

Today's Prelims Topics

World Air Quality Report 2024

Context

The 2024 World Air Quality Report, released by Swiss air quality tracking company IQAir, highlights severe air pollution levels worldwide.

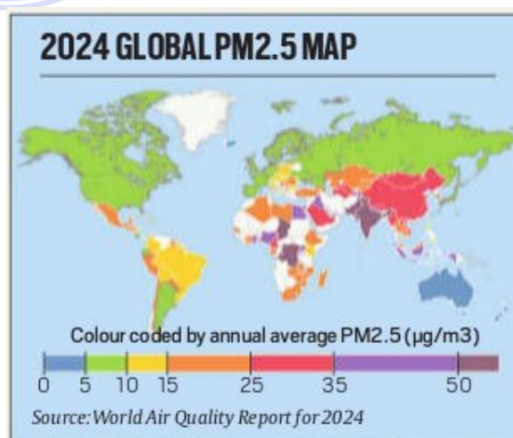
Key Findings of the Report

- **Most Polluted Capital City:**
 - **New Delhi** remains the **most polluted capital in the world** with an annual **PM 2.5 concentration of 91.8 $\mu\text{g}/\text{m}^3$** .
 - **Other polluted capital cities:** N'Djamena (Chad) & Dhaka (Bangladesh).
 - New Delhi has **topped the list every year between 2018 and 2024**, except in **2022**, when **N'Djamena overtook it**.
- **Most Polluted Metropolitan Area in the World:**
 - Byrnihat (Meghalaya, India) is the most polluted metropolitan area globally, with an annual PM 2.5 concentration of 128.2 $\mu\text{g}/\text{m}^3$.
- **Most polluted Countries:** (1) Chad (2) Bangladesh (3) Pakistan (4) Congo (5) **India**.

Pollution Standards and WHO Guidelines

- **WHO PM 2.5 guideline: 5 $\mu\text{g}/\text{m}^3$**
 - **$\mu\text{g}/\text{m}^3$** is a unit of measurement that stands for micrograms per cubic meter.
 - It's used to measure the concentration of pollutants or particulate matter in air or other gases.
- **India's Central Pollution Control Board limit: 40 $\mu\text{g}/\text{m}^3$**
- **India's actual PM 2.5 levels (50.6 $\mu\text{g}/\text{m}^3$) are 10 times higher than the WHO guideline.**

- **Regional Pollution Analysis:**
 - **Oceania** is the cleanest region, with 57% of cities meeting WHO guidelines.
 - **Seven countries met WHO guidelines** for PM 2.5 levels: Australia, Bahamas, Barbados, Estonia, Grenada, Iceland, and New Zealand.
 - **No city in East Asia, South East Asia, or West Asia met WHO guidelines.**
- **Global Pollution Overview:**
 - Only 17% of cities worldwide met WHO air pollution guidelines.
 - 126 out of 138 countries (91.3%) exceeded WHO's annual PM 2.5 guideline.
 - **Central and South Asia** accounted for the **top seven most polluted cities in the world**.
 - **Most polluted major city in USA:** Los Angeles.



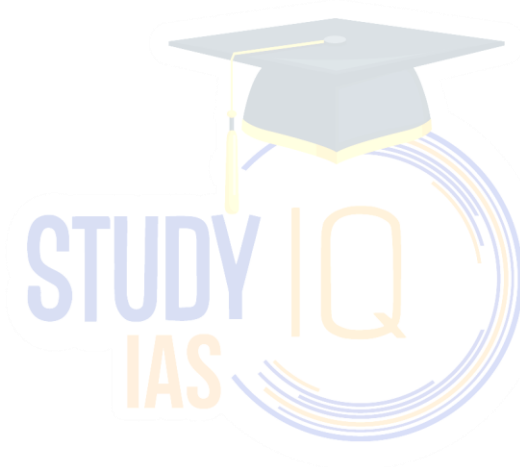
India's Pollution Crisis:

- **India ranks as the 5th most polluted country**, with an average **PM 2.5 level of 50.6 $\mu\text{g}/\text{m}^3$** .
- **In 2023, India was the 3rd most polluted country.**

- **India saw a 7% decline in PM 2.5 levels** in 2024 (**50.6 $\mu\text{g}/\text{m}^3$**) compared to 2023 (**54.4 $\mu\text{g}/\text{m}^3$**), but still remains heavily polluted.
- **Six of the world's 10 most polluted cities are in India.**
- **13 of the world's 20 most polluted cities** are in India.
- **Most Polluted Indian Cities (Annual PM 2.5 Levels):** Byrnihat , Mullanpur (Punjab), Faridabad, Loni & Gurgaon.
- **Major sources of PM2.5 pollution:**
 - **Crop stubble burning** (accounting for **60% of pollution during peak periods**).
 - Vehicular emissions, Industrial discharges & Construction dust.
- **Health Impacts of PM2.5 Pollution:** Respiratory diseases, Chronic kidney disease, Cancer., Strokes and heart attacks etc.
 - **Pollution in India reduces life expectancy by nearly 5 years.**

Source:

- [Indian Express - Delhi's air worst among capitals](#)



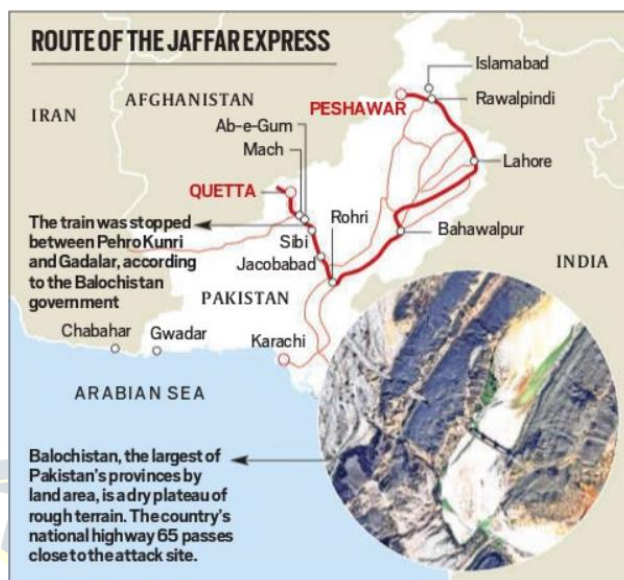
Balochistan Liberation Army

Context

Recently the **Balochistan Liberation Army** carried out a **major attack on the Jaffar Express**, a passenger train traveling from **Quetta to Peshawar**.

About Balochistan Liberation Army (BLA)

- BLA is a **Baloch nationalist militant group** that has been active in **Pakistan's Balochistan province** since the early 2000s.
- It is one of the **most prominent separatist groups** fighting for **Baloch independence**.
- It is designated as a **terrorist organization** by **Pakistan, UK and USA**.
- BLA wants to establish an **independent Balochistan**, separate from **Pakistan**.
- Baloch insurgents oppose **China-Pakistan Economic Corridor (CPEC)**, claiming it exploits local resources without benefiting the Baloch people.



Balochistan: Pakistan's Largest but Least Developed Province

- Balochistan is **Pakistan's largest province** by area but has **low population density**.
- It is rich in natural resources: **Oil, gas, and copper**.
- **Economic inequality**: Despite its resource wealth, Balochistan remains economically backward compared to Punjab, Sindh, and Khyber Pakhtunkhwa.
- **Punjabis dominate the military, bureaucracy, and industries**, leading to **ethnic resentment** among Baloch people.

Historical Background of Baloch Separatism

- Balochistan remained **independent from Pakistan until March 1948**.
- **The Khan of Kalat**, a key regional leader, controlled **Kalat, Makran, Las Bela, and Kharan**.
- He initially sought **independence for Balochistan** but faced **political pressure to join Pakistan**.
- **British geopolitical concerns (fear of Russian influence) and internal demands from Kharan, Las Bela, and Makran** contributed to Balochistan's accession.
- Baloch separatist movements have persisted ever since.

Source:

- [Indian Express - BLA](#)

Former Philippines President arrested on ICC warrant

Context

Former Philippine President **Rodrigo Duterte** was arrested recently, following an arrest warrant issued by ICC for alleged crimes against humanity committed during his war on drugs.

About International Criminal Court (ICC)

- ICC is a permanent judicial institution **established in 2002** under the **Rome Statute of 1998**.
 - It is headquartered in **Hague, Netherlands**.
- **Mandate:** To investigate, prosecute, and adjudicate individuals accused of committing genocide, war crimes, crimes against humanity and the crime of aggression.
- **Members:** 125 (**Important non-member countries: India, US, China & Russia**)
- **Composition:** The Court has **18** judges, each from a different member country, elected for a **nine-year term**.
- **Jurisdiction:**
 - Crimes committed in **Rome Statute signatory states**.
 - Crimes committed by **nationals of signatory states**.
 - Cases referred by the **UN Security Council**.
- After **issuing an arrest warrant ICC relies on countries to make arrests and transfer suspects to the ICC**.
- Unlike the International Court of Justice (ICJ) it is **not an organ of the United Nations**.
- **Challenges in Enforcement:**
 - **No police force of its own**.
 - Relies on member states to arrest suspects.
 - Needs international cooperation for enforcement, asset freezing, and extraditions.

Source:

- [Indian Express - ICC](#)

How a Lie Detector (Polygraph) Works

Context

The Mumbai Police's Economic Offences Wing (EOW) conducted a polygraph test on Hitesh Mehta, the prime accused and former General Manager of New India Cooperative Bank.

Working Principle of a Polygraph

- A polygraph records **changes in bodily functions**, which are believed to occur due to the **emotional response to lying**.
- **The key parameters measured include:** Blood pressure, Heartbeat (pulse rate), Respiration (breathing rate), Perspiration (sweat levels, also known as electrodermal response or psychogalvanic skin reflex) & Electrical impulses in the body.
- The **modern polygraph** was invented in **1921** by **John Larson**, a **medical student at the University of California**, in collaboration with a **police officer**.
- **Equipment Used in a Polygraph Test:**
 - **Pneumograph Tube** – Wrapped around the **chest** to measure **breathing rate**.
 - **Blood Pressure-Pulse Cuff** – Strapped to the **arm** to track **pulse and blood pressure changes**.
 - **Electrodes** – Pick up **electrical impulses** from different body parts.
 - **Moving Graph Paper** – Records **changes in physiological functions** when the subject answers questions.

How the Polygraph Detects Lies

- The examiner **asks a series of questions** to the subject.
- The polygraph records **baseline physiological responses** when neutral questions are asked.
- When a subject lies, **one or more body functions deviate from normal**, leading to changes in the recorded graph.
- The examiner **analyzes these deviations** to infer whether the person is lying.

Accuracy and Reliability of Polygraphs

- Although widely used in **interrogations**, polygraphs are **not scientifically proven** to detect lies accurately.
- Many researchers argue that **physiological responses can be influenced by factors other than lying**, such as **stress, anxiety, or nervousness**.
- Polygraphs are **not accepted as conclusive evidence in courtrooms** due to **their unreliability**.
- Some individuals can **train themselves to manipulate their physiological responses**, making it easy to **deceive the polygraph**.

Legal Admissibility of Polygraph Tests in India

- The **Supreme Court of India** Selvi & Ors vs State of Karnataka & Anr (**2010**) ruled that polygraph tests **cannot be forced** on any individual.
- The court emphasized that such tests **violate human rights**, including the **right against self-incrimination** under **Article 20(3) of the Constitution**.
- **Key legal points from the ruling:**
 - **Results of polygraph tests are NOT considered confessions.**
 - **Statements made during the test cannot be used as direct evidence.**
 - However, **evidence discovered as a result of these tests can be admissible.**
 - **Example:** If the accused reveals the location of a murder weapon during the test, the weapon itself can be used as evidence, but the statement revealing the location cannot.

Source: [The Hindu - Lie Detectors](#)

New Green Electrochemical Process Converts Urine into Plant Fuel

Context

Scientists have developed a **new eco-friendly method** to extract **urea from urine** and turn it into **percarbamide**, a useful fertilizer.

Urine: The 'Liquid Gold' for Agriculture

- In the **17th century**, German alchemist **Hennig Brand** attempted to extract gold from urine. Though unsuccessful, he discovered **phosphorus**, an essential nutrient for plants.
- Urine is often referred to as "**liquid gold**" due to its high content of **phosphorus, potassium, and nitrogen (as urea)**—the **three key nutrients** in fertilizers.
- **Nutrient Composition of Urine:**
 - An **adult produces 450-680 liters** of urine annually.
 - Urine is **95% water**, but the **remaining 5% contains valuable nutrients: 4 kg of nitrogen & 0.3 kg of phosphorus**
 - This nutrient content is enough to **grow wheat for one loaf of bread every day for a year**.
- **Challenges in Utilizing Urine Directly:** Despite its nutrient richness, urine is **chemically complex**, and its **salts interfere** with direct **urea extraction**.

New Electrochemical Process to Extract Urea

- A team of researchers developed a **low-energy, electrochemical method** using **graphitic carbon-based catalysts** to extract **urea as percarbamide**.
- **Key Reaction:** Urea combines with **hydrogen peroxide**, forming **percarbamide**, a **white crystalline solid** that can be separated from urine.
- The process is **almost 100% efficient** and works for both **human and animal urine**.
- **Key Advantages of Percarbamide:**
 - **Slow-release nitrogen fertilizer:** Improves plant nutrition by gradually releasing nitrogen.
 - **Promotes root respiration:** Enhances plant growth.
 - **Acts as an oxygen supplier:** Useful in **chemical reactions** requiring **active oxygen**.
 - **Helps recover urea from urine efficiently.**
- **Significance of the discovery:**
 - Turns waste into a valuable resource instead of flushing it away.
 - Makes agriculture more sustainable by reducing the need for synthetic fertilizers.
 - Improves wastewater treatment by removing excess nitrogen.

Source:

- [The Hindu - Liquid Gold](#)

Parvatmala: National Ropeways Development Programme

Context

The Cabinet Committee on Economic Affairs (CCEA) has approved two major ropeway projects in Uttarakhand under the Parvatmala Pariyojana: **the Govindghat-Hemkund Sahib ropeway (12.4 km) and the Sonprayag-Kedarnath ropeway (12.9 km).**

About Parvatmala Programme

- It is a government initiative to develop **ropeway infrastructure in hilly and congested urban areas.**
- It was launched in the Union Budget 2022-23 by the Ministry of Road Transport and Highways (MoRTH).
- **Implementing Agency:** National Highway Logistics Management Limited (NHLML) under MoRTH.
- **Objective:**
 - Develop **ropeways as an alternative transport mode** in hilly regions and urban areas.
 - Improve **connectivity for tourism, pilgrimage, and remote areas.**
 - Reduce **travel time and environmental impact.**
 - Boost **local economies and job opportunities.**



Key Features of Parvatmala Programme

- **Public-Private Partnership (PPP) Model:**
 - The projects will be implemented through Public-Private Partnership with around **60% contribution support by the Government of India.**
- **Indigenous Component Requirement:**
 - **At least 50%** of the ropeway components must be **manufactured in India**, aligning with 'Make in India'.
- **Environmental Sustainability:**
 - Ropeways have **minimal land and ecological impact & Lower emissions** compared to conventional road transport.
- **Coverage & Scope:**
 - Plan to **develop over 250 ropeway projects** covering **1,200 km in five years.**
 - Focus areas: **Himalayan states (Uttarakhand, Himachal Pradesh, J&K, Arunachal Pradesh, Sikkim, etc.)** and congested urban centers

Source:

- [PIB - Parvatmala](#)

Income Tax Bill, 2025 – Search and Seizure Provisions

Context

The **Income Tax Bill, 2025**, has introduced a **controversial provision** regarding **search and seizure powers** of tax authorities.

Changes in Search and Seizure Provisions

- **Powers Extended to Virtual Digital Spaces:**
 - The new bill gives power to **override any access codes** (passwords, passcodes, encryption keys) protecting an individual's digital communication or accounts.
- **Existing Powers Under Income Tax Act, 1961:**
 - Tax authorities could **enter and search premises** and **forcibly open locks** to seize financial records.
 - Officials were already examining **electronic records** like emails, hard disks, and desktops.
- **New Powers Under Proposed Income Tax Bill, 2025:** Authorities can now **access "virtual digital spaces"** such as:
 - **Email servers, Social media accounts** (Facebook, Twitter, Instagram, etc.)
 - **Online banking and investment accounts**
 - Websites storing asset ownership details
 - Cloud storage and remote servers, Digital application platforms, Any other similar digital space.
- This means tax officials can **use password-breaking software** or **request tech companies (e.g., Apple, Google, Meta) to bypass login credentials.**

Key Provision of new Income Tax Bill

- **Introduction of the 'Tax Year' Concept:**
 - The **'assessment year'** has been removed, and the **'tax year'** now aligns with the financial year (**April 1 – March 31**).
 - For businesses or newly set up professions, the tax year begins from their establishment date.
- **Expanded Definition of Income:**
 - Virtual digital assets (VDAs) like cryptocurrency and NFTs are now considered capital assets, similar to land and shares affecting tax calculations.
- **Simplified and Concise Drafting:**
 - The Bill reduces the number of provisos and cross-references, making it easier to interpret without relying on multiple sections and rules.
- **Consolidation of Tax Compliance Requirements**
 - Provisions related to TDS, assessment timelines, dispute resolution, and deductions have been tabulated for easier access.
- **Removal of Outdated Exemptions:**
 - Provisions like Section 54E (capital gains exemption for pre-1992 asset transfers) and redundant sections from past amendments have been eliminated.
- **Detailed Deductions from Salary:**
 - Deductions related to salary, including standard deductions, gratuity, and leave encashment, are now detailed in tabular form, providing taxpayers with clear guidance.

Source:

- [Indian Express - New IT Bill](#)

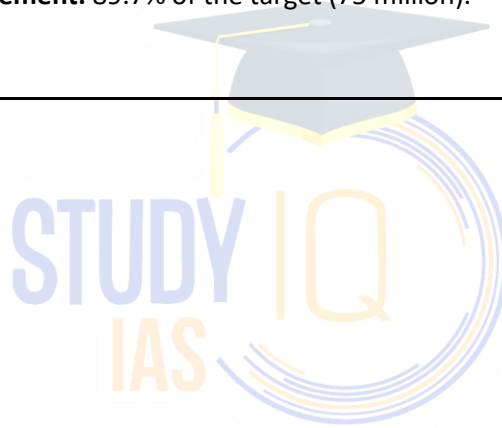
News in short

75/25 Initiative

- It was launched by the Union Ministry of Health & Family Welfare on **World Hypertension Day (May 17, 2023)**.
- It aims to provide **standardized care to 75 million people** suffering from **Hypertension and Diabetes** by **December 2025**.
- **Objective:**
 - Address the **growing burden of Non-Communicable Diseases (NCDs)** in India.
 - Ensure **timely screening, diagnosis, and treatment** for individuals aged **30 years and above**.
 - Improve **access to healthcare services** at **primary, secondary, and tertiary** levels.
- **Hypertension and Diabetes** are two of the most **prevalent** NCDs in India.
 - **Other major NCDs include:** Oral Cancer, Breast Cancer, Cervical Cancer.
- **Progress So Far:**
 - **42.01 million people** treated for **hypertension**.
 - **25.27 million people** treated for **Diabetes**.
 - **Total achievement:** 89.7% of the target (75 million).

Source:

- [PIB - 75/25](#)



Editorial Summary

Corruption and Compliance Challenges in India's Business Sector

Context

A recent “**India Business Corruption Survey 2024**” highlighted 66% of business entities admitting to paying bribes, with 54% stating they were coerced to expedite government processes, obtain permits, ensure compliance, or acquire duplicate licences.

Compliance Reforms Initiated by the Government

- **Jan Vishwas (Amendment of Provisions) Act, 2023:** Decriminalised **180 provisions** related to imprisonment clauses that were burdensome for businesses and entrepreneurs.
 - Aimed at improving the ease of doing business by reducing legal complexities.
- **Jan Vishwas 2.0** (Announced in Budget 2025): Proposes to decriminalise around **100 additional provisions**.
 - Seeks to streamline business compliance and reduce regulatory friction.
- **Labour Code Reforms:** Consolidated **29 colonial-era labour laws** into **4 labour codes** (the Code on Wages, the Industrial Relations Code, the Occupational Safety, Health and Working Conditions Code, and the Social Security Code – yet to be implemented).
 - Intended to simplify and modernise labour regulations.
- **Digitalisation Efforts:** Introduction of **Digi Locker** for verified document storage to simplify regulatory approvals.
 - Proposed ‘**One Nation, One Business**’ Identity System to reduce the need for multiple identifiers and improve compliance efficiency.

Issues and Challenges

- **Persistent Red-Tapism and Bribery:** Regulatory officials exploit compliance provisions to extract bribes.
- **Complex and Frequent Regulatory Changes:** Over **9,420 compliance updates** in the past year (~36 daily).
 - Creates confusion, increases compliance costs, and fosters corruption opportunities.
- **Implementation Gap in Labour Reforms:** Despite consolidating **29 labour laws into 4 labour codes**, they remain unimplemented.
 - Delays in state-level adoption undermine the effectiveness of reforms.
- **Lack of Accountability Among Inspectors:** Inspectors have excessive discretionary powers to threaten businesses with penalties or shutdowns.
 - No clear grievance redressal mechanism for businesses facing unjust action.
- **Fragmented Business Identity System:** Businesses must maintain **23+ identifiers** (e.g., PAN, GSTIN, CIN) from different authorities.
 - Periodic renewals and varying requirements create inefficiencies and increase operational costs.

Implications

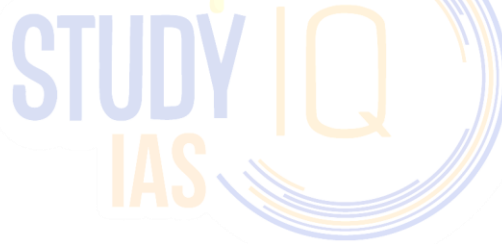
- **Deterrent to Foreign Investment:** 80% of respondents in the EY-FICCI survey believe corruption hinders FDI inflows.
 - Loss of competitiveness in the global investment landscape.
- **Increased Cost of Doing Business:** Bribery and unofficial payments increase business costs.
 - Slows down business growth and profitability.
- **Loss of Entrepreneurial Confidence:** Entrepreneurs face hurdles in setting up and expanding businesses.

- Regulatory uncertainty discourages innovation and expansion.
- **Global Competitive Disadvantage:** Countries like the US are streamlining business operations through governance reforms.
 - India risks losing investment and talent to more business-friendly economies.

What Needs to Be Done

- **Strengthen Jan Vishwas Reforms:** Expand decriminalisation beyond 100 provisions under Jan Vishwas 2.0.
 - Establish clear timelines for implementing reforms.
- **Limit Compliance Changes:** Follow FSSAI's model of announcing regulatory updates only once a year.
 - Create a predictable compliance environment.
- **Digital-First Approach:** Introduce a **'One Nation, One Business' Identity System** to unify business identifiers.
 - Simplify approvals and reduce administrative burdens through digital platforms.
- **Accountability for Regulatory Officials:** Establish oversight mechanisms to curb discretionary powers of inspectors.
 - Introduce penalties for officials engaging in corrupt practices.
- **Implement Labour Codes:** Fast-track implementation of the labour codes across all states.
 - Ensure consistency and clarity in labour regulations.
- **Transparent and Fair Regulatory Environment:** Simplify the licensing process with a single-window clearance system.
 - Enhance grievance redressal mechanisms to protect businesses from undue harassment.

Source: [The Hindu: More signs of overhauling the compliance framework](#)



Covid 19 Impact on Global Economy 5 Years later

Context

Five years after the World Health Organization declared the COVID-19 outbreak a pandemic, its impact on the global economy remains significant.

Impacts of COVID-19 Pandemic 5 Years Later

- **Debt and Inflation:**
 - Global government debt increased by **12 percentage points** since 2020, with larger rises in emerging markets.
 - Inflation spiked due to post-lockdown spending, government stimulus, and supply chain disruptions, peaking in 2022.
 - Central banks raised interest rates to control inflation, but financial conditions tightened.
 - Average global sovereign credit scores remain **a quarter of a notch lower** than pre-pandemic levels, while emerging market ratings remain **half a notch lower**.
- **Labour Market and Travel Shifts:**
 - Millions of job losses, with women and poorer households worst affected.
 - Shift in employment towards sectors like hospitality and logistics.
 - Women's workforce participation initially declined but the gender employment gap has slightly narrowed.
 - Airline sector suffered **\$175 billion in losses** in 2020 but is expected to post a **\$36.6 billion net profit** in 2025 with a record **5.2 billion passengers**.
 - Hotel prices remain above 2019 levels, especially in Oceania, North America, Latin America, and Europe.
 - Remote work has led to record-high office vacancy rates.
- **Digital Transformation:**
 - Online shopping increased significantly during lockdowns, stabilising at higher levels post-pandemic.
 - Physical retail space in Europe increased by **1% from 2022 to 2023** and is projected to grow by **2.7% by 2028**.
 - Shares in delivery and digital firms surged during the pandemic, with some retaining long-term gains.
 - Retail investment increased, with **27% of total U.S. equity trading** coming from retail investors in December 2020.
 - Platforms like Robinhood gained prominence during the retail trading boom.

Source: [The Hindu: Five years on, the economic impact of COVID-19 pandemic still lingers](#)

Detailed Coverage

Rising Palm Oil Prices

Context

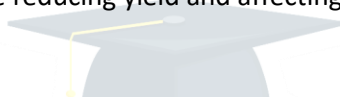
Indonesia's biodiesel push and stagnant production are driving up palm oil prices, impacting global vegetable oil markets and inflation.

Recent Situation of Palm Oil Production

- **Slow Growth:** Global production growth slowed to **1% annually** over the past four years due to limited land and aging plantations.
- **Biodiesel Push:** Indonesia increased the mandatory mix of palm oil in biodiesel to **40%** in 2024, reducing export availability.
- **Deforestation Concerns:** Environmental issues and land constraints in Indonesia and Malaysia are limiting new plantations.
- **Labour Shortages:** Malaysia faces a shortage of workers, slowing production.
- **Ageing Plantations:** Oil palms lose productivity after 20 years, but replanting is slow due to high costs and productivity loss during transition.
- **Ganoderma Fungus:** A fungal disease reducing yield and affecting palm health.

About Oil Palm (*Elaeis guineensis*)

- **Origin:** Comes from an African tree belonging to the palm family (*Arecaceae*).
- **Global Distribution:** Native to **West and Central Africa**, now widely cultivated in **Malaysia and Indonesia**.
- **Nutritional Composition:** Rich in **beta-carotene, saturated and unsaturated fats, and vitamin E**.
- **Health Benefits:** Used for **preventing and treating vitamin A deficiency**.
- **Conditions Suitable for Plantation:**
 - **Climate:** Requires a **hot and humid tropical climate** (temperature between **30°C to 32°C**).
 - **Rainfall:** Annual rainfall of **250 cm to 400 cm**.
 - **Soil:** **Deep, well-drained, fertile loamy soil** with a pH between **4.0 to 7.0**.
 - **Altitude:** Low altitudes, usually below **500 meters**.
 - **Sunlight:** Requires **5–7 hours of direct sunlight** daily for optimal growth.
 - **Humidity:** High humidity levels (**at least 80%**).



Uses Of Palm Oil



Food Industry: Cooking, baking, frying, and processed foods (cakes, snacks, margarine).



Cosmetics: Soaps, shampoos, and lotions.



Cleaning Products: Detergents and household cleaners.



Pharmaceuticals



Biofuel: Biodiesel and jet fuel.



Industrial Use: Lubricants and manufacturing processes

Palm Oil Production

- **Global:**
 - Indonesia and Malaysia account for about **85% of global palm oil production**.
 - Indonesia is the largest exporter, followed by Malaysia.
 - In 2024, global palm oil production is estimated at around **77 million metric tons**.
 - **Other Producers** – Thailand, Nigeria, Colombia, and Papua New Guinea are also significant producers.
- **India:**
 - India produces about **0.35 million metric tons** of palm oil annually.
 - India is the **world's largest importer** of palm oil, importing over **9 million metric tons** annually, primarily from **Indonesia and Malaysia**.
 - **Major Producing States:** Andhra Pradesh, Telangana, Karnataka, Tamil Nadu, and Kerala.

National Mission on Edible Oils – Oil Palm (NMEO-OP)

- **Launched in:** 2021
- **Objective:** To increase edible oil production by expanding the area under oil palm cultivation and improving productivity.
- **Aim:** To reduce India's dependence on edible oil imports.
- **Funding Pattern:** **80% funded by the central government** and **20% by state governments**.
- **Focus Regions:** Special emphasis on **Northeast India** and **Andaman & Nicobar Islands**.
- **Implementation:** Being implemented in **15 states**, including **Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland, and Tripura**.
- **Key Features:**
 - **Financial aid** for procuring quality planting material.
 - **Assistance for intercropping costs** during the **4-year gestation period**.
 - **Financial assistance** for the **upkeep of plantations**.
 - Mechanism to ensure a **minimum price to farmers**.
 - **Financial support for projects** that are economically beneficial but financially unviable.

Challenges Associated with Palm Oil Cultivation

- **Deforestation and Habitat Loss:** Palm oil cultivation is a major driver of tropical deforestation, especially in **Southeast Asia** (Indonesia and Malaysia).
 - Since the 1960s, **60% of Borneo's forests** have been lost due to palm oil plantations.
 - Forest loss threatens species like orangutans, Sumatran rhinos, and tigers, increasing their risk of extinction.
- **Human-Wildlife Conflict:** Habitat destruction forces animals to enter plantations in search of food.
 - Orangutans, elephants, and other animals are often killed or injured by plantation workers trying to protect crops.
- **Climate Change Contribution:** Deforestation for palm oil contributes **2–4% of annual global greenhouse gas emissions**.
 - Peatland clearing for palm oil releases about **438 million tonnes of CO2** annually, equal to the emissions from EU vehicle traffic.
- **Complex and Unregulated Supply Chains:** Over **1,500 registered palm oil firms** in Indonesia alone create a complex network of producers, processors, and distributors.
 - Major corporations like Nestlé, PepsiCo, and Unilever have **No Deforestation, No Peat, and No Exploitation (NDPE)** commitments but struggle to enforce them.
 - Illegal operations and weak enforcement undermine sustainability efforts.
- **Illegal Clearing and Poor Regulation:** Illegal logging and plantation establishment persist due to weak enforcement and corruption.
 - Despite corporate commitments, sourcing from illegal plantations continues.

- **Hidden Use in Products:** Palm oil is present in over **200 derivative forms** in everyday products (e.g., food, cosmetics, and cleaning supplies).
 - The widespread and disguised presence of palm oil makes consumer awareness and accountability difficult.
- **Soil Degradation and Water Scarcity:** Palm oil requires large quantities of fertilizers and pesticides, leading to soil nutrient depletion.
 - It is water-intensive (needs **250–300 litres per plant per day**), straining local water resources.
- **Loss of Indigenous Land and Community Rights:** Large-scale plantations shift land control from indigenous communities to corporations.
 - Local communities lose access to traditional lands and resources, impacting their livelihoods and food security.

Palm Oil Cultivation Issues in Northeast India

- The National Mission on Edible Oils—Oil Palm aims to expand oil palm cultivation in India's north-eastern states and the Andaman and Nicobar Islands.
- However, this initiative poses significant ecological and cultural risks.
- The experience in Mizoram since 2004 has been particularly problematic:
 - **Unsuitable Terrain:** Over 90% of North Eastern land is hilly, which is unsuitable for palm oil cultivation as per Food and Agriculture Organisation (FAO) guidelines.
 - Oil palm plantations are more suitable for plains and foothill areas, not steep and rugged terrains.
 - **Water Scarcity:** Oil palm is a water-intensive crop, needing **250–300 litres per plant per day**.
 - The region receives rainfall for only 4 months, leading to water shortages and groundwater depletion.
 - **Soil Fertility Loss:** Palm oil cultivation requires large amounts of **chemical fertilizers and pesticides**, which degrade soil quality over time.
 - Mizoram's plantations have already resulted in soil infertility, making crop replacement difficult.
 - **Lack of Infrastructure:** Palm oil fruits need to be processed within **48 hours** of harvest.
 - The region lacks adequate transport and milling infrastructure, causing harvested crops to rot and financial losses for farmers.
 - **Threat to Food Security:** Traditional jhum cultivation (slash-and-burn) is discouraged, affecting the availability of food crops and medicinal plants.
 - Groundwater depletion and loss of natural forests further threaten food security.
 - **Shift in Land Tenure:** Oil palm cultivation transfers land control from local communities to private companies.
 - Gram panchayats and community-based councils lose power over land management, making farmers dependent on companies and vulnerable to exploitation.
 - **Loss of Livelihood:** Farmers face financial losses due to crop failure and poor soil health.
 - No sustainable alternative livelihoods have been provided, leaving farmers in economic distress.

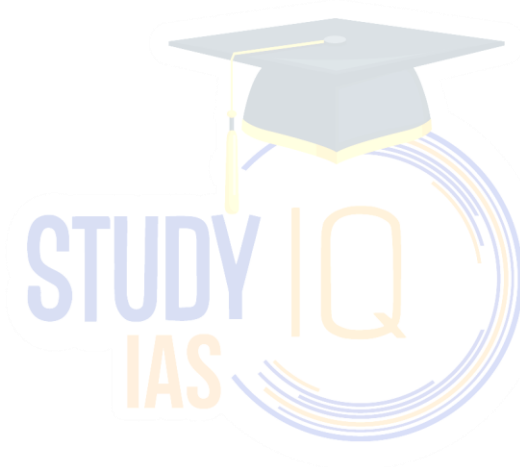
Sustainable Practices for Palm Oil Cultivation

- **No Deforestation, No Peat, No Exploitation (NDPE) Policies:** Ensure that palm oil is grown without deforestation, peatland destruction, or exploitation of communities.
- **Use of Degraded Land:** Plantations should be established on degraded or previously cultivated lands rather than primary forests.
- **Water Management:**

- **Efficient Water Use:** Implement systems to minimize water consumption and collect gray water for reuse.
- **Protect Water Sources:** Maintain riparian reserves to protect water quality and wildlife habitats.
- **Waste Utilization:** Reuse palm leaves and cuttings as mulch or compost.
- **Optimized Fertilizer Use:** Employ organic and bio-fertilizers based on soil tests to enhance fertility and reduce chemical dependency.
- **Biodiversity Conservation**
 - **Multi-Cropping:** Intercrop with other plants to enhance biodiversity and provide additional income streams for farmers.
 - **Wildlife Corridors:** Establish corridors within plantations to support local wildlife.
- **Community Engagement:** Obtain consent from local communities before establishing new plantations.
- **Certification and Transparency:** Adhere to Roundtable on Sustainable Palm Oil (RSPO) standards for transparency and accountability.

Source:

- **The Hindu: End of cheap palm oil? Output stalls with rise of biodiesel**



India And Mauritius

Context

Indian Prime Minister Narendra Modi visited Mauritius as the chief guest for the country's National Day celebrations.

India and Mauritius Ties

- **Historical and Cultural Ties**
 - **Indian Diaspora:** Nearly **70% of Mauritius' population** is of Indian origin, mainly descendants of indentured laborers brought by the British.
 - **French and British Rule:**
 - French rule (1700s): Indians from Puducherry were brought as artisans and masons.
 - British rule (1834–early 1900s): Around **500,000 Indian indentured laborers** arrived; two-thirds settled in Mauritius.
 - **Gandhi's Influence:** Mahatma Gandhi's visit in **1901** inspired political awareness and the importance of education and empowerment.
 - **Seewoosagar Ramgoolam:** Led the freedom struggle and became the first PM of independent Mauritius; had close ties with Indian leaders like Gandhi, Nehru, and Subhash Chandra Bose.
- **Political and Diplomatic Ties**
 - **Diplomatic Relations:** Established in **1948** after India's independence.
 - **Chagos Archipelago Dispute:** India supports Mauritius' territorial claim over the Chagos Islands.
 - **Political Influence:** Mauritius has been ruled mainly by two political families — the **Ramgoolams** and the **Jugnauths** — both maintaining strong ties with India.
- **Economic and Trade Cooperation**
 - **CECPA (Comprehensive Economic Cooperation and Partnership Agreement):**
 - Signed in **2021**, the first trade agreement between India and an African country.
 - Facilitates preferential access to each other's markets.
 - **FDI:**
 - Mauritius is the **second-largest source of FDI** into India after Singapore in FY 2023–24.
 - **Double Taxation Avoidance Agreement (DTAA)** signed in **1983** boosted Mauritius' position as an investment hub for Indian businesses.
 - **Indian PSUs in Mauritius:**
 - Bank of Baroda, Life Insurance Corporation (LIC), and NBCC operate in Mauritius.
 - **Development Assistance:**
 - India's assistance in the last decade = **\$1.1 billion** (\$729 million as lines of credit and \$427 million as grants).
 - Key projects include the **Metro Express** and **96 small development projects** (51 inaugurated).
- **Defence and Maritime Security**
 - **Agaléga Island:**
 - Infrastructure developed for sea and air connectivity under the **2015 MoU**.
 - Facilities aid maritime surveillance and patrolling of Mauritius' **Exclusive Economic Zone (EEZ)**.
 - India mobilized assets to assist during **Cyclone Chido** in 2023.
 - **White Shipping Agreement:** Likely to be signed to enhance real-time data sharing between the Indian Navy and Mauritius authorities.

- **First Responder:** India has provided rapid assistance during the **Covid-19 pandemic, Wakashio oil spill (2020), and cyclones.**
- **Space and Technological Cooperation**
 - In **2022**, India assisted Mauritius in launching its first satellite under ISRO collaboration.
 - MoU signed in **2023** for joint satellite development with the **Mauritius Research and Innovation Council (MRIC).**
 - **Telemetry, Tracking, and Telecommand (TTC) Station:** Established under the **1986 agreement** for satellite and launch vehicle monitoring.
- **Capacity Building and Education**
 - **Indian Technical and Economic Cooperation (ITEC):**
 - Over **4,940 Mauritian**s trained since **2002** in civilian and defence sectors.
 - About **2,300 Indian students** currently studying in Mauritius in fields like medicine, business, and hotel management.
 - **Cultural Ties:**
 - Mahatma Gandhi Institute and Indian Cultural Centre foster shared heritage.
 - **Maha Shivratri** and the **Ganga Talao pilgrimage** reflect strong cultural bonds.
- **Strategic Significance:**
 - **Indian Ocean Region:** Mauritius is critical for India's **SAGAR (Security and Growth for All in the Region)** strategy to counter China's growing influence.
 - **Blue Economy:** India is supporting Mauritius in developing its blue economy to strengthen maritime security and sustainable ocean resource management.

Challenges in India-Mauritius Relations

- **Declining FDI from Mauritius:**The 2016 amendment of the DTAA reduced Mauritius' appeal as an FDI conduit to India.
 - **E.g.,** FDI from Mauritius dropped from \$15.72 billion in 2016-17 to \$6.13 billion in 2022-23, making it the third-largest FDI source after Singapore and the USA.
- **Maritime and Security Challenges:** The Indian Ocean Region (IOR) faces growing threats like drug trafficking and illegal fishing.
- **Delays in Infrastructure Projects:** India-backed projects in Mauritius face delays due to bureaucratic and implementation issues.
 - **E.g.,** The Metro Express Project under India's \$500 million Line of Credit faced significant delays initially.
- **Trade Imbalance and Limited Diversification:** India's exports to Mauritius significantly exceed Mauritius' exports to India.
 - **E.g.,** In 2023-24, India's exports to Mauritius were \$778 million, while Mauritius' exports to India were only \$73 million.
- **Growing Chinese Influence:** China constructed the Mauritius Supreme Court and provided infrastructure loans, raising debt dependency concerns.

Way Forward

- **Enhancing Maritime Security and Strategic Cooperation:** Establish a White Shipping Agreement with Mauritius, similar to the one with France.
- **Countering China's Influence through Strategic Diplomacy:**Increase infrastructure grants, technology partnerships, and soft power initiatives.
- **Long-Term Strategic Vision:** Follow the India-UAE Vision 2030 and India-Singapore Smart City Collaboration models.
- **Strengthening Economic and Trade Ties:** Revise the DTAA to boost FDI and expand CECPA to cover sectors like IT, fintech, and renewable energy.
- **Cultural and Diaspora Engagement:** Strengthen institutions like the Mahatma Gandhi Institute and the World Hindi Secretariat.

- **Innovation and Skill Development:** Boost youth and skill-building programs, and promote fintech and digital payment integration such as India's UPI model to Mauritius.

Source: [Indian Express: As Prime Minister Modi lands in Mauritius, why the island country matters to India](#)

