Framework** to **bolster digital infrastructure in India**, focusing on 5G, data centers, AI, and smart cities.

About DiGi Framework

- The DiGi Framework will support projects across **India's information and communications technology (ICT) sector**, targeting critical areas like 5G, Open RAN, submarine cables, optical fiber networks, data centers, smart cities, e-commerce, AI, and quantum technology.

- This collaboration between the **U.S., Japan, and South Korea and Indian private sector partners** aims to boost connectivity, enhance

digital infrastructure, and advance technological innovation across these sectors in India.

- It further reflects the **shared commitment to advance digital transformation and sustainable development in India** and the Indo-Pacific region.

Digital Public Infrastructure (DPI)

- It encompasses the foundational digital systems and services that enable efficient, inclusive, and transparent public service delivery. It refers to the shared digital systems and services that support public service delivery at scale.

- It includes digital identity systems, payment platforms, data exchange frameworks, and other foundational technologies, and characterised by its interoperability, open standards, societal scale, and robust governance frameworks.

- India has become the **first country to establish all three foundational Digital Public Infrastructures (DPIs**), collectively known as the **India Stack**. This comprehensive digital framework includes:

  - **Digital Identification (Aadhaar):** Providing a unique digital identity for citizens.
  - **Real-time Rapid Payment System (UPI):** Enabling fast and seamless digital payments.
  - **Data Sharing Architecture (Data Empowerment and Protection Architecture, DEPA):** Facilitating secure and consent-based data sharing.

DIGITAL INDIA GOALS 2026

1	$	$1 trillion digital economy by 2025-26
2	💡	Global innovation and entrepreneurship system
3		Shape the future of technologies
4		Become a significant and trusted global player for digital products, devices, platforms, and solutions

Significance

- **Financial Inclusion:** UPI revolutionized digital payments, allowing millions to access financial services seamlessly and affordably. This has expanded financial inclusion, enabling even those without formal banking access to participate in the digital economy.

- **Efficient Governance and Service Delivery:** Aadhaar has simplified public service delivery by verifying identities digitally, reducing duplication, and preventing fraud. This efficiency supports programs such as direct benefit transfers, which reach beneficiaries faster and reduce leakage.

- **Economic Growth and Innovation:** DPI has spurred innovation and entrepreneurship by creating open digital frameworks accessible to fintech, health tech, and other digital service providers. It enables the private sector to build value-added services, fostering job creation and economic growth.

- **Data Empowerment and Privacy:** Through DEPA (Data Empowerment and Protection Architecture), individuals can share data securely and with consent, promoting data sovereignty. This empowers citizens to control and benefit from their data while ensuring privacy protection.

Key Challenges Associated With DPI

- **Privacy and Security Concerns:** Ensuring the protection of personal data and preventing cyber threats is paramount. Privacy violations, identity theft, and data-driven manipulation are significant risks.

- **Digital Divide:** Bridging the gap between those with access to digital technologies and those without is a major challenge. It includes addressing issues of affordability, digital literacy, and infrastructure availability in remote areas.

- **Institutional Change:** Implementing DPI requires significant changes within public institutions, including updating policies, training staff, and adapting to new technologies.

- **Funding and Investment:** Securing adequate funding and investment for DPI projects is essential. This includes not only initial setup costs but also ongoing maintenance and upgrades.

Realising the Full Potential of DPI: Strategic Steps

- **Integrating Impact Assessments:** To ensure that DPI initiatives are effective and inclusive, it is crucial to integrate impact assessments into their design. It involves evaluating the social, economic, and environmental impacts of DPI projects from the outset.

  - By doing so, policymakers can identify potential issues early and make necessary adjustments to enhance the benefits and mitigate any negative consequences.

- **Ensuring Data Privacy and Security:** As DPI systems handle vast amounts of sensitive data, ensuring robust data privacy and security measures is paramount. It includes implementing strong encryption standards, regular security audits, and transparent data governance policies.

  - Protecting user data not only builds trust but also safeguards against potential misuse and cyber threats.

- **Promoting Inclusivity and Accessibility:** For DPI to be truly transformative, it must be

accessible to all segments of society, including marginalised and underserved communities.

- **Fostering Public-Private Partnerships:** Collaboration between the public and private sectors can accelerate the development and adoption of DPI.

Source: TH

URBANISATION & A DIP IN GROUNDWATER RESERVE

Context

- Recently, a new hydrology model-based study titled as 'Detection and Socio-economic Attribution of Groundwater Depletion in India' has proven a **clear correlation between urbanisation and a decline in groundwater reserves** in Indian states of Punjab and Haryana, Uttar Pradesh, West Bengal, Chhattisgarh and Kerala.

About

- India hosts **around 18% of the global population,** faces a severe water crisis despite having **only 4% of the world's freshwater resources.**

- Groundwater, which supports over 60% of irrigated agriculture and around 85% of domestic water supply in rural areas, is depleting at an alarming rate.

- The belief that the country receives sufficient rainfall to fulfil the needs of its large population does not carry much weight.
    - Only around **8% of the rainwater received is harvested**, and more than 90% of the groundwater (which should have been recharged by rainwater) is claimed by **agricultural practices** — and is misused.

> **Ground Water Extraction: A Global Crisis**
>
> - The **first case** of land subsidence due to groundwater extraction was reported in California, USA, in the early 1990s, where families were evacuated after certain regions recorded subsidence of up to 150 m, over 50 years.
>
> - The **San Joaquin Valley of California**, land continues to sink by 0.3 m per year due to excessive pumping of groundwater for a commercial orchard, which has caused permanent subsidence and landslides in the area.
>
> - In **Southeast Asia,** the rapid growth of megacities has led to a pressing design

> problem that many governments are only just starting to address. **Jakarta is considered the world's fastest sinking city**. With 40% of the city already below sea level, it is predicted that by 2050, some 95% of North Jakarta will be underwater.
>
> - Bangkok in Thailand and Ho Chi Minh City in Vietnam are also sinking, with subsidence rates of up to 2 cm and 5 cm per year, respectively.

Key Findings of the Report

- The study identifies Punjab, Haryana, Uttar Pradesh, West Bengal, and Chhattisgarh as the most affected states. These regions have experienced a **substantial decline in groundwater levels** over the **past two decades.**

- The northern and northwestern hotspots, particularly **Punjab and Haryana**, have lost approximately 64.6 billion cubic metres of groundwater.

- **Between 2004 and 2020**, the state experienced a 17% decline in net annual groundwater availability — the highest among the **five hotspots.** Groundwater demand for irrigation dropped by 36% during this period, while domestic and industrial uses increased by 34%.

> **Case Study Related To Rural Areas of Punjab and Haryana**
>
> - After the **high agricultural advancement and practices**, the two states saw tremendous **groundwater dependency for irrigation**.
>
> - Although the two states lie in an **arid to semi-arid zone** which sees moderate **precipitation** in the monsoon months, this is **not enough to recharge aquifers** to their previous level, hence **causing land deformation**, which is mostly *witnessing tensional, compressional and shear cracks with vertical, horizontal and diagonal orientations in nature.*

Causes of Groundwater Depletion

- **Urbanisation:** Rapid urbanisation has led to increased water demand for domestic and industrial use. In areas like Faridabad and Gurgaon in Haryana, groundwater levels have been dropping since 2012, despite minimal agricultural activity.

- **Industrialisation:** The growth of factories and industrial units has further strained groundwater resources. The study notes a significant increase in the number of factories in Punjab and Haryana, correlating with a drop in groundwater availability.

- **Irrigation Practices:** While urbanisation and industrialisation are major factors, irrigation for agriculture also plays a role in groundwater depletion.
    - However, the study highlights that urban areas with minimal agriculture are still experiencing significant groundwater loss.

Implications

- The depletion of groundwater reserves has far-reaching consequences. Reduced groundwater levels can lead to decreased agricultural productivity, degraded soil quality, and long-term socio-economic challenges.
- The study calls for immediate action to address these issues and ensure sustainable water management practices.
- **Environmental Implications:** Rapid decline in groundwater reserves and contributing to **India's carbon emissions**.
    - It has **resulted in the Earth's axis tilting nearly 80 cm to the east**.
    - It is linked to **land subsidence**, which is an irreversible process.
    - Groundwater extraction has been linked to the **climate crisis**, and impacts the ecosystem and biodiversity.
- **Socio-economic Implications:** Groundwater extraction is the lowest since 2004, and came down by about 6 billion cubic metres in 2022 from 2020, causing the increased cost and adverse effects on food supply and communities.

Recommendations

- **Rainwater Harvesting:** Implementing rainwater harvesting systems can help recharge groundwater levels and reduce dependence on groundwater for domestic and industrial use.
- **Sustainable Agriculture:** Promoting precision agriculture and efficient irrigation techniques can minimise water wastage and reduce the strain on groundwater resources.

- **Policy Interventions:** Stronger regulations and policies are needed to manage groundwater extraction and ensure equitable distribution of water resources.

Conclusion

- The study serves as a wake-up call for policymakers, industries, and citizens alike. Ensuring sustainable water management practices is crucial to preserving groundwater reserves and securing the future of these states.
- By addressing the root causes of groundwater depletion, India can work towards a more sustainable and water-secure future.
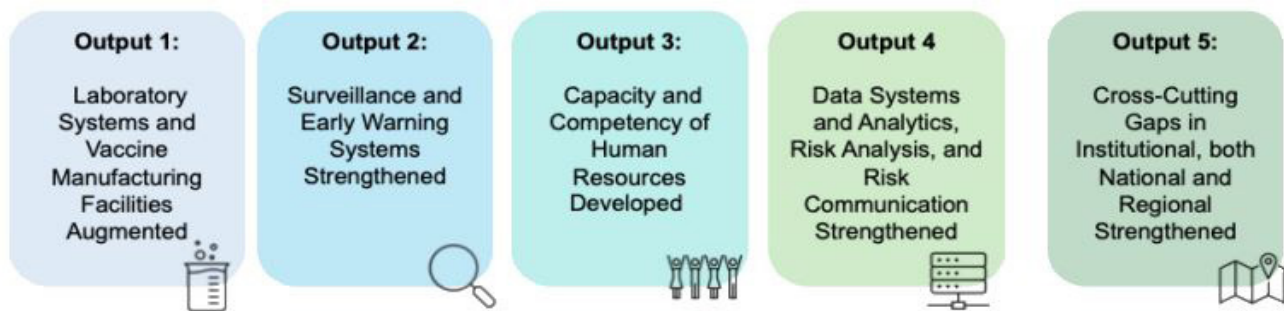
Source: DTE

PANDEMIC FUND PROJECT

Context

- The Ministry of Fisheries, Animal Husbandry and Dairying launched the **Pandemic Fund Project** on Animal Health Security.

About

- The Pandemic Fund Project is a $25 Million initiative funded by the **G20 Pandemic Fund.**
- Two important documents were also launched:
    - **Standard Veterinary Treatment Guidelines (SVTG):** Outlines best practices for veterinary care, aimed at improving the overall health and productivity of livestock and supporting the **national action plan for Antimicrobial resistance.**
    - **Crisis Management Plan (CMP) for Animal Diseases:** It will provide a framework for managing and responding to outbreaks of animal diseases, ensuring rapid containment and mitigation.

Pandemic Fund Project

- The Fund is to be implemented in partnership with the **Asian Development Bank (ADB), the World Bank and the Food and Agriculture Organization (FAO)**, is to be utilised by **August 2026.**
- The Fund supports the existing initiatives of the department through **enhancing disease surveillance.**
- It is also aimed at **developing human capacity-building initiatives** to enhance the skills and capabilities of animal health human resources.
- The project is designed to enhance India's animal health security through the following five key outputs:

Output 1:	Output 2:	Output 3:	Output 4:	Output 5:
Laboratory Systems and Vaccine Manufacturing Facilities Augmented	Surveillance and Early Warning Systems Strengthened	Capacity and Competency of Human Resources Developed	Data Systems and Analytics, Risk Analysis, and Risk Communication Strengthened	Cross-Cutting Gaps in Institutional, both National and Regional Strengthened

Need

- **Zoonotic Diseases:** India faces significant challenges from zoonotic diseases such as rabies, leptospirosis, and avian influenza.
    - These diseases can spread between animals and humans, highlighting the need for integrated surveillance and control measures involving both human and animal health sectors.
- **Antimicrobial Resistance (AMR):** India has high rates of antimicrobial resistance due to the widespread use of antibiotics in human healthcare, veterinary medicine, and agriculture.
    - One Health approaches are crucial to mitigate AMR by promoting responsible antibiotic use across all sectors.
- **Livestock and Agriculture:** Agriculture and livestock farming are major economic sectors in India.
    - These strategies can ensure sustainable agricultural practices that promote animal welfare, reduce disease transmission, and enhance food security.
- **Emerging Infectious Diseases:** India, like many countries, faces threats from emerging infectious diseases such as COVID-19.
    - These diseases often originate at the human-animal-environment interface, underscoring the importance of early detection, rapid response, and collaborative efforts between health sectors.

India's Livestock

- India has **World's highest number of livestock** of 536 million (including cattle, buffalo, sheep, goats, and pigs).
- India has the **second largest poultry market** in the world.
- **Second largest producer of fish** and also second largest aquaculture nation in the world.
- The livestock provides food items such as Milk, Meat and Eggs for human consumption. **India is number one milk producer in the world.**

Government Initiatives

- **National Animal Disease Control Programme (NADCP):** It is a flagship scheme launched in **2019** for control of Foot & Mouth Disease and Brucellosis by vaccinating 100% cattle, buffalo, sheep, goat and pig population.
- **National Livestock Mission (NLM):** The NLM, launched by the Ministry of Agriculture, aims to ensure sustainable development of the livestock sector, including dairy farming.
    - It focuses on increasing the productivity of livestock, improving their health, and providing support for fodder and feed resourc
- **National Action Plan on Antimicrobial Resistance (NAP-AMR):** India launched the NAP-AMR in 2017 to address antimicrobial resistance across human health, animal health, and environmental sectors.
- **National Centre for Disease Control (NCDC):** The NCDC plays a key role in disease surveillance and response in India, including zoonotic diseases.
    - It collaborates with animal health agencies such as the Department of Animal Husbandry, Dairying, and Fisheries (DAHDF).
- **Integrated Disease Surveillance Programme (IDSP):** IDSP monitors disease outbreaks across India and includes zoonotic diseases in its surveillance efforts, thereby promoting a One Health approach in disease monitoring.

Source: PIB

ISRO CHIEF SETS NEW DATES FOR GAGANYAAN MISSION AND CHANDRAYAAN-4

Context

- The Indian Space Research Organisation's Chairman, S Somanath, shared new timelines for Chandrayaan 4, Gaganyaan, and a joint moon-landing mission with Japan's JAXA.

About

- The Gaganyaan mission will likely begin in **2026** and sample return mission Chandrayaan-4 will be carried out in **2028.**
- A joint moon-landing mission named LUPEX, or **Lunar Polar Exploration,** would be the **Chandrayaan-5 mission.**
  - India would provide a lander for the mission, while a rover would come from Japan.

Space Sector of India

- India's space sector has benefitted from decades of consistent investment, with **$13 billion** invested in the last decade.
  - It is the **8th largest space economy** (in terms of funding) in the world.
- In the recently announced Union Budget for **2024-25,** India's space sector received a significant boost. The Central government allocated **₹13,042.75 crore** to support space-related initiatives.

Contribution of Space Sector to India's GDP

- The Sector has supported **96,000 jobs** in the public and private sector.
- For every dollar produced by the space sector, there was a **multiplier effect of $2.54** to the Indian economy and India's space force was **2.5 times more productive** than the country's broader industrial workforce.
- The Indian space sector was diversifying and now had 700 companies including **200 start-ups** and had seen revenues **grow to $6.3 billion in 2023**, which was about **1.5%** of the global space market.
- **Satellite communications** contributed **54% to the space economy,** followed by **navigation (26%)** and launches (11%).
  - The main industries supported by the space sector were **telecom (25%)**, **information technology (10%)** and **administrative services (7%).**

Challenges in India's Space Sector

- **Competition and Global Market Share:** To achieve this ambitious goal of 8% of the global market share, Indian space companies must compete effectively on the international stage.
- **Private Sector Participation:** While the private sector has shown interest, there's a need for more substantial investment and commitment.
- **Technology Development and Innovation:** Developing cutting-edge technologies, such as reusable launch vehicles, miniaturized satellites, and advanced propulsion systems, requires substantial investment and research.

- **Regulatory Framework and Licensing:** Navigating licensing processes, export controls, and compliance can be complex.
- **Infrastructure and Facilities:** Developing and maintaining such infrastructure requires significant capital.

Major Reforms In Space Sector of India

- **Indian Space Policy 2023:** It laid down roles and responsibilities of organizations such as ISRO, New Space India Limited (NSIL) and private sector entities.
  - It aims to enhance the participation of research, academia, startups and industry.
- **Strategic Proposals by SIA:** The Space Industry Association – India (SIA-India) in its Pre-Budget Memorandum for the **FY 2024-25** has proposed a substantial increase in India's space budget.
  - It aims to support India's expanding space program, foster private sector involvement, drive technological advancements, and position the nation as a key player in the dynamic global space ecosystem.

Way Ahead

- India aims to commission the **Bharatiya Antariksha Station (BAS) by 2035** and land Indian astronauts on the Moon by 2040.
- Private entities are now actively involved in crucial aspects of research, manufacturing, and fabrication of rockets and satellites, fostering a vibrant ecosystem of innovation. It is expected to integrate Indian companies into global value chains.

Gaganyaan mission

- **The mission aims** to demonstrate the capability to **launch human beings** (three crew members) to **low earth orbit** and bring them back safely to earth by landing.
- **Launch vehicle:** The Launch Vehicle Mark-3 (LVM3) is the launch vehicle for the Gaganyaan mission. All systems in the LVM3 launch vehicle are reconfigured to meet human rating requirements and named Human Rated LVM3 (HLVM3).
- **Crew Escape System (CES):** HLVM3 consists of CES powered by a set of quick acting, high burn rate solid motors which ensures that Crew Module along with the crew is taken to a safe distance in case of any emergency either at launch pad or during ascent phase.
- **Orbital Module:** The Orbiter Module will orbit the Earth, and it consists of Crew Module (CM) and Service Module (SM). It is designed to keep the crew safe during ascent, orbital phase, and re-entry.

- ◆ T**he Crew Module (CM)** is the habitable space with the Earth-like environment in space for the crew.
  - ◆ **Service Module (SM):** It will be used to provide the necessary support to CM while in orbit. It is an unpressurized structure containing thermal system, propulsion system, power systems, avionics systems and deployment mechanisms.
- This manned mission will be the **first of ISRO's human spaceflight missions**. The **US, Russia and China** are the only three countries to have conducted human spaceflights yet.

Source: IE

═══ NEWS IN SHORT ═══

YUVAI INITIATIVE AND CENTER FOR GENERATIVE AI, SRIJAN ("GENAI COE")

Context

- IndiaAI and Meta have launched the Center for Generative AI, Srijan, at IIT Jodhpur, alongside the "YuvAI initiative" in partnership with AICTE.

YuvAi Initiative

- Meta, in collaboration with MeitY and the **All India Council for Technical Education (AICTE)**, launched the "**YuvAi initiative for Skilling and Capacity Building**".
- The program aims to **bridge the AI talent gap** in the country by empowering 100,000 students and young developers aged 18-30 to leverage open-source large language models (LLMs) to address real-world challenges.
- This will include
  - ◆ The establishment of a Gen AI Resource Hub with courses, case studies, and open datasets;
  - ◆ An LLM for Young Developers Course designed by Meta; and
  - ◆ Master Training Activation Workshops to introduce participants to foundational AI concepts.

Center for Generative AI, Srijan

- The GenAI CoE aims to **advance research and development** in AI while fostering the growth of responsible and ethical AI technologies in India.
- It will support and enhance open science innovation across the AI technology landscape.

SOURCE: PIB

GUIDELINES TO BOLSTER SEAWEED PRODUCTION IN INDIA

Context

- The Union Government has notified the 'Guidelines for Import of Live Seaweeds into India' to bolster the development of seaweed enterprises in coastal villages.

About

- The guidelines aimed at **facilitating import of high quality seed materials** or germplasm to help the coastal societies to find better livelihood opportunities.
- It will also help in the socio-economic upliftment of the fisher community while upholding environmental protection.
- According to ICAR, **India produced only 34,000 tonnes (in 2021) of Seaweeds** which is only 0.01% of the world production and 2.5% of the actual production.

What are Seaweeds?

- Seaweeds are marine algae, simple plant-like organisms that live in the sea or other bodies of water.
- They are known for their **medicinal properties** with manifold nutritional value.
- Seaweeds are being used for making **pharmaceutical capsules** for the treatment of goitre, cancer, bone-replacement therapy and cardiovascular surgeries.

What are the guidelines?

- To import live seaweed, the importers will have to submit a detailed application to the Department of Fisheries which will be reviewed by the **National Committee on Introduction of Exotic Aquatic Species** into Indian Waters.
- Upon approval, the Department will issue an import permit within four weeks, facilitating the import of high-quality seaweed germplasm.

Source: TH

FORMATION DAY OF NDMA

Context

- The National Disaster Management Authority will celebrate its 20th Formation Day on Amit Shah to grace 20th Formation Day inaugural ceremony of NDMA on October 28, 2024.

National Disaster Management Authority

- It is the apex statutory body for Disaster Management in India, established through the **Disaster Management Act, 2005.**

- The Act envisaged the creation of the NDMA, headed by the **Prime Minister,** and **State Disaster Management Authorities (SDMAs)** headed by respective **Chief Ministers**, to spearhead and implement a holistic and integrated approach to Disaster Management in India.
- **Functions & Responsibilities;**
  - **Lay down policies** on disaster management,
  - **Approve plans** prepared by the ministries or departments of the Government of India in accordance with the National Plan,
  - **Lay down guidelines** to be followed by the state authorities in drawing up the State Plan,
  - **Coordinate the enforcement and implementation** of the policy and plans for disaster management,
  - **Recommend provision of funds** for the purpose of mitigation etc.

Source: AIR

PRADHAN MANTRI MATSYA KISAN SAMRIDHI SAH-YOJANA

In News

- The Department of Fisheries convened a Key Meeting to Enhance Implementation of Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana.

About Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana

- It was launched under Pradhan Mantri Matsya Sampada Yojana (PMMSY).
- It is a **Central Sector Sub-scheme.**
- It aims to formalize the fisheries sector, improve access to credit, promote aquaculture insurance, and enhance supply chains with an estimated outlay of Rs 6,000 crores over a period of four (4) years from FY 2023-24 to FY 2026-27 in all States/Union Territories.

> **Do you know?**
> - The fisheries sector is termed a 'Sunrise Sector' crucial for food security and economic well-being, supported by various government initiatives and investments exceeding Rs 38,572 crore since 2015.
> - Fisheries extension is essential for facilitating knowledge transfer, promoting modern practices, and streamlining communication between stakeholders, ultimately enhancing productivity and benefiting the entire fisheries value chain.
> - India is the **2nd largest fish producing country** with around **8% share in global fish production.**

> - Globally, **India also stands 2nd in aquaculture production**, is one of the top shrimp producing and exporting nations and **3rd largest capture fisheries producer.**

Source: PIB

21ST LIVESTOCK CENSUS

Context

- The Union Minister of Fisheries, Animal Husbandry and Dairying, launched the **21st Livestock Census.**

About

- It is conducted every five years and carries out a headcount of the number of domesticated animals, poultry, and stray animals in the country.
  - Information about the species, **breed, age, sex, and ownership status** is noted.
- **Since 1919,** a total of **20 livestock censuses** have been carried out so far, with the last being conducted in 2019.

21st Census

- It will take place between **October 2024 to February 2025.**
- It is expected to cover **30 crore households in India.**
- **16 animal species** will be collected in the census.
- It will also carry out a headcount of **poultry birds** such as fowl, chicken, duck, turkey, geese, quail, ostrich, and emu.
- The data from the census will also be crucial to **track progress of achieving Sustainable Development Goals (SDGs) of the United Nations.**

Source: IE

ISRO-DBT SIGN AGREEMENT TO CONDUCT BIOTECHNOLOGY EXPERIMENTS IN SPACE STATION

Context

- The Indian Space Research Organisation (ISRO) and the Department of Biotechnology (DBT) have inked **an agreement to design and conduct experiments.**

About

- The ISRO-DBT collaboration stems from another initiative this year called the **BIOE3 (Biotechnology for Economy, Environment and Employment) policy** by DBT.

- It aims to stimulate **'bio-manufacturing' in India.**
- It will then be integrated into the forthcoming **Bharatiya Antariksh Station (BAS),** India's proposed indigenous space station.
- Before the BAS, the major mission on ISRO's plate is the **Gaganyaan mission,** which will be India's first crewed mission to space that is expected to launch in **2025-2026.**

Bharatiya Antariksh Station

- The BAS is expected to take shape from **2028-2035.**
- Some of the experiments being mooted include:
  - how weightlessness can influence muscle loss on those in space,
  - what kind of algae may be suitable as nutrients or to preserve food for longer,
  - how some algae may be processed to make jet fuel and the impact of radiation on the health of those aboard space stations.
- **The International Space Station (ISS),** which is a collaborative venture involving the **United States, Canada, Russia, Japan**, has been operational, in its complete form, since 1998.
  - But with changing geo-politics and costs, the ISS is expected to be **decommissioned by 2030.**
- Some countries are moving to build their own space stations.
  - **China** launched the base module of its station, Tiangong, in 2021.

Source: TH

HASDEO ARAND MINING ISSUE

Context

- Tensions erupted between Police and villagers over clearing trees of H**asdeo forest i**n Chhattisgarh for mining of coal.

About

- **The Hasdeo Arand** is referred to as the **"lungs of Chhattisgarh"**, with a wealth of biodiversity.
  - According to the Indian Council of Forestry Research and Education (ICFRE), Hasdeo Arand is the **"largest un-fragmented forest in Central India consisting of pristine Sal (Shorea robusta) and teak forests.**
  - **Nine species** in HAC have special protection under schedule I of the Wildlife Protection Act, 1972.
- **Concerns of Locals:** Locals say the mining will destroy their villages, the forest cover around them, and hit their livelihood.

- Some villagers are also unhappy with the compensation and resettlement offer made by the government.

Source: IE

MANGROVES ROLE IN DISASTER MITIGATION

In News

- Significant damage of Cyclone Dana was averted largely due to effective evacuation efforts by state authorities and the **protective role of the region's mangrove forests.**

Mangroves

- Mangroves are salt-tolerant trees that thrive in estuarine and intertidal areas, characterized by their aerial roots and waxy leaves.
- **Characteristics:** Represent the littoral forest ecosystem.
  - Found in low-lying tropical and subtropical regions (between 24°N and 38°S).
  - Known as halophytes due to their salt tolerance.
  - Trees typically range from 8 to 20 meters in height with thick leaves.
  - Have specialized roots called pneumatophores that assist in respiration in anaerobic soils.
  - Reproduce via viviparity, where seeds germinate on the parent tree before falling.
- **Distribution :** The Sundarbans, spanning India and Bangladesh, is the world's largest contiguous mangrove forest.
  - In India, notable mangrove areas include Odisha's Bhitarkanika, Andhra Pradesh's Godavari-Krishna delta, and regions in the Andaman Islands and Kerala.
- **Protection Against Cyclones**: Mangrove forests act as natural barriers against storm surges, reducing wave heights and water flow velocities during cyclones. Studies indicate that certain mangrove species can significantly diminish surge heights and water flow when properly sized strips are planted.
  - Combining mangroves with built infrastructure enhances this protective effect.

> **Do you know?**
> - Bhitarkanika National Park boasts a mangrove forest cover of 231 square kilometers, with 82 square kilometers densely populated with mangroves. Declared a Wildlife Sanctuary in 1975, the area has withstood multiple cyclones, demonstrating the resilience provided by its rich mangrove ecosystem.

Source :IE

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