Today's Prelims Topics

Anamalai Tiger Reserve (ATR)

Context

The counting of tigers and other wildlife has begun in the Pollachi and Tiruppur divisions of the Anamalai Tiger Reserve (ATR) ahead of the monsoon season.

About Anamalai Tiger Reserve

- **Established:** It was officially designated as the Anaimalai Wildlife Sanctuary in 1974.
    - Subsequently, in 1987, it was renamed the Indira Gandhi Wildlife Sanctuary and National Park.
    - In 2007, it was declared a Tiger Reserve.
- **Location:** Coimbatore, Tamil Nadu.
    - Surrounded by **Parambikulum Tiger Reserve** on the East, **Chinnar Wildlife Sanctuary and Eravikulum National Park** on the South Western side.
- **UNESCO World Heritage Site Located Within:** Kariyan shola, Grass Hills, and Manjampatti.
- **Indigenous Tribes:** Malasars, Muduvars and Kadars.

Source: The Hindu: Pre-monsoon wildlife census begins at Anamalai reserve

Vruthi

Context

Since October 2, 2024, Kerala has been aggressively advocating its latest campaign — 'Vruthi'.

What is Meant by Vruthi?

- The word *Vruthi* in Malayalam means **cleanliness of both the body and the mind**.
- It is a **people-centric behavioural movement** focused on achieving a **garbage-free, hygienic Kerala** through wide public participation.
- The campaign is part of a broader initiative called **'Malinya Muktham Nava Keralam'** (Waste-Free New Kerala).

Comparison 'Vruthi' (Kerala's campaign) and the Swachh Bharat Mission (SBM)

Aspect	Vruthi (Kerala)	Swachh Bharat Mission (SBM)
Launched by	Kerala State Government	Government of India
Start Date	October 2, 2024	October 2, 2014
Focus Area	Behavioural change, decentralised waste solutions, local governance	Sanitation infrastructure (toilets, treatment plants), supply-driven model
Approach	Bottom-up, participatory, context-specific	Top-down, target-based, centrally designed
Key Campaign	*Malinya Muktham Nava Keralam* (Waste-Free Kerala)	Swachh Bharat Mission Phase 1 & 2 (Rural & Urban)
Technology Orientation	Technology-neutral, decentralised and adaptable	Technology-specific (treatment plants, toilets, etc.)
Community Involvement	High – involves local bodies, students, civil society, artists, sanitation workers	Moderate – focused more on government execution than organic participation
Slogan	"My Waste, My Responsibility"	"Ek Kadam Swachhata Ki Ore" (One Step Towards Cleanliness)
Institutional Support	Strong role for local self-governments (Panchayats, Municipalities)	More bureaucratic, centrally monitored
Challenges Addressed	Zoonotic diseases, public waste, sanitation worker safety, decentralisation gaps	Open defecation, lack of toilets, basic sanitation infrastructure

Source: The Hindu: How is Kerala handling its waste problem?

Digital Banking Units (DBUs)

Context

More than two years since the introduction of DBUs, lenders have made little to no progress in expanding these units across the country.

What are DBUs?

- According to the Reserve Bank of India (RBI), a DBU is "A **specialised fixed-point business unit/hub housing** certain **minimum digital infrastructure** for **delivering digital banking products and services** as well as servicing existing financial products & services digitally, in both self-service and assisted mode."
- **Launch**: **October 16, 2022**, as part of the Azadi Ka Amrit Mahotsav.
- **Key Features of DBUs:**
    - **Purpose**: To provide digital banking services 24x7 in a secure, paperless, and efficient manner.
    - **Mode of Services**: Both **self-service** (like kiosks, ATMs) and **assisted service** (staff-assisted digital services).
    - **Accessibility**: Year-round access to services such as money transfer, loans, grievance redressal, and digital banking education.
    - **Goal**: Enhance financial inclusion and digital literacy across regions, especially underserved areas.

Source: [The Hindu: Why digital banking units never picked up in India]

News in Short

Vanniyar Community

News? An accusation was made that the state's Chief Minister has betrayed the Vanniyar community by refusing to grant them internal reservation within the Most Backward Class (MBC) quota.

About Vanniyar Community

- **Found:** In the **northern part of Tamil Nadu.**
- **Formerly Known:** *Palli*
- **Status:** Most Backward Community **(MBC)**
- **Political Influence: Pattali Makkal Katchi (PMK)** political party was founded in 1989.
- **Issues Associated:** A law enacted by the state government in 2021 granted a **10.5% internal reservation for Vanniyars.**
    - However, the **Supreme Court struck down** this law in 2022.

Total Fertility Rate

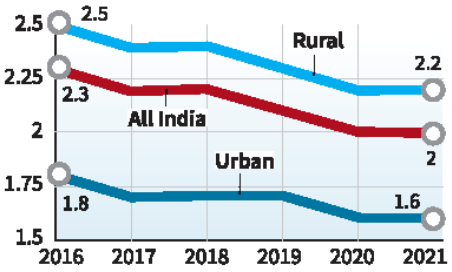
News? The Total Fertility Rate (TFR) of India has remained at 2.0 in 2021 (same as in 2020) shows the Sample Registration System (SRS) report for 2021 released by the Registrar-General of India (RGI)

What Is Meant By TFR?

- The Total Fertility Rate (TFR) estimates the average number of children a woman would have in her lifetime.
- It's calculated based on the assumption that a woman experiences the current age-specific fertility rates (the rate of births at each age group) throughout her entire reproductive lifespan (typically considered ages 15 to 49) and survives through those years.

Facts Related

- **Highest TFR: Bihar (3.0)**
- **Lowest (1.4): Delhi, West Bengal**
- **Demographic Age Composition (1971–2021):**
    - **0–14 years: Declined** from 41.2% (1971) to 24.8% (2021)
    - **15–59 years** (working-age group): **Increased** from 53.4% to 66.2%
    - **60+ years: Increased** from 6% to 9%
    - **65+ years: Increased** from 5.3% to 5.9%



Related Term

- **TFR of about 2.1** children per woman is called **Replacement-level fertility.**

Asteroid YR4

News? According to a NASA announcement on April 2, asteroid YR4 has a 3.8% chance of colliding with the moon on December 22, 2032.

About Asteroid YR4

- **Discovery**: Detected in **December 2024** by the **ATLAS telescope** in Chile.
- **Type**: A **Near-Earth Object (NEO)** and **Apollo-class asteroid** — meaning it crosses Earth's orbit.
- **Size**: Estimated at **~65 meters wide** — about the height of a **10-storey building**.

How Often Do Asteroids Crash into Earth?

- **Small asteroids:**

- Thousands **enter Earth's atmosphere daily**.
- Most **burn up due to friction**, sometimes appearing as **fireballs**.

- **Larger asteroids:**
  - Those **over 1 km in diameter** strike Earth approximately **every 260 million years**.
  - The **Solar System's vastness** makes direct asteroid impacts rare.
  - **Small asteroids (~40m)** could **devastate an entire city**, depending on **entry speed and angle**.

Editorial Summary

Air Quality Puzzle

Context

Despite the successes of *Make in India*, India continues to lag in addressing **air pollution**, with Indian cities consistently ranking among the world's most polluted.

Challenges Associated with Air Quality Management in India

- **Underutilised Funds**: Although **funding is available**, pollution control boards often **return unspent funds**, indicating inefficiencies in utilization rather than resource scarcity.
- **Research & Dependence on Foreign Agencies:** India relies heavily on **foreign-funded air quality studies** and **international data sets**, making it vulnerable, especially when foreign agencies scale back.
    - Indigenous efforts like **SAFAR (2010)** have shown promise but remain underutilized, limited to only a few cities.
- **Institutional Challenges: Elite capture of research funding** limits broader institutional participation.
    - Collaboration between top Indian agencies like **Earth System Science Organisation - India Meteorological Department (ESSO-IMD)** and **Central Pollution Control Board (CPCB)** is inadequate but essential for national-level forecasting and management.
- **City-centric Approach to Pollution:** Focus is on city-level solutions rather than comprehensive airshed-based management.

Way Forward – Atmanirbharta in Air Quality:

- A **unified, science-based air quality resource framework** is critical.
- Initiatives like **NARFI (National Air Quality Resource Framework of India)** aim to promote **airshed-level management**, inter-agency coordination, and **evidence-based policy**.
- India must move from **city-centric** to **health- and food-centric airshed approaches** to achieve real **self-reliance (Atmanirbharta)** in environmental governance.

Source: Indian Express: Air Quality Puzzle

A fundamental reset to drive manufacturing growth

Context

The innovation-driven, high-tech manufacturing, fueled by R&D and advanced skills, current high tariffs, demands a manufacturing reset, requiring policies that directly confront the challenges.

Why India Needs to Reset its Manufacturing Sector

- **Lagging Manufacturing Productivity:** India's **per capita value added in manufacturing** is $0.32K vs global average of $2K.
    - Productivity is $8.9K vs $32K global average (World Bank, 2023).
- **Global Shift Toward High-Tech Manufacturing:** Global trade is moving toward **innovation-driven**, **medium- and high-tech sectors** (e.g., semiconductors, robotics).
    - India risks missing the bus if it doesn't catch up in **R&D and skills**.
- **Over-reliance on Services Sector:** India's economic growth is **service-heavy**, while manufacturing's contribution to GDP is stagnant (~16-17%).
    - This limits **employment generation** and **resilience**.
- **Strategic Concerns in Global Supply Chains:** Geopolitical shifts (e.g., US-China tariffs) are reorganising supply chains.
    - India must reposition as a **reliable manufacturing base**.

Key Concerns Hindering India's Manufacturing Growth

- **Low Investment in R&D:** India's R&D expenditure is **just 0.65% of GDP**, compared to 2–4% in industrial economies.
- **Weak Industry-Academia Linkages:** Engineering institutions focus on grades and theory, not on **practical innovation or industry problems**.
- **Skill Mismatch:** Lack of alignment between **technical education** and **industry needs**, especially in **core engineering skills**.
- **Inadequate Infrastructure:** Delays in **industrial park development**, high logistics costs, and lack of **plug-and-play facilities**.
- **Policy Gaps:** Existing schemes like *Make in India* and *PLI* have **limited coverage** and **uneven implementation** across states and sectors.

What Needs to Be Done

- **Increase R&D Spending:** Raise R&D investment to **2% of GDP**.
    - Promote **mission-based R&D hubs** for manufacturing technologies.
- **Reform Engineering Education:** Focus on **practical training, product design, and prototyping**.
    - Redesign entrance and graduation systems to foster **creativity and problem-solving**.
- **Build Advanced Manufacturing Ecosystems:** Develop **state-specific manufacturing clusters** with in-house prototyping, testing, and design labs.
    - Encourage **manufacturing-focused startups** with access to toolrooms and workshops.
- **Strengthen Core Engineering Sectors:** Prioritise traditional sectors like **civil, mechanical, chemical, metallurgy**, etc., alongside AI and electronics.
- **Industrial Infrastructure Investment:**Allocate **1% of GDP** for developing **plug-and-play industrial parks**, logistics, and certification labs.
- **Policy Innovation and Monitoring:** Tailor policies to **specific sectors and geographies**; ensure **real-time feedback and coordination** between centre and states.

Source: The Hindu: A fundamental reset to drive manufacturing growth

Why Farmers Prefer Rice, Wheat

Context

When farmers have access to basic irrigation that supplements natural rainfall, rice and wheat become their most preferred crops.

Why Farmers Prefer Cultivation of Rice and Wheat

- **Assured Procurement at MSP:** The government provides near-guaranteed purchases of rice and wheat at minimum support prices (MSP), offering price stability and reducing market risk.
    - This government backstop is not available for most other crops, making rice and wheat much safer economic bets for risk-averse farmers.
- **Yield Assurance and Irrigation:** Rice and wheat are less risky in terms of yield, especially when grown under irrigated conditions.
    - They have benefitted from decades of focused public breeding and research, leading to steady increases in yield and resilience against diseases and climate stressors.
- **Technological Advances:** Successive waves of high-yielding varieties (such as Green Revolution wheat and rice) have made these crops more productive, reliable, and responsive to inputs like fertilizer and water.
    - Newer varieties mature faster, are resistant to major diseases, and can be sown flexibly, further reducing risk.

Concerns with Continued Rice-Wheat Monoculture

- **Soil Degradation:** Intensive rice-wheat cropping and heavy use of chemical fertilizers have degraded soil health, causing nutrient imbalances, reduced organic matter, and compaction.
    - This undermines long-term productivity.
- **Water Depletion**: Both crops are highly water-intensive.
    - Over-extraction of groundwater for irrigation has led to dangerously low water tables in major growing regions, threatening future agricultural sustainability.
- **Environmental Pollution:** The burning of rice crop residue (stubble) is widespread, causing severe air pollution and health hazards.
    - Additionally, excessive use of fertilizers and pesticides pollutes soil and water.
- **Pest and Disease Issues:** Monoculture and heavy pesticide use have led to pest resistance and disrupted ecological balances, requiring ever-stronger chemical controls.
- **Economic and Nutritional Imbalances:** The focus on rice and wheat has led to the neglect of other crops, reducing crop diversity, increasing economic vulnerability, and contributing to nutritional deficits in diets.

What Needs to Be Done

- **Promote Crop Diversification:** Encourage farmers to grow a wider variety of crops, including pulses, oilseeds, and coarse grains, by extending MSP and procurement support to these crops and investing in their research and development.
- **Adopt Sustainable Farming Practices:** Shift towards crop rotation, polyculture, and conservation agriculture to restore soil health, break pest cycles, and reduce input needs.
- **Improve Water Management:** Invest in water-saving technologies, promote efficient irrigation methods, and incentivize less water-intensive crops to conserve groundwater resources.
- **Enhance Residue Management:** Provide farmers with alternatives to stubble burning, such as machinery for residue incorporation or incentives for using crop residues as biofuel or animal feed.
- **Farmer Education and Support:** Expand extension services to educate farmers about the long-term risks of monoculture and the benefits of sustainable practices, while providing technical and financial support for transition.

Source: Indian Express: Why Farmers Prefer Rice, Wheat