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Transgender Reservation

Context: A transgender activist, who supports horizontal reservation, has filed a complaint accusing an activist of casteist and transphobic behavior, including misgendering and using abusive language. The activist alleges that the accused has been harassing those who advocate for horizontal reservations. As part of the evidence, a recording of an abusive phone call has been submitted. In response to the complaint, the National Commission for Scheduled Castes (NCSC) has issued notices to the local district administration and police, instructing them to investigate the allegations and provide an action report by January 17.

About Horizontal vs. Vertical Reservation

Horizontal Reservation:

- **Definition:** Reservation for a specific group within a larger category (e.g., disabled people within SC).
- **Target Group:** Beneficiaries within a larger category or class (e.g., transgender persons within SC, ST, OBC).
- **Example:** Reservation for women within SC or OBC groups.
- Addresses sub-categories within a reserved category to address layered discrimination faced by specific groups, like transgender persons from marginalized castes.

Vertical Reservation:

- **Definition:** Reservation for specific categories such as caste, class, etc.
- **Target Group:** Entire categories
- **Example:** Reservation for SC, ST, and OBC categories in general.
- Allocates seats to specific castes or communities but doesn't address the layered discrimination faced by transgender persons.

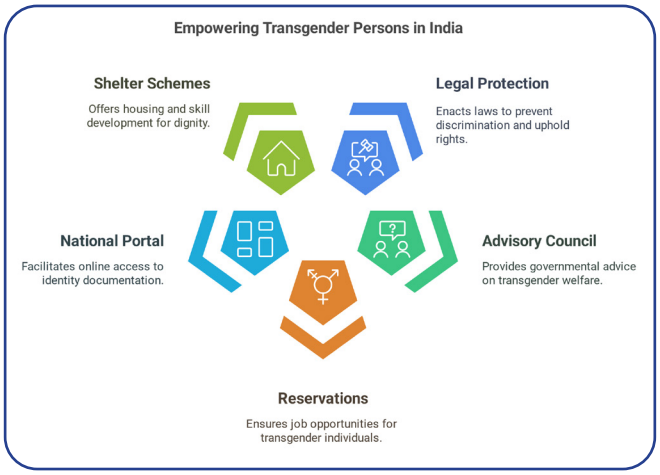
Legal and Social Implications

- The 2014 Supreme Court ruling instructed transgender people be treated as SEBCs, but left room for interpretation. States like Madhya Pradesh have included them in the OBC category, while others like Tamil Nadu support horizontal reservations. The ambiguity led to the Supreme Court declining further clarification in March 2023.

Initiatives for Transgender Persons in India:

India has implemented several key initiatives to empower and support transgender individuals, focusing on their rights and well-being:

- **Transgender Persons (Protection of Rights) Act, 2019:** This law aims to end discrimination in education, employment, and healthcare, while recognizing the right of transgender persons to self-perceived gender identity.
- **Transgender Persons (Protection of Rights) Rules, 2020:** These rules operationalize the provisions of the 2019 Act, ensuring transgender persons can access legal support and welfare measures.
- **National Council for Transgender Persons:** Established under the 2019 Act, this council advises the government on policies, programs, and legislation aimed at improving the welfare of transgender persons.
- **Reservation for Transgender Community:** The Union Government is working on providing reservations for transgender individuals under the OBC category in government jobs to address historical marginalization.
- **National Portal for Transgender Persons:** This platform allows transgender individuals to apply for a Certificate and Identity Card online, ensuring a transparent and accessible application process.
- **Garima Greh:** A shelter scheme offering basic amenities, medical care, and skill development for transgender persons, enabling them to live with dignity and integrate into society.



Way forward:

The issue underscores intersectional discrimination faced by transgender individuals, particularly those from marginalized castes, who endure both gender and caste-based prejudice. Activists argue that horizontal reservations are vital to address these dual forms of discrimination.

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New method on Nitrogen Use Efficiency

Context: A recent breakthrough by researchers has introduced a promising new method for improving nitrogen use efficiency (NUE) in plants, a key factor in enhancing crop yields sustainably. The study, published by the National Institute of Plant Genome Research (NIPGR), reveals that reducing nitric oxide (NO) levels in plants can significantly boost their nitrogen uptake and overall efficiency.

Understanding Nitrogen Use Efficiency (NUE)

- **Nitrogen's Role in Agriculture:**
  - » Nitrogen is a crucial nutrient for plant growth and crop yields.
  - » Efficient nitrogen use is key to enhancing crop productivity and maintaining soil health.
- **Challenges with Traditional Methods:**
  - » Current technologies largely depend on agronomic practices like split doses of inorganic nitrogen fertilizers and slow-release formulations.
  - » These methods have drawbacks such as high operational costs for farmers.
  - » They contribute to nitrogen oxide (NOx) emissions, which are harmful to the environment.
  - » The production and application of synthetic fertilizers also contribute to greenhouse gas emissions, exacerbating climate change.
- **Need for Sustainable Solutions:**
  - » There is a growing need for more sustainable methods to improve NUE and reduce the dependency on synthetic nitrogen fertilizers.

About the Research:

- **Research Team:**
  - » The study was conducted by Dr. Jagannath Swain, Dr. Jagadis Gupta Kapuganti, Dr. Nidhi Yadav, and Dr. Sanjib Bal Samant.
- **Key Discovery:**
  - » The researchers found that manipulating nitric oxide (NO) levels in plants could significantly improve nitrogen use efficiency.
  - » NO levels regulate the expression of high-affinity nitrate transporters (HATs), such as NRT2.1 and NRT2.4, which are responsible for the uptake of nitrogen from the soil.
  - » The team used a pharmaceutical approach by treating plants with NO donors and NO scavengers to observe their effects on NUE.
  - » By overexpressing phytoglobin, a natural NO scavenger, they were able to increase the expression of HATs, leading to more efficient nitrogen uptake.
- **Results:**
  - » The plants demonstrated enhanced nitrogen absorption, especially under conditions of low NO.
  - » This approach allowed for improved nitrogen uptake even with reduced nitrogen inputs, providing a potential solution for improving crop yields sustainably.
  - » Unlike traditional methods that rely on high quantities of synthetic fertilizers, this new method focuses on genetically and pharmacologically modulating NO levels in plants.
  - » It offers a sustainable way to boost nitrogen uptake while reducing the need for fertilizers, thus minimizing environmental harm.

The Potential Benefits of this Innovation

- **Sustainable Agriculture:** The new method could help reduce dependence on synthetic nitrogen fertilizers, offering a more eco-friendly approach to enhancing crop yields.
- **Cost-Effectiveness for Farmers:** By improving NUE, this method could lower the operational costs for farmers, making it economically beneficial for agricultural sectors worldwide.
- **Environmental Impact:** Reducing the use of nitrogen fertilizers can help mitigate the environmental problems associated with excessive NOx emissions and the overall ecological footprint of farming practices.
- **Better Crop Productivity:** The ability to increase nitrogen uptake efficiently can lead to improved plant growth, especially in low-nitrogen environments, thus boosting crop yields in a sustainable manner.

India's GDP Growth Forecast for FY25

Context: The Ministry of Statistics and Programme Implementation (MoSPI) recently released the "First Advance Estimates" (FAEs) for India's GDP growth in FY25.

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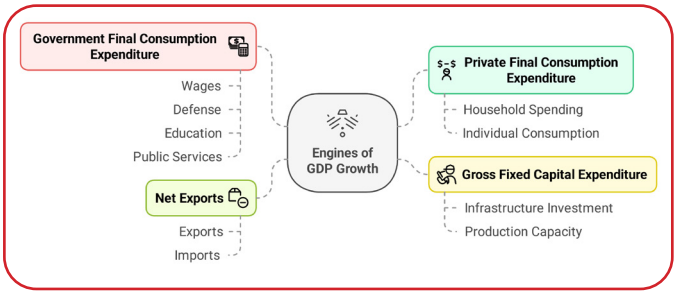
These estimates forecast the country's economic output, based on available data and past trends.

What is GDP?

- Gross Domestic Product (GDP) measures the monetary value of all final goods and services produced in a country within a specific period. It reflects total economic output, excluding intermediate goods.

Four Key "Engines of GDP Growth":

- **Private Final Consumption Expenditure (PFCE):** Spending by individuals and households on goods and services.
- **Government Final Consumption Expenditure (GFCE):** Government spending on wages, defense, education, and public services.
- **Gross Fixed Capital Expenditure (GFCF):** Investments in infrastructure and production capacity.
- **Net Exports (NX):** Exports minus imports.



Formula for GDP Calculation:

- GDP = Private Consumption + Gross Investment + Government Investment + Government Spending + (Exports - Imports)

Difference between Nominal GDP and Real GDP

- Nominal GDP represents the total value of all goods and services produced within a country's borders in a specific time period (quarterly or annually), calculated using current market prices, which includes inflation. It is useful for calculating the size of an economy but does not adjust for inflation, potentially distorting views of economic growth.
- Real GDP is the nominal GDP adjusted for inflation, providing a clearer picture of actual growth by removing price increase effects. It is especially important for policymakers to design economic strategies and control inflation.

GDP Forecast for FY25

- India's GDP for FY25 is projected to reach Rs 324 lakh crores, reflecting a 9.7% growth compared to FY24. This places India's nominal GDP at approximately $3.8 trillion, based on an exchange rate of 85 rupees per dollar. However, this estimate is lower than the Rs 328 lakh crores projected in the Union Budget.
- **Nominal GDP:** Expected at Rs 324 lakh crores, reflecting a growth of 9.7% compared to FY24.
- **Real GDP:** Estimated at Rs 184.9 lakh crores, accounting for 57% of nominal GDP.
- While nominal GDP growth is positive, it shows signs of deceleration:
  - » Since FY20, India's real GDP has grown at an average rate of 4.8%, which is notably lower than the 7% growth observed after the 1991 economic reforms.
  - » Nominal GDP growth has also slowed, with annual increases falling below 10%, compared to the historical average of 13.5% between 2003-04 and 2018-19.

What's Impacting GDP Growth?

India's GDP is influenced by four main components:

- **Private Consumption (PFCE):** Contributing around 60% to GDP, low growth in private consumption hampers overall GDP expansion. It's expected to grow by 7.3% this year, but since FY20, it has grown at just 4.8%.
- **Government Spending (GFCE):** Accounting for 10% of GDP, government spending grew only 4.2% in FY25, reflecting limited fiscal push despite attempts to stimulate the economy.
- **Investments (GFCF):** Accounting for around 30% of GDP, investments are expected to grow by 6.3% in FY25. However, investment growth has been waning since 2014, with businesses remaining cautious amid low private consumption.
- **Net Exports:** India traditionally imports more than it exports, which negatively impacts GDP. However, the gap between imports and exports has narrowed in recent years.

Global Water Monitor Report

Context: A recent report, the 2024 Global Water Monitor Report, has brought attention to the growing impact of

climate change on Earth's water cycle. This disruption has led to more frequent and severe extreme weather events, such as intense rainfall, floods, and droughts.

Key Findings of the report

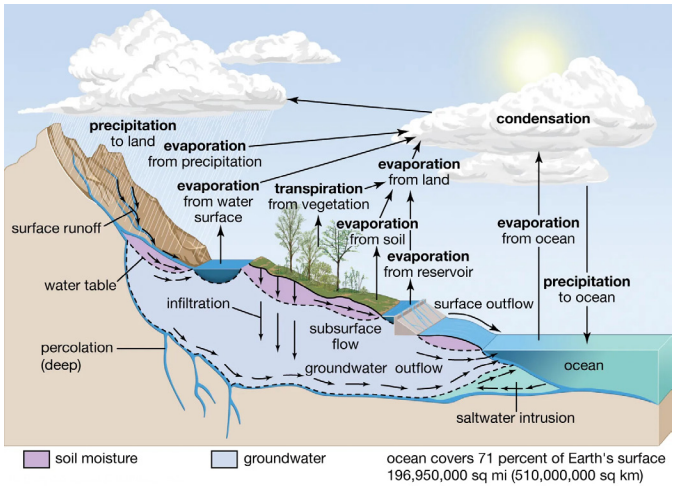
- The 2024 Global Water Monitor Report, produced by a team of international researchers from universities across Australia, Saudi Arabia, China, and Germany, sheds light on the devastating consequences of climate change on the water cycle. Key findings from the report include:
  - » **Fatalities and Displacement:** Water-related disasters in 2024 caused over 8,700 fatalities and displaced 40 million people, with economic losses exceeding $550 billion globally.
  - » **Increase in Dry Months:** The frequency of record-dry months in 2024 was 38% higher than the baseline period (1995-2005), reflecting the intensifying dry spells across the globe.
  - » **Rising Rainfall Records:** Rainfall records were shattered more frequently in 2024, with monthly rainfall records being set 27% more often than in 2000, and daily rainfall records occurring 52% more frequently.
  - » **Changes in Water Storage:** Global regions that were traditionally dry experienced a significant decline in terrestrial water storage (TWS), while regions in western, central, and eastern Africa saw increases in water reserves.
  - » **Future Projections:** For 2025, the report forecasts worsening droughts in northern South America, southern Africa, and parts of Asia, alongside heightened flood risks in wetter regions like the Sahel and Europe.

What is the Water Cycle?

- The water cycle, or hydrological cycle, is the movement of water in its solid, liquid, and gas forms through the Earth's atmosphere, oceans, and land. It is driven by solar energy and is essential for water availability and weather regulation. The cycle includes:
  - » **Evaporation:** Water turns into vapor due to the Sun's heat.
  - » **Transpiration:** Plants release water vapor through their leaves.
  - » **Condensation:** Water vapor cools to form clouds.
  - » **Precipitation:** Water returns as rain, snow, etc.
  - » **Infiltration and Runoff:** Water seeps into the ground or flows into rivers and streams.

How is Climate Change Impacting the Water Cycle?

- Climate change is intensifying the water cycle, causing more extreme weather. Higher temperatures increase evaporation, adding more moisture to the atmosphere. This leads to stronger storms and heavier rainfall, causing flooding. Conversely, warmer temperatures also increase evaporation from soils, leading to prolonged droughts. As temperatures rise, the water cycle will become more erratic, with wetter regions experiencing floods and drier areas facing greater droughts.



Implications of Climate Change on the Water Cycle

Climate change's disruption of the water cycle causes:

- **Extreme Weather:** More frequent heavy rainfall and droughts, disrupting food and water supplies, agriculture, and infrastructure.
- **Health Risks:** Floods contaminate water sources, and droughts reduce access to clean water, leading to health issues.
- **Economic Losses:** Water-related disasters cause financial burdens, particularly in agriculture and tourism.
- **Displacement:** Millions are displaced annually due to floods and droughts, especially in vulnerable areas.

Suggestions on How to Address Extreme Rainfall and Floods

To mitigate the effects of climate change on the water cycle, the following actions are recommended:

- **Strengthen Water Management:** Improve forecasting and invest in infrastructure to handle both floods and droughts.
- **Global Emissions Reduction:** Reduce greenhouse gas emissions to slow climate change and its impacts.
- **Adaptation Strategies:** Implement resilient infrastructure, better urban planning, and conservation of natural water systems in vulnerable regions.
- **International Cooperation:** Share resources and technologies globally to protect communities from water-related disasters.

India-U.S. Sonobuoy Co-Manufacturing Partnership

Context: India and the United States have launched a historic partnership to co-manufacture U.S. sonobuoys, a critical technology used for undersea domain awareness (UDA) to detect submarines in deep oceans. This move comes amid growing concerns about China's expanding naval presence in the Indian Ocean Region.

About Sonobuoys:

- Sonobuoys are buoy-based devices that detect submarines through acoustic signals. They play a vital role in undersea warfare, enabling the tracking and neutralizing of submarines. These devices are deployed from aircraft such as maritime patrol planes, helicopters, or UAVs, conducting wide-area searches that are crucial for naval defense operations.

Key Players:

- The co-manufacturing initiative involves Ultra Maritime, a U.S. leader in undersea warfare technologies, and Bharat Dynamics Limited (BDL), a state-owned Indian defense company. Ultra Maritime will provide expertise in sonobuoy design and production, while BDL will handle manufacturing and delivery within India.

iCET (Initiative on Critical and Emerging Technologies)

- This collaboration is a significant step under the U.S.-India Initiative on Critical and Emerging Technologies (iCET), launched in January 2023. The initiative focuses on fostering collaboration between the two countries in advanced technologies, especially in defense sectors like undersea domain awareness.

Significance for India:

- The partnership strengthens India's naval capabilities, allowing the Indian Navy to enhance its surveillance and detection abilities in the increasingly contested Indian Ocean Region. The sonobuoys produced in India will also be interoperable with U.S. Navy platforms and those of allied forces, including Australia and Japan. This interoperability promotes a strong defense ecosystem and strengthens India's strategic position in the Indo-Pacific, ensuring regional stability and maritime security.

India-U.S. Defense Relations: A Strong Foundation

The strategic defense relationship between India and the U.S. has evolved significantly over the years:

- **2005:** India and the U.S. initiated strategic dialogues, marking the beginning of deeper engagement.
- **2016:** India was designated a "Major Defense Partner," granting access to advanced technologies.
- **2018:** India received Strategic Trade Authorization Tier 1 (STA-1) status, facilitating easier access to U.S. military technology.
- **2018:** The establishment of the 2+2 Ministerial Dialogue further strengthened strategic cooperation.
- **2019:** The first tri-service exercise, "Tiger Triumph," took place, alongside the signing of the Industrial Security Annex (ISA) to allow U.S. companies to participate in India's defense production.
- **2021-2022:** India and the U.S. made progress on major defense deals, including acquiring MQ-9B drones and F-414 fighter jet engines.
- **2023:** The India-U.S. Defense Acceleration Ecosystem (INDUS-X) was launched to foster collaboration among defense companies, investors, and research institutions.

Conclusion:

The co-manufacturing of sonobuoys marks a key milestone in the growing India-U.S. defense collaboration, enhancing India's strategic maritime capabilities and fostering a robust defense ecosystem in the Indo-Pacific region

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Power Packed News

Israel launches digital e-Visa system for Indian travelers

- Recently Israel Ministry of Tourism (IMOT) has launched digital e-Visa system for Indian travelers from January 1, 2025. This process enables completely online application by eliminating paperwork.
- The move is part of strengthening India-Israel relations and simplifying tourism. Now Indian citizens can apply for visas from Israel's official portal. The process is fast, efficient and requires less documentation, which is convenient for solo travellers. However, the traditional system for group visas will continue.
- The e-Visa system is integrated with Israel's Entry Travel Authorisation (ETA) platform, ensuring speedy approval.
- India is an important market for Israel tourism, with 70,800 Indians visiting Israel in 2018.

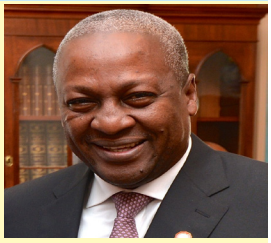
Battery energy storage system launched in South Delhi

- India's first Battery Energy Storage System (BESS) will be commissioned in Kilokari, South Delhi in the coming March 2025.
- It is a cluster of batteries with a capacity of 20 MW/40 MWh, which will supply power for four hours a day.
- This project, established with the help of BSES Rajdhani, will cost 120 crore. The project is approved by the Delhi Electricity Regulatory Commission. It is funded by the Global Energy Alliance for People and Planet (GEAPP).
- India aims to install 47 GW of BESS by 2032.

Flamingo festival to be held in Tirupati

- The Flamingo Festival will be held after five years in Tirupati district of Andhra Pradesh from January 18 to 20, 2025.
- The events will be held at five locations including Nelapattu, B.V. Palem and Sullurpeta. More than 200 bird species are expected to visit.
- Three-day sessions on environmental biodiversity will be held in Sri City and Nelapattu. Infrastructure development has been integrated with MNREGA.

John Mahama becomes President of Ghana



- John Mahama took oath as the President of Ghana for the third time.
- He will replace the current President Nana Akufo-Addo. Mahama was first sworn in as President in July 2012.
- John Mahama promised to tackle corruption, unemployment and economic crisis.
- He has been President from 2012 to 2017. His priority will be economic stability and good governance.

'Garudakshi' FIR system launched in Karnataka

- The Karnataka Forest Department has launched the 'Garudakshi' online FIR system for the prevention of forest crimes.
- It will enable online settlement of cases under Forest Conservation Acts.
- The system, developed in collaboration with the Wildlife Trust of India, has been implemented in five forest divisions.
- The Garudakshi software will be gradually implemented in all divisions.
- This advanced alert system will help authorities monitor illegal activities including felling of trees by tracking changes in forest area.

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IIT Madras launches Shallow Wave Basin Facility

- IIT Madras launched Asia's largest Shallow Wave Basin research facility at the Thaiyur campus.
- It will meet the technical requirements of coastal and marine engineering.
- The facility will help test 3D wave effects and study stability associated with climate change.
- It will also help in studying sediment transport, wave impact loading and structural stability in the face of climate change.

Banded Royal Butterfly Discovered in Tripura

- The Banded Royal Butterfly (Rachna Jalindra Indra) has been discovered in Sipahijala Wildlife Sanctuary in Tripura.
- It was first sighted on May 5, 2021.
- It is protected under Schedule II of the Indian Wildlife Act, 1972.
- It has three subspecies found in India.

Martin Guptill retires from international cricket

- New Zealand cricketer Martin Guptill has recently announced his retirement from international cricket after a career spanning 14 years. He scored 23 centuries and over 14,000 runs in 367 matches.
- Guptill played 47 Tests, 198 ODIs and 122 T20 matches. He holds the record of 237 not out in the 2015 World Cup.
- He is New Zealand's top scorer in T20 with 3531 runs. He is third in ODIs after Stephen Fleming and Ross Taylor with 7,346 runs.
- Guptill will continue to play in T20 franchise cricket.