NEXT IAS

DAILY CURRENT AFFAIRS (DCA)

Time: 45 Min

Date: 30-10-2025

Table of Content

News In Short

CYCLONE MONTHA

Context

- Severe cyclonic storm Montha created destruction in **Andhra Pradesh.**
  - The name **'Montha',** meaning **beautiful or fragrant flower,** was contributed by **Thailand**.
  - The next cyclone will be named Senyar, as suggested by UAE, after that it will be Ditwah (Yemen), Arnab (Bangladesh), and Murasu (India).

What are Cyclones?

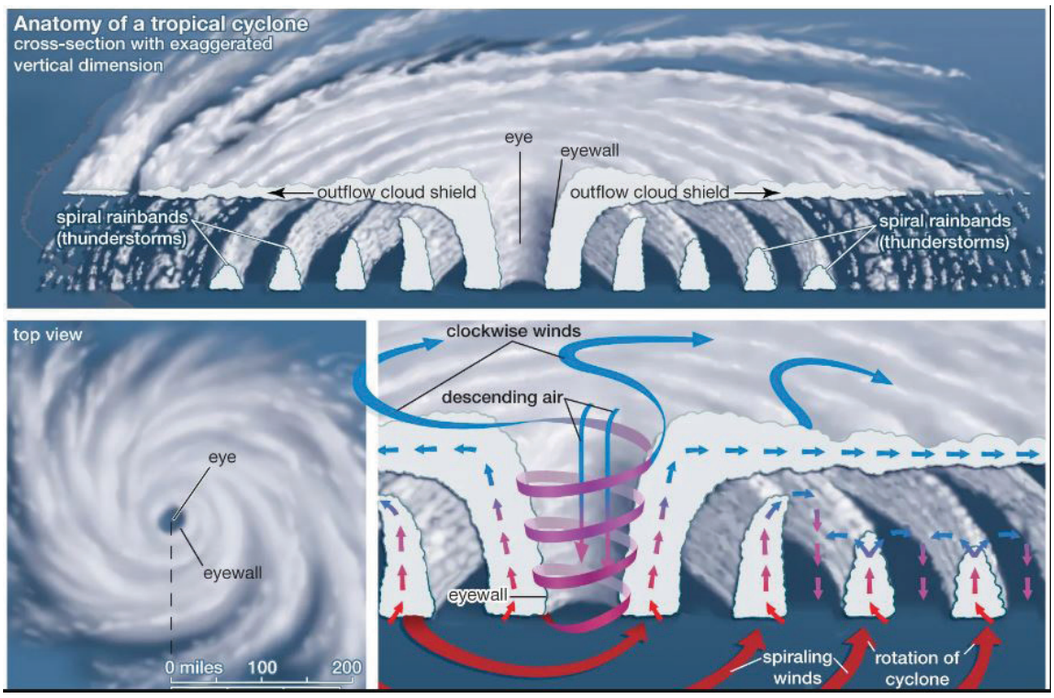
- The word Cyclone is derived from the **Greek word Cyclos** meaning the **coils of a snake.**
  - It was coined by **Henry Peddington** because the tropical storms in the Bay of Bengal and the Arabian Sea appear like coiled serpents of the sea.
- Cyclones are **powerful, rotating storms** that form over warm ocean waters, characterized by low pressure at the center and high winds.

Type of Disturbances	Wind Speed in Km/h	Wind Speed in Knots
Low Pressure	Less than 31	Less than 17
Depression	31-49	17-27
Deep Depression	49-61	27-33
Cyclonic Storm	61-88	33-47
Severe Cyclonic Storm	88-117	47-63
Super Cyclone	More than 221	More than 120

- **Worldwide terminology:** Cyclones are given many names in different regions of the world:
  - They are known as **typhoons** in the China Sea and Pacific Ocean; **hurricanes** in the West Indian islands in the Caribbean Sea and Atlantic Ocean; **tornados** in the Guinea lands of West Africa and southern USA.; **willy-willies** in north-western Australia and **tropical cyclones** in the Indian Ocean.

How a Cyclone is formed?

- **Conditions:** Cyclones typically form over **warm ocean waters**, the warmth provides the necessary **heat and moisture** to fuel the cyclone.
- **Formation of a Low-Pressure System:** When the air rises up and away from the ocean surface, it creates an **area of lower air pressure below.**
  - It causes the air from surrounding areas with higher pressure to move towards the low-pressure area which further leads to **warming up of the air and causes it to rise above.**
- **Cyclonic Circulation:** The rotation of the Earth (Coriolis effect) causes the rising air to start spinning around the low-pressure center. This spinning motion leads to the development of cyclonic circulation.



- **As the wind system rotates with increasing speed, an eye gets formed in the middle.**
  - The centre of a cyclone is very calm and clear with very low air pressure. The difference of temperature between the warm, rising and the cooler environment causes the air to rise and become buoyant.
- **Dissipation:** A cyclone will eventually weaken and dissipate when it moves over cooler waters, encounters dry air, or interacts with land, which disrupts the system's supply of warm, moist air.

Nomenclature

- The names are maintained and updated by an **international committee of the World Meteorological Organization.**
- Cyclones in the North Indian Ocean region are named by the **regional specialized meteorological centers (RSMCs)** in India, Bangladesh, Myanmar, Oman, Pakistan, and Sri Lanka.
  - Each country contributes names to a list used on a **rotating basis.**
- The primary reason for naming cyclones is to **make communication easier and more efficient.**

India Meteorological Department (IMD)

- It was established in 1875.
- It is the principal government agency in all matters relating to meteorology and allied subjects.
- It is under the Ministry of Earth Sciences (MoES).

Source: TH

RELOCATION OF FOREST-DWELLING COMMUNITIES

In News

- The Union Tribal Affairs Ministry has issued a policy mandating that **relocation of forest-dwelling communities** from tiger reserves must be **"exceptional, voluntary, and evidence-based.**

Background

- India's tiger conservation strategy is moving from exclusionary "fortress conservation" to a rights-based, community-centred model.
- Historically, the creation of tiger reserves often displaced forest-dwelling communities, but the Union Ministry of Tribal Affairs (MoTA) now mandates that relocation must be a last resort, voluntary, scientifically justified, rights-compliant, and equitable.

Do you know?

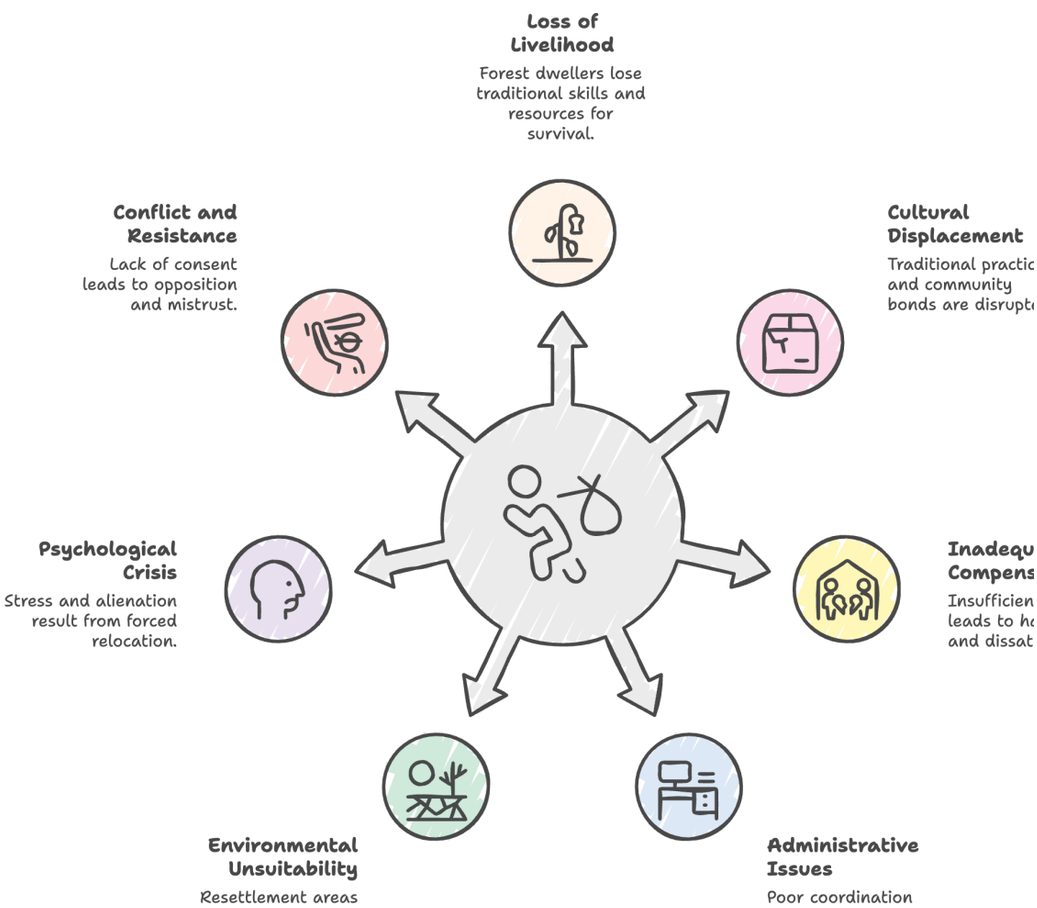
- **Forest Rights Act (FRA), 2006:** The Act mandates Free, Prior and Informed Consent (FPIC) from the Gram Sabha, scientific evidence that coexistence with wildlife is infeasible, voluntary consent of affected families, and comprehensive rehabilitation.
  - The Forest Rights Act (FRA) is intrinsically tied to constitutional guarantees of equality (Article 14), life and livelihood (Article 21), and self-governance in Scheduled Areas (Article 244).
- **Wildlife (Protection) Act (WLPA), 1972**: Tiger conservation cannot harm tribal or forest-dweller rights unless irreversible ecological damage is proven and all alternatives fail.
  - Together, these laws establish a "rights-first, science-based, consent-driven" framework, placing the burden of proof on the state rather than the community.

Key Recommendations

- It advocates a rights-based, ethical approach to the relocation of forest-dwelling communities from tiger reserves.
- It mandates that relocation must be voluntary, scientifically justified, and compliant with the Forest Rights Act (FRA) and Wildlife Protection Act (WLPA).
- It emphasizes Free, Prior, and Informed Consent (FPIC), robust rehabilitation, and the Gram Sabha's authority in decision-making.
- Officials have a fiduciary duty to act with integrity, and mechanisms such as public dashboards and independent audits are essential to uphold accountability and prevent misuse of conservation as a pretext for dispossession.
- It outline**s two pathways**: **coexistence**, where communities remain in their traditional habitats with access to infrastructure, conservation roles, and livelihood support; and **voluntary relocation**, which must include land-for-land compensation, livelihood restoration, cultural access, and rigorous monitoring. Five core principles guide this approach—rights protection, community self-determination, equity, scientific transparency, and accountability.

- Establish a **National Framework for Community-Centred Conservation and Relocation (NFCCR)** to set procedural standards, timelines, and accountability.
- It aims to Create a National Database on Conservation-Community Interface (NDCCI) to track relocations, compensation, and post-relocation outcomes.

Challenges in Forest Dweller Relocation



Way Ahead

- The new policy framework by the Union Tribal Affairs Ministry marks a transformative shift in India's conservation strategy by prioritizing tribal rights and ethical relocation practices.
- Protecting India's wildlife and upholding the rights and dignity of forest communities are inseparable goals, requiring collaboration, transparency, and respect for constitutional and ecological imperatives.

Source: TH

NITI AAYOG RELEASES REPORTS ON INDIA'S SERVICES SECTOR

Context

- NITI Aayog released two reports titled **India's Service Sector: Insights from GVA trends and state-level dynamics** and **India's Service Sector: Insights from employment trends and state-level dynamics.**

Key Findings of GVA Trends

- The services sector contributes around **55%** of India's GVA.
- India is evolving from a **"services-exporter nation"** to a **"services-driven economy"** with strong domestic linkages.
  - High-growth subsectors include IT-BPM, finance, real estate, logistics, healthcare, and education.

- **Regional Trends:** Southern and Western states (Karnataka, Maharashtra, Tamil Nadu, Telangana, Gujarat) remain leaders, accounting for over **60%** of India's total services GVA.
  - **Delhi and Karnataka** have the highest per-capita services GVA, reflecting strong tertiary diversification.
- The sector displays a dual character:
  - **Modern, high-productivity** segments that are globally competitive but limited in employment generation.
  - **Traditional, low-productivity** segments that employ large numbers but remain informal and low-paying.

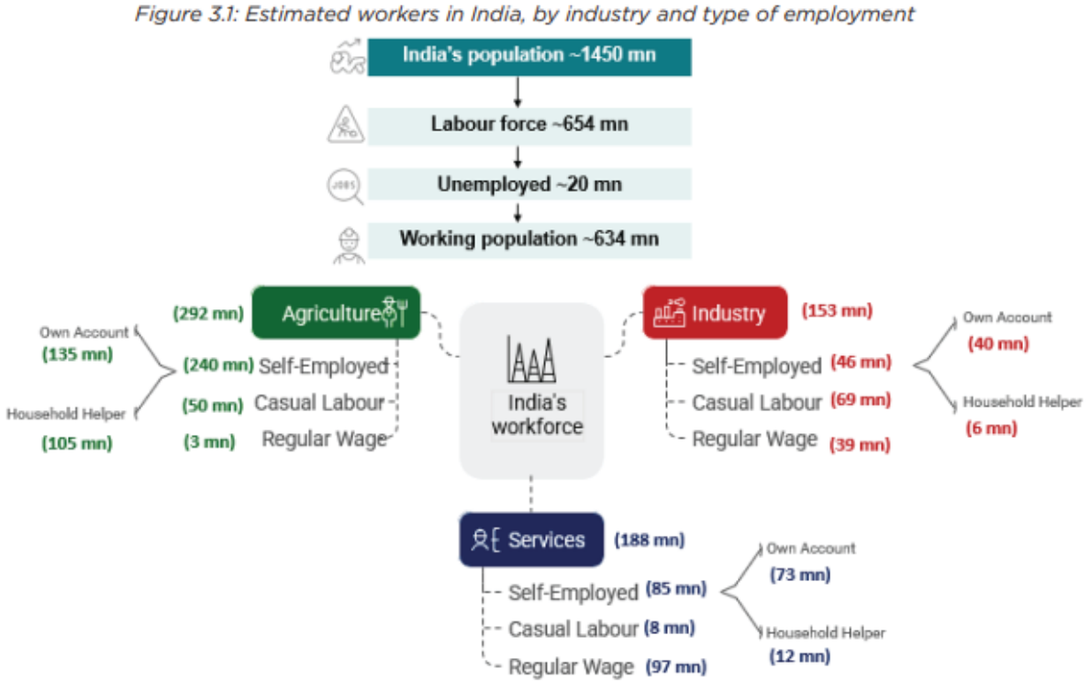
Table 3.1: Average Sectoral Composition of GVA (% share, 2011-12 to 2023-24)[3]

Sector	2011-12 to 2013-14	2014-15 to 2016-17	2017-18 to 2019-20	2020-21 to 2022-23	2023-24
Primary	21.1	18.7	17.6	18.1	16.7
Secondary	28.8	28.4	28.2	28.6	28.8
Services	50.1	52.9	54.2	53.3	54.5
Total GVA	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Key Findings of Employment Trends

- The services sector accounts for only about **one-third of total employment,** reflecting a disconnect between output and job creation.
- Services added **~40 million jobs** in six years, with employment **elasticity at 0.63**, second only to construction.
- **Gender and Employment:**
  - Female participation in services declined from **25.2%** in 2017–18 to **20.1%** 2023–24.
  - **Rural gender gap:** women earn less than **50%** of men's wages.
  - **Urban services:** women earn **84%** of men's wages; better parity in ICT, health, and education.

Figure 3.1: Estimated workers in India, by industry and type of employment



Key Challenges in India's Services Sector

- **Regional Imbalance:** High-value modern services concentrated in southern and western states; lagging states remain dependent on low-value activities.
- **Infrastructure Gaps:** Weak logistics, urban infrastructure, and digital connectivity in smaller cities.
- **Skill and Technology Mismatch:** Shortage of industry-ready and digital skills.
- **High Informality:** Majority of workers lack contracts, social protection, and job security.
- **Gender Gaps:** Falling female participation and persistent wage inequality.
- **Rural–Urban Divide:** Urban areas dominate high-value jobs; rural services remain low-value.

Policy Roadmap Proposed

- **Formalisation and Social Protection:** Extend coverage to gig workers, self-employed individuals, and MSME workers.
- **Targeted Skilling and Digital Access:** Expand opportunities for women and rural youth, leveraging digital tools.
- **Investment in Emerging and Green Economy Skills:** Develop new skill sets in sustainability, digital transformation, and clean technologies.
- **Balanced Regional Development:** Foster service hubs in Tier-2 and Tier-3 cities to ensure spatially inclusive growth.

Concluding remarks

- The reports collectively position the services sector as central to India's Viksit Bharat @ 2047 vision, emphasizing its potential to generate productive, high-quality, and inclusive jobs.
- By deepening digital infrastructure, expanding skilled human capital, and fostering innovation ecosystems, India can strengthen its position as a trusted global services hub.

Source: AIR

CSE ASSESSMENT FINDS INDIAN SOILS SEVERELY DEFICIENT IN KEY NUTRIENTS

Context

- Centre for Science and Environment (CSE) analysis of government data finds **64% of Indian soil samples low in nitrogen and nearly half low in organic carbon.**

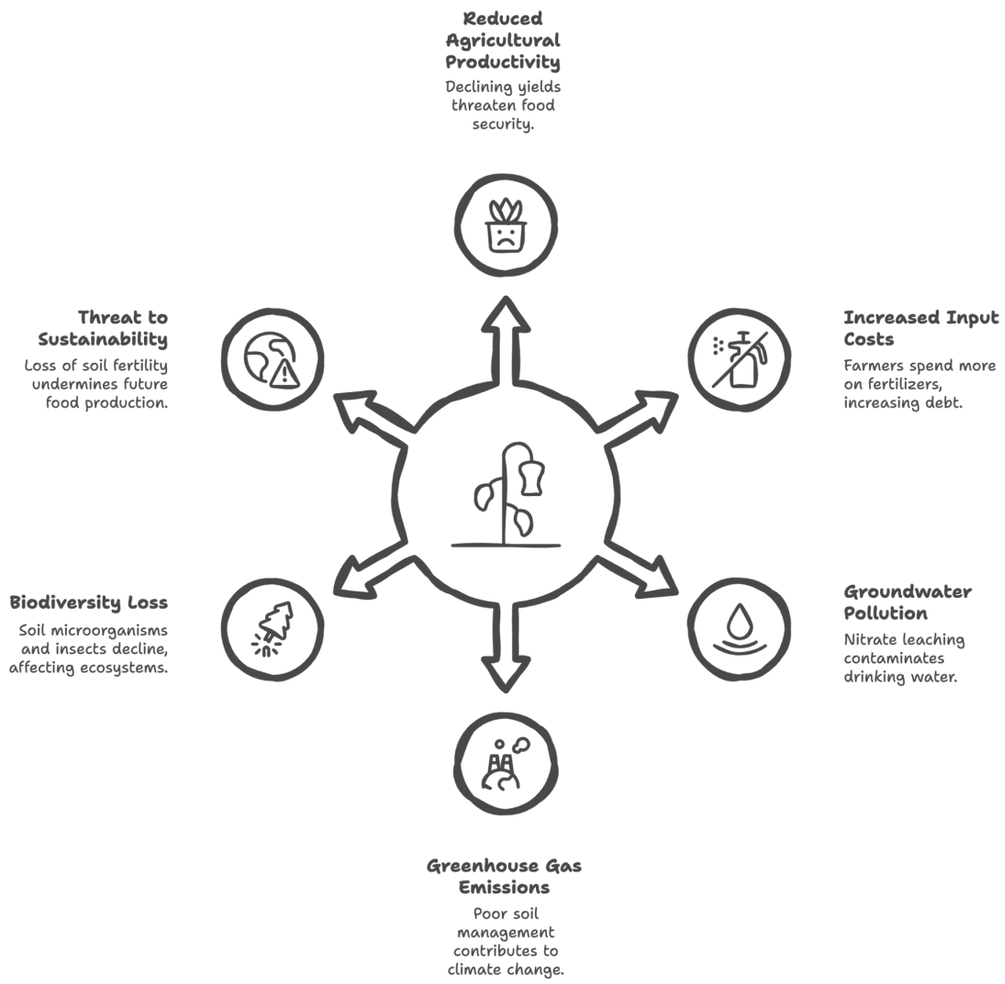
Major Findings

- India's soils are severely deficient in essential nutrients such as **nitrogen and organic carbon.**
  - These deficiencies have **serious implications for both crop productivity and climate change mitigation.**
- A critical function of healthy soil is its capacity to store organic carbon, which makes it essential for climate change mitigation.
  - **Indian soils can sequester an estimated 6-7 teragram of carbon annually.**
- **Limited scope of soil monitoring:** Launched in 2015 under the National Mission for Sustainable Agriculture, the SHC scheme tests 12 chemical parameters in soil and issues nutrient-based recommendations to farmers.
  - Experts at the conclave cautioned that the **current monitoring framework is incomplete.**
- **Fertiliser inefficiency and policy gaps:** The CSE analysis suggested that current fertiliser use **fails to improve nitrogen or organic carbon levels in soil.**
  - This indicates inefficiency in application practices and calls for corrective policy measures.
- While **organic farming schemes exist,** their reach remains limited, the assessment underlined.

Soil Health and Its Significance

- **Soil health** is defined as the continued capacity of **soil to function as a vital living ecosystem that sustains plants, animals, and humans.**
  - **The soil** on 96-120 million hectares out of India's 328 million hectares of land, particularly in forests, croplands and pastures, is already classified as **'degraded'** (NAAS 2010)(Space Application Centre, ISRO 2021).
- **Nutrient availability:** Healthy soils are rich in essential nutrients, such as nitrogen, phosphorus, and potassium, which are essential for plant growth and development.
- **Biodiversity:** Healthy soils can host a vast diversity of organisms. They all play vital roles in nutrient cycling, decomposition, and soil formation.
- **Soil structure:** A "well-structured soil" embodies a vast amount of interconnecting pore spaces that allows the drainage of water, free movement of air and unrestricted growth of roots.
- **Water retention:** When soils have poor structure, they cannot hold water within the pore spaces, the water hits the compacted layers, and it cannot infiltrate.
  - This leads to more runoff, and therefore, more erosion, flooding, more pollution, and less water held in the soil.
- **Carbon sequestration:** Healthy soils play a vital role in capturing and storing CO2.
  - Soils with higher organic carbon content can support a richer population of microorganisms and contain more nutrients favoring the development of high-quality crops.

Consequences of Deteriorating Soil Health



Government Initiatives

- **Soil Health Card Scheme (2015):** Provides farmers with soil nutrient status and fertilizer recommendations.
- **Neem Coated Urea (NCU):** This scheme is initiated to regulate use of urea, enhance availability of nitrogen to the crop and reduce cost of fertilizer application.
- **Paramparagat Krishi Vikas Yojana (PKVY):** Promotes organic farming.
- **National Mission for Sustainable Agriculture (NMSA):** Encourages soil and water conservation, and integrated nutrient management.
- **Rashtriya Krishi Vikas Yojana (RKVY):** Supports state-level interventions for soil health.
- **National Project on Organic Farming (NPOF):** Capacity building for composting and biofertilizer use.

Way Ahead

- **Biochar** – produced through pyrolysis of biomass –is an emerging soil amendment that can enhance fertility, retain moisture and serve as a carbon sink by increasing the soil organic content.
  - But India **does not have any standardised production protocols for biochar.**
- There is a need to **strengthen soil testing infrastructure and farmer awareness.**
- **Regulate industrial effluent discharge** and improve irrigation management.
- Foster climate-resilient agricultural practices.

- Encourage crop rotation and intercropping for nutrient restoration.

Source: DTE

INDIAN MARITIME SECTOR HAS SEEN HISTORIC PROGRESS: PM MODI

Context

- Recently, the Prime Minister of India, addressing the **Maritime Leaders' Conclave** during **India Maritime Week 2025,** declared that **India's maritime sector** has undergone 'historic progress', positioning the nation as a rising force in global maritime trade.

About the India's Maritime Sector

- Nearly 95% of India's trade by volume and about 70% by value moves through maritime routes.
- In FY 2024–25, major ports handled about 855 million tonnes of cargo, signaling robust growth in maritime trade and port efficiency.
- The Maritime India Vision 2030 charts 150+ initiatives with projected investments of ₹3–3.5 lakh crore, supported by a recent ₹69,725 crore package for shipbuilding.

India's Ports: New Benchmarks

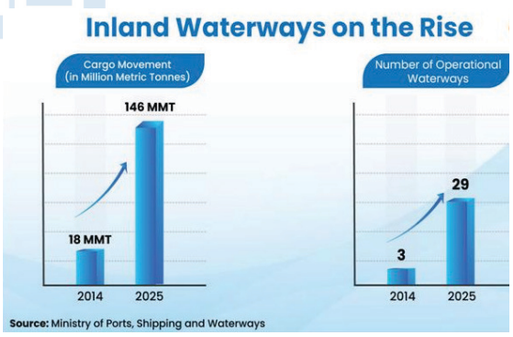
- **Expanding Capacity and Efficiency:** India's port capacity has nearly **doubled**, rising from **1,400 million metric tonnes per annum (MMTPA)** in 2014 to **2,762 MMTPA** in 2025.
  - Cargo handling volumes also surged from **972 million metric tonnes (MMT)** to **1,594 MMT**, with major ports handling **855 MMT in FY 2024–25**, up from **819 MMT** the previous year.
  - The **average vessel turnaround time** dropped from **93 hours to 48 hours**, enhancing global competitiveness and throughput.
- **Financial Strength and Productivity:** India's maritime sector's **net annual surplus** increased from **₹1,026 crore to ₹9,352 crore**, while the **operating ratio** improved from **73% to 43%**, reflecting robust financial discipline and operational sustainability.

Indian Shipping: Expanding Fleet & Capacity

- **Fleet and Tonnage Growth:** India's shipping fleet expanded from **1,205 to 1,549 Indian-flagged vessels**, with **gross tonnage** rising from **10 MGT to 13.52 MGT**, underscoring growing national capacity in maritime trade.
- **Rise of Coastal Shipping:** Coastal cargo movement nearly **doubled** from **87 MMT to 165 MMT**, highlighting a strategic shift toward **low-cost and eco-friendly transport**.
- **Empowering the Seafaring Workforce:** India's seafarer community has grown from **1.25 lakh to over 3 lakh**, now comprising **12% of the global workforce**.
  - India ranks among the **top three suppliers** of trained seafarers, creating global opportunities across ship operations and logistics.

India's Inland Waterways

- The **Inland Waterways Authority of India (IWAI)** reported a record **146 MMT cargo movement in 2025**, up from **18 MMT in 2014** — an astounding **710% increase**.
- The number of **operational waterways** grew from **3 to 29**, strengthening India's riverine logistics network.
  - The **Haldia Multi-Modal Terminal (MMT)** in West Bengal — developed with **World Bank support** and handed to **IRC Natural Resources** under PPP mode — has a **3.08 MMTPA capacity**, marking a milestone in multimodal transport integration.
- **Ferry and Ro-Pax Revolution:** Over **7.5 crore passengers** travelled via ferry and **Ro-Pax services** in 2024–25, reflecting public confidence in **water-based mobility.**



Issues & Challenges Facing India's Maritime Sector

- **Fragmented Governance and Outdated Legislation:** The maritime sector is governed by multiple laws, some dating back to the 19th century, such as the **Indian Ports Act, 1908.**
  - Recent reforms like the **Indian Ports Bill, 2025** aim to modernize governance, but concerns remain over centralization of power and erosion of federal balance.
- **Underperformance of Non-Major Ports:** A **NITI Aayog** study highlights that non-major ports lack adequate infrastructure, skilled manpower, and

connectivity, limiting their contribution to national trade.

- Many of these ports operate below capacity and struggle with regulatory bottlenecks.

- **Infrastructure and Logistics Bottlenecks:** Several port projects face delays in land acquisition, environmental clearances, and inter-agency coordination, despite several initiatives.
  - Inland waterway development is progressing slowly, affecting multimodal logistics efficiency.
- **Environmental and Sustainability Concerns:** Ports are under pressure to adopt green technologies, but implementation of shore power, waste management, and emission controls remains uneven.
  - The push for **green hydrogen hubs at Paradip, Tuticorin, and Kandla** is promising but still in early stages.
- **Limited Domestic Shipping Capacity:** India's shipping fleet is relatively small compared to global standards, leading to heavy reliance on foreign vessels for cargo movement.
  - Tax disparities and lack of incentives have discouraged domestic shipbuilding and fleet expansion.
- **Skill Gaps and Maritime Education:** Maritime training institutions need modernization to meet international standards.
  - There's a shortage of skilled professionals in areas like port operations, marine engineering, and logistics management.
- **Security and Strategic Vulnerabilities:** Maritime security challenges include piracy, illegal fishing, and geopolitical tensions in the Indian Ocean Region.
  - Coordination among coastal states and agencies remains a work in progress.

Related Efforts & Initiatives

- **Strategic Investments and Schemes:** Under **Maritime India Vision (MIV) 2030**, India plans investments worth **₹3–3.5 lakh crore** across ports, shipping, and inland waterways. **Key financial pillars** include:
  - **Maritime Development Fund (MDF):** ₹25,000 crore corpus for long-term shipping finance.
  - **Shipbuilding Financial Assistance Scheme (SBFAS):** ₹24,736 crore to offset domestic cost disadvantages.
  - **Shipbuilding Development Scheme (SbDS):** ₹19,989 crore for greenfield clusters and yard expansions.
  - **Indian Ship Technology Centre (ISTC):** ₹305 crore facility in Visakhapatnam for R&D, design, and skills.
- **Sagarmala Programme:** It is a **flagship component** of MIV 2030 and the **Maritime Amrit Kaal Vision 2047**, aims to cut logistics costs, enhance port-led development, and create jobs.
  - Out of **840 projects worth ₹5.8 lakh crore**, **272 projects (₹1.41 lakh crore)** have been completed, while **217 projects (₹1.65 lakh crore)** are underway — transforming India's coastal and logistics infrastructure.
- **Boosting the Northeast and Tourism:** Over **₹1,000 crore** has been invested in inland waterway infrastructure in the **Northeast**, with luxury cruise ships worth **₹250 crore** being built for **Assam's Brahmaputra River** under the **Cruise Bharat Mission**.
- **Maritime Amrit Kaal Vision 2047:** It charts a long-term roadmap with **₹80 lakh crore investments** targeting **green ports, sustainable shipping, digital logistics**, and **shipbuilding innovation**. Key initiatives include:
  - **Green corridors** and **methanol-fueled vessels;**
  - **Green hydrogen bunkering** at major ports;
  - Over **300 actionable initiatives** to make India a global maritime leader by **2047.**
- **Other Notable Projects:**
  - **Greenfield Port at Bahuda (Odisha):** 150 MTPA capacity, ₹21,500 crore investment.
  - **Water Metro Project (Patna):** Electric ferry system worth ₹908 crore.
  - **SCI–Oil PSU JV:** Strengthening India's vessel ownership.
  - **Lighthouse Museum (Lothal, Gujarat):** ₹266 crore cultural project.
  - **NMPA Initiatives:** 8 major projects including a **150-bed hospital (₹107 crore)** and a **dedicated cruise gate** for international tourists.

Source: TH

CHINA'S COMPLAINT AGAINST INDIA AT WTO

Context

- **China** has filed a complaint with the World Trade Organization (WTO) **against India.**

About

- **The three specific PLI schemes that China has challenged are:**
  - the PLI scheme which aims to incentivise the establishment of giga-scale manufacturing capabilities of ACC batteries in India;
  - the scheme for the auto industry, which seeks to buttress the manufacturing of Advanced Automotive Technology (AAT) products in India, encompassing both vehicles and their components;
  - and third, a scheme to promote EV manufacturing by attracting global EV manufacturers to the country.
- **Domestic Value Addition (DVA):** Under the PLI scheme for the auto sector, one of the conditions for eligibility to get financial benefits is that there must be a **50% DVA.**
  - Likewise, one of the salient features of the PLI scheme for ACC batteries is that the **beneficiary must ensure a DVA of 25%.**
  - The Chinese argue that the **DVA requirements incentivise companies to use domestic goods rather than imported goods,** discriminating against Chinese goods in the Indian market.

Law on subsidies in WTO

- **Legal Framework:** Governed by the **Agreement on Subsidies and Countervailing Measures (SCM Agreement) under the WTO.**
- **Sovereign Right vs. Fair Trade:** While nations have the sovereign right to grant industrial subsidies to boost domestic industries, WTO law ensures these do not **distort international trade or create unfair competition.**
- **Unfair Competition:** Arises when subsidies artificially enhance competitiveness of domestic industries in exports or against imports.
- **Article 1 (Definition of Subsidy):** A subsidy exists when there is a financial contribution by a government or public body, and it confers a benefit on the recipient.
  - The subsidy must also be specific to an enterprise, industry, or group of industries.
- The SCM agreement divides subsidies into three categories — **prohibited subsidies, actionable subsidies, and non-actionable subsidies.**
  - **Prohibited subsidies are forbidden by definition and are generally of two types:** export subsidies and Import Substitution (IS) subsidies.
  - **Export subsidies** are contingent on export performance, and IS subsidies, as defined in Article 3.1(b) of the SCM agreement, refer to subsidies contingent upon the use of domestic goods over imported goods.
  - Thus, if a country promises a financial contribution to a specific industry on the condition that it uses domestic goods or goods produced locally, rather than imported goods, **it would constitute a prohibited subsidy.**
- The SCM Agreement balances a country's right to support domestic industry with the need to prevent trade distortions, maintain a level playing field, and uphold fairness in global trade.

Do Import Substitution (IS) subsidies violate other laws?

- **National Treatment Rule (GATT Article III.4):** Every country must treat imported goods and domestic goods equally.
  - So, a country cannot make laws that give better treatment to local products than to imported ones.
- **TRIMs Agreement (Article 2.1):** This rule says countries cannot make investment policies that go against the national treatment rule of GATT.
  - The TRIMs Agreement even gives an example — local content requirements, which force or encourage companies to use local goods instead of imports.
- Because an IS subsidy gives special benefits only when local goods are used, it is **treated as a banned (prohibited) measure under WTO law.**

WTO Dispute Settlement Process

- **Consultations:** India and China must first engage in consultations to resolve the issue amicably.
- **Adjudication by WTO Panel:** If consultations fail, a three-member ad hoc WTO panel is constituted to adjudicate.
- **Appeal to Appellate Body:** However, the WTO Appellate Body has been non-functional since 2019 (due to U.S. opposition to new appointments).

- If either party appeals the panel's ruling, the dispute enters a **"legal limbo" until the Appellate Body is revived.**

- Thus, if the WTO panel's decision is appealed, it would mean postponing the adjudication of the dispute till the time the Appellate Body is resurrected.
- The practical implication is that the status quo remains, and a country can continue with its impugned measures.

Source: TH

NEWS IN SHORT

HURRICANE MELISSA

In News

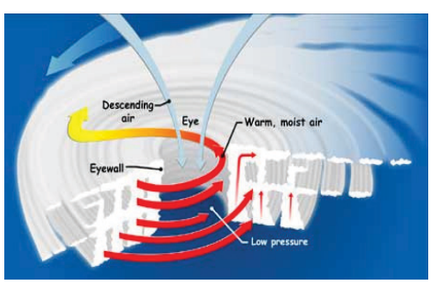
- Hurricane Melissa made a catastrophic landfall in Jamaica, bringing extreme rainfall, storm surge, and potential structural collapse.

- ***Melissa** is the strongest storm to hit **Jamaica** since **1988's** Hurricane Gilbert and is expected to impact southeastern Cuba and the Bahamas.*

Hurricanes

- It is also known as **typhoons** or cyclones depending on their location and are the most intense storms on Earth.
- Scientifically termed **tropical cyclone**s, they all form through the same process, but only those originating in the **Atlantic or eastern Pacific are called hurricane**s.
- A six-year rotating list of names, updated and maintained by the World Meteorological Organization, is used to identify these storms.
  - Names can be retired if storms cause significant damage or casualties, based on member consensus.

Formation



- Tropical cyclones are powerful storms that form over warm ocean waters near the equator, fueled by **rising warm, moist air that creates low-pressure zones**.
- As surrounding air rushes in, it also warms, rises, and forms clouds, causing the system to spin due to Earth's rotation—**counterclockwise in the Northern Hemisphere** and **clockwise in the Southern**.
- As the storm intensifies, an eye forms at the center, marked by calm and low pressure.
- When wind speeds reach 39 mph, it becomes a tropical storm, and at 74 mph, a tropical cyclone or hurricane.
  - These storms weaken over land but can still cause heavy rain and wind damage inland.

Category	Wind Speed (mph)	Damage at Landfall	Storm Surge (feet)
1	74-95	Minimal	4-5
2	96-110	Moderate	6-8
3	111-129	Extensive	9-12
4	130-156	Extreme	13-18
5	157 or higher	Catastrophic	19+

Source : TH

MODEL YOUTH GRAM SABHA INITIATIVE

Context

- The Union government launched the **Model Youth Gram Sabha (MYGS) initiative** along with a Training Module and the MYGS Portal in New Delhi.

The Model Youth Gram Sabha (MYGS)

- **The Model Youth Gram Sabha (MYGS)** is a pioneering initiative to strengthen Janbhagidari and promote participatory local governance by engaging students in simulated Gram Sabha sessions.
- **Aligned with National Education Policy 2020**, it aims to inculcate democratic values, civic responsibility and leadership among youth, nurturing future citizens committed to transparency, accountability and the vision of Viksit Bharat.
- The initiative is a joint effort of the **Ministry of Panchayati Raj, the Ministry of Education, and the Ministry of Tribal Affairs.**
- The initiative will be rolled out across more than **1,000 schools** nationwide, including

Jawahar Navodaya Vidyalayas (JNVs), Eklavya Model Residential Schools (EMRSs), and State Government Schools.

Source: AIR

AMAZONFACE EXPERIMENT

Context

- In Brazil's Amazon rainforest, scientists have built a unique experiment called **AmazonFACE** to simulate future atmospheric conditions by pumping **carbon dioxide (CO_2)** into the forest canopy.
    - The goal is to understand how the Amazon — often called the "lungs of the Earth" — will adapt to rising CO levels in the coming decades.

About the Project:

- **AmazonFACE (Free-Air CO_2 Enrichment)** is located near **Manaus**, Brazil.
- The setup includes **six steel tower rings**, each surrounding 50–70 mature trees.
- Three rings will be fumigated with elevated CO to mirror **future climate projections (2050–2060)**, while others serve as controls.
- Sensors monitor forest responses every 10 minutes — tracking CO absorption, oxygen release, and changes in humidity.
- The project is led by **INPA (National Institute for Amazon Research)** and **Universidade Estadual de Campinas**, with support from **Brazil and the United Kingdom**.

Source: DDNews

SUPERFLUID HELIUM TO STUDY NONLINEAR WAVE DYNAMICS SUCH AS TSUNAMIS AND SOLITONS

In News

- Researchers at the University of Queensland have developed a chip-scale wave flume using a 6.7-nanometre film of superfluid helium to study nonlinear wave dynamics such as tsunamis and solitons.

Do you know?

- Tsunamis and solitons are examples of nonlinear waves, whose behaviour changes unpredictably with conditions.
    - **Tsunamis** are large and destructive, while **solitons** are stable, solitary waves that maintain their shape and speed over long distances.

Latest Developments

- Researchers used laser light to generate and measure waves and observed long-predicted phenomena such as backward wave steepening, shock fronts, and soliton fission—solitary waves travelling as troughs instead of crests.
- Although the microscopic system operates under different forces, it follows the same Korteweg–De Vries equation that governs large-scale waves, making it mathematically equivalent.
- The platform offers a fast, precise way to explore nonlinear fluid dynamics and advances research in optomechanics.

Significance

- The recent innovation enables ultra-fast, tunable experiments and opens new frontiers in optomechanics and nonlinear physics at microscopic scales, with implications for disaster prediction and communication technologies.

Source :TH

RUSSIA TESTED POSEIDON DRONE

In News

- Russia has successfully tested a Poseidon drone declaring it impossible to intercept.

Poseidon drone

- It is a new atomic-powered and nuclear-capable underwater drone.
- It outperforms all existing systems in speed and depth.
- It is designed to travel at a speed of up to 200 kph (124 mph) significantly faster than any existing torpedoes or warships.
- It is designed to evade defenses to cause a tsunami powerful enough to devastate a coastal city.

Source :IE