VAJIRAM & RAVI
Institute for IAS Examination

The Analyst

CURRENT AFFAIRS Handout

5th June 2025

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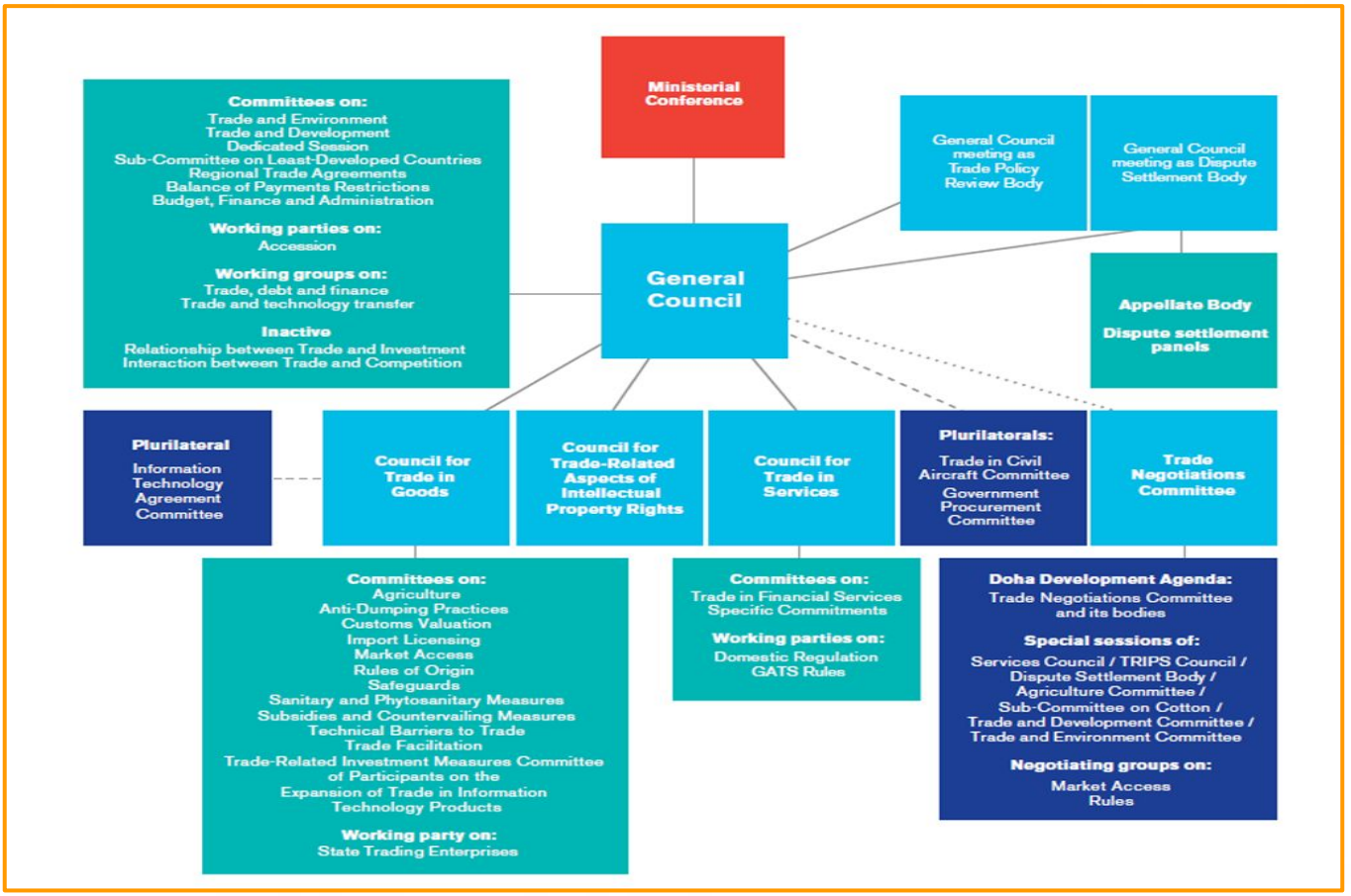
5th June 2025

WTO: Dispute Settlement & Barriers

CONTEXT: India has called for a strong dispute settlement mechanism at the WTO.



Governance Structure of the WTO

1. Ministerial Conference

- Highest decision-making body, every 2 years
- All members

2. General Council

- Day-to-day operations (Geneva)
- Acts as:
  - Trade Policy Review Body
  - DSB
- Oversees three key councils:
  - GATT, GATS, TRIPS Council

3. Dispute Settlement Mechanism

- DSB
- Panels & Appellate Body

4. Specialized Committees

- Agriculture, Market Access, Anti-Dumping, Subsidies, Safeguards, etc.

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Goals of the WTO

1. Economic Benefits
- Trade barriers
- Costs, choice, prices

2. Development & Equity
- Economic growth, employment in developing
- Weaker nations voice

3. Environmental & Social Goals
- No disguised trade barriers
- Balances trade with other priorities

4. Global Stability
- Peace
- Protectionism, uncertainty

GATT 1947 System

- **Article XXIII(2)**:
  - first attempt bilateral
  - Then, decisions by consensus
- Later independent panels - binding reports
- **Weaknesses**:
  - "Positive consensus" rule
  - veto power

Uruguay Round (1986-1994) – Birth of DSU

- **Key reforms**:
  - Negative consensus
  - Strict timelines:
    - 1 year for panel ruling.
    - 15 months if appealed.
  - Appellate Body for legal review
  - No unilateral blocking of rulings

Dispute Settlement Process Under WTO

1. **Consultation** (60 days)
2. **Panel Formation** (45 days)
   - Losing party cannot block
3. **Panel Report** (6 months) – Findings submitted to DSB
4. **Appeal** (60-90 days) – Reviewed by 7-member Appellate Body
5. **Implementation & Enforcement**:
   - "Reasonable period" for compliance
   - If non-compliance:
     - Compensation negotiations (20 days)
     - Trade sanctions (retaliation) authorized by DSB

Challenges in DSU

1. Sovereignty Concerns
- WTO panels reviewing domestic laws
- "Judicial lawmaking"

2. Appellate Body Crisis (2019-Present)
- U.S. blocked AB judge appointments
  - ad-hoc arbitration

3. Institutional challenges:
- Workload & delays
- Lack of transparency
- Bias risks

Case Studies of WTO Disputes

Agricultural Products (DS430)
- **Background (2012)**
  - U.S. challenged India's import bans
  - Panel & AB - No scientific basis, trade-restrictive
- **Lessons Learned**
  - Revised SPS measures
  - Need for evidence-based trade policies
  - WTO-compliant risk assessments

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Solar Cells & Modules (DS456)

- **Background (2013)**
  - U.S. challenged DCR under Solar Mission
  - Alleged violation of TRIMs & National Treatment rules
- **Lessons Learned**
  - Shifted focus to R&D, tax incentives, competitiveness
  - Trade vs. environmental goals balance
  - Innovation-driven policies over protectionism

Export Subsidies (DS541)

- **Background (2018)**
  - U.S. challenged India's MEIS export subsidies
  - Alleged violation of WTO's SCM Agreement
- **Lessons Learned**
  - Phased out MEIS, introduced WTO-compliant RoDTEP scheme
  - Tax/duty refunds over direct subsidies

Reform Suggestions for Disputes

1. Pre-Panel Dispute Resolution

- Mandatory mediation/conciliation
- Non-binding arbitration for sovereignty issues

2. Strengthening the AB & Panels

- Permanent judges
- Transparency reforms:
  - Public hearings.

3. Alternative Enforcement Mechanisms

- Monetary compensation
- Fines for non-compliance

4. Judicial Independence

- Standing WTO court with expert judges
- Clearer legal boundaries

Related WTO Ministerial Conferences

1. Doha (2001) – "Doha Development Agenda"

- Focused on developing nations' concerns:
  - Agriculture
  - TRIPS & Medicines
  - Special & Differential Treatment

2. Nairobi (2015) – Decline of Doha Agenda

- US: Doha Round "dead"
- New issues pushed: E-commerce, investment, competition policy
- Developing nations demanded:
  - Food security protections
  - Special Safeguard Mechanism (SSM) for farmers

Issues in WTO - AoA

1. Shrinking Policy Space

- MSP calculations flawed: 1986-88 ERP

2. Attacks on S&DT

- Input subsidies for "low-income farmers" (99.4% in India)
- Push to cap Development Box flexibilities

3. Food Security & Public Stockholding

- e.g, FCI procurement
- Need permanent solution

4. SSM

- Demand: Allow tariffs to counter import surges

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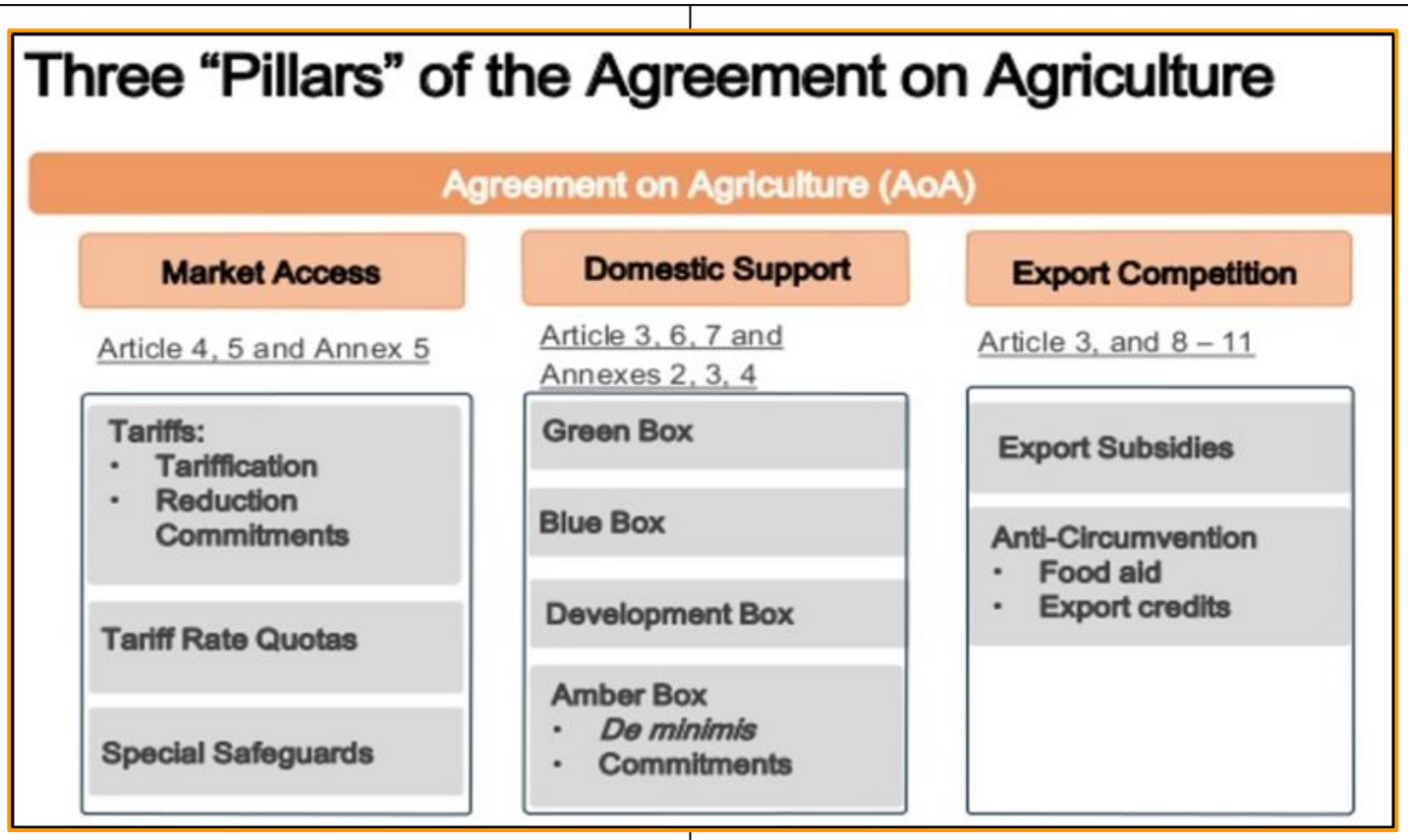

Recommendations

1. **Fix AoA imbalances**:
   - No AMS entitlements for developed
   - Update ERP
2. **Defend S&DT**:
   - No caps on Development Box subsidies
3. **Permanent solution** for public stockholding
4. **SSM** to counter import surges
5. **Reform export policies**:
   - Shift to WTO-compliant schemes
6. **Strengthen alliances**
7. **Domestic coordination**:
   - Inter-ministerial collaboration on WTO-compliant policies

MAINS PRACTISE QUESTION

"The Dispute Settlement Mechanism of the WTO has been central to enforcing global trade rules. Explain the process of dispute settlement under the WTO. What challenges has the mechanism faced in recent years, particularly with respect to the Appellate Body? Suggest reforms to enhance its effectiveness."

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India Middle East Europe Economic Corridor: West Asian Crisis

CONTEXT: Challenges faced by IMEC

About IMEC:

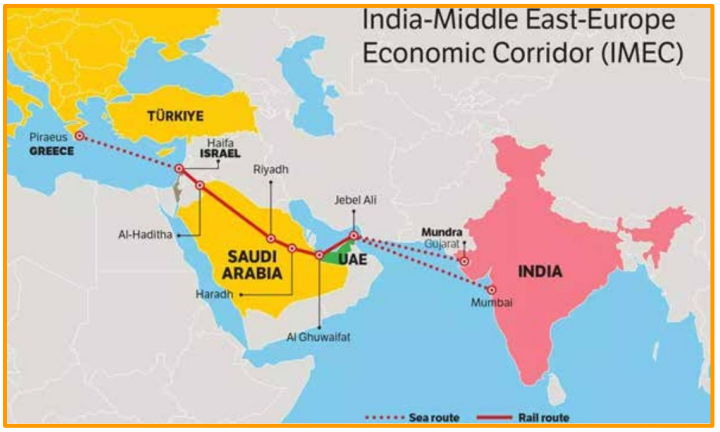
- Announced: September 2023
- India, US, UAE, Saudi, Italy, France, Germany, EU
- Aim: transport, data, RE, clean hydrogen corridor

Geopolitical & Geoeconomic Rationale

- From Abraham Accords, I2U2
- Saudi Arabia's inclusion
- peace train
- Recent conflicts

Impact of Regional Conflicts

- Houthi attacks on Red Sea shipping
- Egypt (Suez Canal) and Türkiye
- Arab-Israel tensions



Key Features of IMEC

1. **Transport Connectivity**
   - **Eastern Leg**: India to Haifa (Israel)
   - **Western Leg**
   - 40% faster than Suez Canal
   - **Challenges**: Weak rail networks in West Asia, Saudi-UAE economic rivalry, regulatory harmonization
1. **Digital Connectivity**
   - Undersea data cables
   - 5G networks
   - UPI integration
2. **Energy Connectivity**
   - RE grids
   - Energy Trilemma for Emerging Economies

Interconnected Grids for Renewable Energy

- **Challenge**: intermittent, costly battery storage
- **IMEC's solution**: Cross-border grid connectivity
- **Benefits for India**:
  - Import green energy
  - Export excess solar power
- **West Asia's potential**: High solar irradiance
- Supports India's OSOWOG initiative

Green Hydrogen Corridor

- for heavy industries & long-distance transport
- **India's plans**:
  - $2B incentive scheme for 5M tonnes/year production by 2030
  - Private sector investments
- **Challenges**:
  - High production cost
  - cheaper electrolyzers, tech-sharing
- **IMEC's role**:
  - export market for hydrogen
  - co-development of hydrogen tech

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India Middle East Europe Economic Corridor: West Asian Crisis

CONTEXT: Challenges faced by IMEC

Challenges

- **Competition with BRI**:
  - China-centric, "debt-trap diplomacy"
  - IMEC: Plurilateral partnership, mutual economic benefits
- **Geopolitical Risks**:
  - Israel-Hamas war
  - Saudi-UAE rivalry
- **Implementation Hurdles**:
  - Long gestation period
  - Harmonizing regulations across diverse economies
  - Infrastructure gaps: Rail networks
- **Financing IMEC**
  - G7's $600B infrastructure fund
  - UAE/Saudi investments
  - Islamic finance
  - EU's Global Gateway

Opportunity for India:

- **Counter "protectionist" tag**
- **Leadership in RE/digital trade**
- **Economic Opportunities:**
  - Trade with GCC ($184B/year)
  - Entry into global value chains
- **Infrastructure Synergies:**
  - Indian ports (Mumbai, Kochi) + Saudi/UAE rail networks
  - GCC investments
- **Financial Reforms Nudge:**
  - Sovereign risk funds
  - Regulatory easing
- **Supply Chain Resilience**
  - Trade costs
  - insulated against global shocks
  - India's labor/natural resources + EU/West Asia's markets

Concluding Remarks

- strategic counter to BRI
- geopolitical stability, multilateral coordination
- reshape trade routes, energy flows, and digital connectivity between Asia-ME-EU

MAINS PRACTISE QUESTION

"The India-Middle East-Europe Economic Corridor (IMEC) is being hailed as a transformative connectivity initiative. Discuss the key features of the IMEC and examine the strategic and economic opportunities it offers for India. Also, highlight the major challenges in its implementation."

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Indian Railways: Net Zero Path

SYLLABUS : GS Paper 3: Infrastructure: Railways
Newspaper : Indian Express **Page No :** 12

ON THE GREEN TRACK

Indian Railways is helping the country move closer to its net zero goal

ASHWINI VAISHNAW

EVERY TIME YOU choose to travel by train, you are not just choosing comfort or convenience — you are choosing a cleaner, greener Bharat. More than 700 crore people chose to travel in Indian Railways last year. It's our lifeline, and a green promise for tomorrow.

Indian Railways is helping the country move closer to the Panchamrit goals set by Prime Minister Narendra Modi — net zero by 2070. It is enabling this through a multi-pronged approach: By shifting traffic from road to rail and powering operations with cleaner, greener energy sources. Together, these moves are helping India decarbonise its economy at scale.

In 2013-14, Indian Railways carried about 1,055 million tonnes of cargo. This has increased to 1,617 million tonnes in 2024-25, making our railway the second-largest cargo-carrying railway in the world. Using the computations done by experts, this shift of cargo from road to rail has helped our country save over 143 million tonnes of CO_2 emissions. That's like planting 121 crore trees.

Transporting goods by rail costs nearly half of what it does by road. This means big savings, not just for businesses, but for the entire economy. This shift has helped save Rs 3.2 lakh crore in logistics costs over the past decade. Railways are also much cleaner, releasing 90 per cent less carbon dioxide than trucks. That's less smoke in our skies and cleaner air for us. This road-to-rail transition has saved us 2,857 crore litres of diesel, roughly translating to savings of Rs 2 lakh crore in fuel costs.

Railways are also much cleaner, releasing 90 per cent less carbon dioxide than trucks. That's less smoke in our skies and cleaner air for us. This road-to-rail transition has saved us 2,857 crore litres of diesel, roughly translating to savings of Rs 2 lakh crore in fuel costs.

India imports oil. Therefore, it makes strategic sense to electrify our transportation sector so that our dependence on imports is reduced. In the 60 years before 2014, Indian Railways electrified 21,000 km of track. And in the past 11 years, we have electrified 47,000 km. Today, 99 per cent of our broad-gauge network is electrified.

Indian Railways is increasingly using green energy for stations, factories and workshops. Now, it is working with states to get more green energy for running the trains. This will all lead to India achieving its net zero goal.

Building on this momentum, dedicated freight corridors (DFCs) are electrified, high-capacity railway lines designed exclusively for goods transport. With 2,741 km operational, DFCs have eased congestion on roads and significantly reduced diesel consumption and carbon emissions.

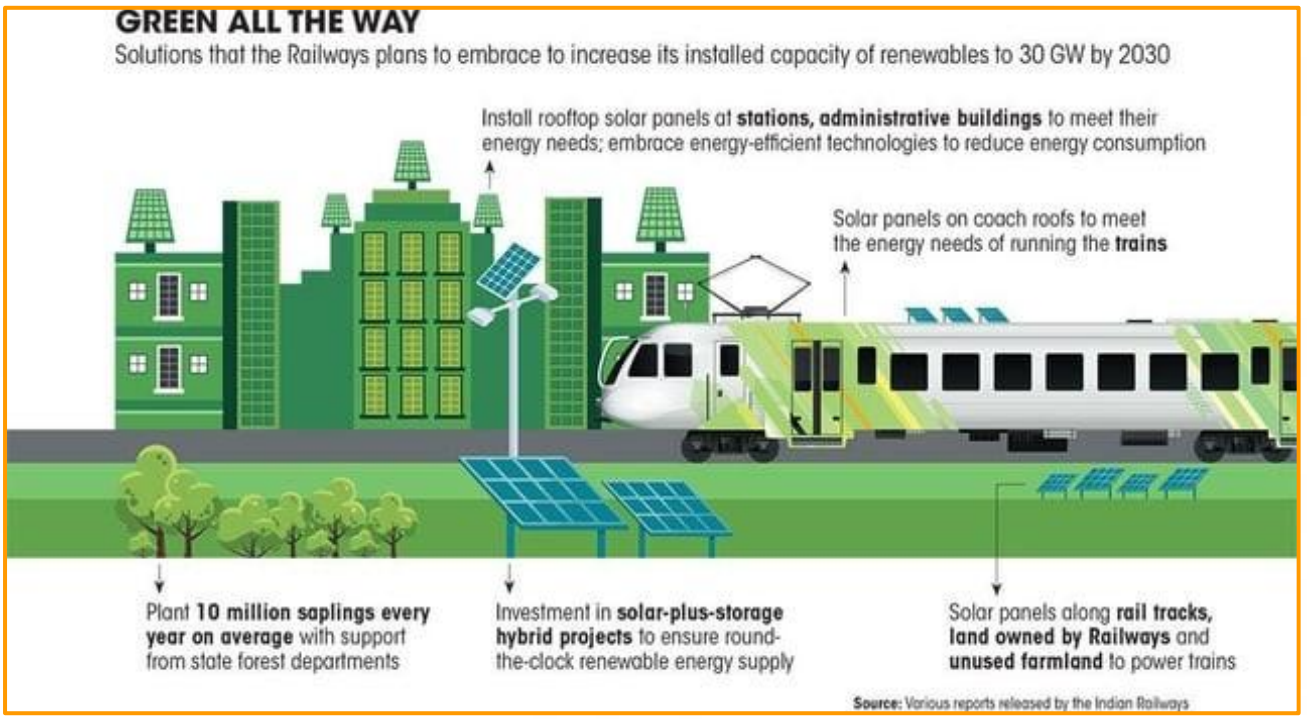
India is also embracing modern, zero-emission technology like the hydrogen-powered train. The first train will run between Jind and Sonipat in Haryana and carry up to 2,600 passengers. It will be the most powerful and longest hydrogen train in the world.

India is proving that economic growth and ecological responsibility can, and must, go hand in hand. According to the World Bank's Logistics Performance Index 2023, India now ranks 38 out of 139 countries, a jump of 16 places since 2014. The expansion of railway electrification has reduced costs and emissions. It has also increased speed and capacity, helping India move closer to world-class logistics standards.

PM Modi set 2030 as the year to achieve net zero for Indian Railways. Due to the accelerated electrification and large-scale shifting of cargo from road to rail, Indian Railways is on track to achieve net zero (scope 1) within 2025.

On this World Environment Day, Indian Railways reaffirms its commitment to sustainable development. Every electrified track, every solar panel placed, and every freight container off the road is a promise — to our people and our planet.

The writer is Minister of Railways, Electronics and Information Technology, and Information and Broadcasting, Government of India



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Indian Railways: Net Zero Path

SYLLABUS : GS Paper 3: Infrastructure: Railways
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- Transport sector GHG - 12% (4% rail)

Railway Measures for Net Zero by 2030

- For Reducing Carbon Emission
  - 142 MW solar rooftop capacity, 103.4 MW of Wind energy (August, 2022)
  - Electrification, DFCs Green certification of Railway Establishments
- Additional Carbon sink by Afforestation
  - on vacant railway land
  - planting 1 crore trees annually
- Waste Management
  - Waste to energy/compost/biogas plants
  - Environment-friendly Bio-toilets
- Green certification
  - Consent to operate (CTO) from State Pollution Control Board
- Exploring partnerships with Solar Energy Corporation of India (SECI), NTPC, MNRE

Environmental Impact & Achievements

- 700 crore passengers
- Shift from road to rail saved 143 million tonnes of CO_2 (equivalent to planting 121 crore trees)
- 90% less CO_2 emissions compared to trucks
- 2,857 crore litres of diesel saved (worth ₹2 lakh crore)
- ₹3.2 lakh crore saved in logistics costs over the past decade

Electrification & Renewable Energy Push

- 47k km electrified in the last 11 years
- 99% of broad-gauge network electrified
- Green energy adoption for stations, workshops, and trains
- Dedicated Freight Corridors (DFCs) – reducing congestion and emissions
- Hydrogen-powered train (Jind-Sonipat)- world's most powerful

Economic Impact

- Logistics Performance Index rank to 38 (2023) from 54 (2014)
- Reduced oil imports
- rail freight 50% cheaper than road

Future Goals

- Net zero (Scope 1) target advanced to 2025
- Supports India's Panchamrit goals (Net Zero by 2070)

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India Germany

SYLLABUS : GS Paper 2: Effect of Policies and Politics of Developed and Developing Countries on India's interests
Newspaper : Indian Express **Page No :** 13

Our open society's offer

Germany's universities and research ecosystem have — and want — Indian talent

PHILIPP ACKERMANN

FROM A GERMAN point of view, the Indian diaspora seems to have a magic formula for success. They climb to the highest ranks around the world, particularly in Europe and North America. They succeed in the economy, in education, and in research. What do they bring to the table? A culture where education and learning are highly regarded, where grit and determination are a necessity, and where being adaptable and nifty is a way of life.

What is it that we offer? An open society, an internationalised economy and education landscape, and a framework where hard work and skill are rewarded. When smart and well-educated Indians plan parts of their career outside India, they usually think of the English-speaking world first. But I think that the smartest Indians should actually start thinking about Germany. Why? Let me give you a few reasons.

Germany is built on a tradition of science and education. Compulsory education was a German invention, and the modern university was shaped in 19th-century Germany. German scientists dominated the Nobel Prize during the first 50 years of its existence. For the longest time, the tiny university town of Göttingen had the highest Nobel Prize rate per capita. Almost 50 Nobel Prizes are linked to its university.

The beauty of this story is that it would not have been possible without the minds of those who were also shaped outside of Germany. For excellent science, brilliant ideas need to travel freely, and so do brilliant people. Many of our world-famous scientific organisations are built on this principle — be it the Humboldt Foundation, the Max Planck Society, the Helmholtz Institutes, the DFG, or Fraunhofer. Thirty-one researchers of the Max Planck Society have won Nobel Prizes in natural sciences. If you go through the list, you will find a lot of names that do not sound very German. It is an open, internationalised organisation, and that is why it is so strong.

One of the most inspiring stories written by our accessible and welcoming scientific landscape is that of the pharmaceutical company BioNTech. Founded less than 20 years ago, it is now valued at almost $30 billion. With its groundbreaking mRNA technology, it helped address the global Covid pandemic. Its founders? One was born in Turkey; the other is a second-generation migrant from Turkey. Who knows from which country the founders of the next BioNTech will come to Germany?

German educational institutions do not select their students and scientists based on economic criteria. We are not looking for the richest minds in the world but for the smartest. You will find that German institutions offer world-class education and research facilities while being very affordable. German science is so accessible because there is a lot of money in it. We are not setting up high economic walls around our research and education institutions. To a large extent, the German education and research ecosystem is financed by taxpayers' money to make it as accessible as possible. Excellent quality, excellent equipment, excellent researchers — all backed by public spending. The private sector adds to this — it opens the way for applied research, for large interdisciplinary teams, and for bringing your ideas to the market. Some German companies have annual research budgets that only a few national research budgets around the world can actually match.

It is no secret anymore that Germany is a very interesting destination for Indian students. There are 50,000 already in Germany. State universities have had excellent experiences with students from India. And up to 18 months after graduation, they can look for a job in Germany. Right now they will find many job offers, particularly in the STEM field. Germany, an engineering nation, is offering a lot of opportunities.

There is, of course, the question of the language barrier. Be assured, English is the language of science – and Germany is no exception to this. If you want to buy freshly baked bread rolls on your way to your lab, you might have to master the intricacies of the German language. But if you want to run one of the state-of-the-art particle accelerators in Germany or crack the riddles of quantum physics in one of our beautiful university towns, English will do the trick. We believe that we should select international students based on their talents and their dedication, and not based on what they say on social media. Of course, you will have to prove that you are smart, ambitious, dedicated, and industrious — that is important for us. Indians have an excellent reputation in our science landscape — and we want to invite more brilliant Indians to come to Germany. You are very *willkommen!*

The writer is Germany's Ambassador to India

Timeline

- **1951** – Diplomatic relations established
- **2000** – Strategic Partnership Agreement signed
- **2005** – Indo-German Consultative Committee formed
- **2011** – Biennial Intergovernmental Consultations (IGC) launched
- **2019** – 1.5 Track Dialogue initiated under IGC

Significance of the Partnership

1. Trade & Investment

- Largest European trade partner ($33.33 bn in 2023)
- 9th FDI source ($ 14.5 bn, 2000-2023)
- India's skilled workforce & digital growth

2. Climate & Sustainability

- €10 bn commitment under Green & Sustainable Development Partnership (2022)
- supports ISA & CDRI
- solar energy, agro-ecology, green tech

3. Technology & Innovation

- Indo-German Science & Tech Centre
- Women in Science & Engineering Research (WISER)

4. Defense & Security

- 2006 Defense Cooperation Agreement, JWGs on Counter-terrorism, Cybersecurity, Defense collaboration
- Joint exercises: Ex MILAN, PASSEX, TARANG SHAKTI-1

5. China+1 Strategy

- EU tariffs on Chinese EVs
- India as an alternative manufacturing hub

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India Germany

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Challenges in Bilateral Relations

- Trade Barriers:
  - CBAM
  - Bureaucratic hurdles limit German FDI
- Geopolitical Differences:
  - India's neutrality on Russia-Ukraine
  - Germany's economic reliance on China
- Human Rights Criticisms:
  - German critiques on Kashmir, press freedom

Way Forward

- Early conclusion of India-EU FTA
- Indo-Pacific engagement: naval exercises, infrastructure investments
- Clean tech collaboration: Electric mobility, green hydrogen, renewables
- Supply chain resilience: Diversifying semiconductors, auto parts, pharma away from China
- Support for 'Make in India' in high-tech manufacturing.

Success of the Indian Diaspora

- Global leaders in business, academia, research
- Strong cultural values + Highly skilled

Germany's Strengths for Indian Talent

- Rich Academic & Scientific Legacy Nobel Prize dominance (50+ linked to Göttingen University alone)
  - World-class research institutions:
    - Max Planck Society (31 Nobel laureates)
    - Humboldt Foundation, Helmholtz Institutes
- **Open & Merit-Based System**
  - No economic barriers – education/research funded by taxpayers
  - PPP for applied research & innovation
- **Success Stories in Innovation**
  - BioNTech (mRNA Covid vaccine) – Founded by Turkish immigrants
  - Thriving startup & corporate R&D ecosystem
  - German firms invest heavily in research (rivaling national budgets)
- **Opportunities for Indian Students & Professionals**
  - 50,000+ Indian students already
  - High demand in STEM fields
- **Language & Integration**
  - English used in academia/research
  - Welcoming culture for skilled migrants

Observation

- Germany seeks talent, but brain drain???
- You are very *willkommen*!

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Battery Energy Storage Systems

SYLLABUS : GS Paper 3: Infrastructure: Energy
Newspaper : The Hindu **Page No :** 7

BESS in India's clean energy transition

Saurabh Kumar
Vice president, India, Global Energy Alliance for People and Planet

Harsh Shah
CEO & Executive Director, IndiGrid

The climate crisis has changed the idea of energy security. A country's energy sources must stand firm on four planks: availability, accessibility, affordability, and environmental acceptability. Environmental acceptability focuses on the trade-offs policymakers and the public are willing to make in terms of pollution, biodiversity loss, and greenhouse gas emissions. In this context, renewables have strengthened their position as an energy source that provides affordable power with lower emissions. They are important for the fulfillment of Sustainable Development Goal 7, which focuses on access to clean energy.

The case for integrating green energy into power systems is further strengthened by looming climate risks and geopolitical tensions. However, increasing renewable energy capacity may not have the desired results due to the intermittent nature of the resource. Energy storage technologies, such as Battery Energy Storage Systems (BESS), offer a crucial solution to mitigate the variability of renewable energy while enhancing grid stability.

Why energy storage matters

With the potential to enhance grid operations, enable large-scale integration of renewables, and provide reliable power, energy storage systems are critical to the energy transition. Among the technologies available, BESS stands out for its affordability, scalability, rapid deployment, and geographical flexibility.

By stabilising the grid, balancing demand-supply fluctuations, and enabling peak load management, BESS plays a foundational role across all forms of energy storage. Integrating BESS into the grid with renewables can considerably reduce greenhouse gas emissions from the power sector. Further, its ability to support decentralised energy solutions and microgrids ensures renewable energy reaches where it is needed most, making BESS a key enabler of a cleaner, more resilient, and equitable energy ecosystem.

Among the technologies available, BESS stands out for its affordability, scalability, rapid deployment, and geographical flexibility

Declining costs and technological advancements lead to the accelerating expansion of BESS. Over the past 15 years, the average cost of batteries has fallen by nearly 90%. However, despite this progress, utilisation of its full potential is impeded by regulatory, technical, financial, and market barriers.

India's BESS Landscape

Emerging economies such as India can lead by example in BESS deployment through a combination of financing and policy measures. India has set a target of 500 GW of installed power capacity from non-conventional fuels by 2030. As of January 2025, the country had already achieved 217.62 GW. To achieve full results, BESS deployment must be accelerated.

WORLD ENVIRONMENT DAY 2025

In this regard, the government has committed to installing 47 GW of BESS by 2032 to enable increased renewable deployment and its integration with the grid. Schemes such as Viability Gap Funding and waiver of interstate transmission system charges for BESS projects commissioned by June 2025 have been enacted to support BESS projects.

But progress has been slow. In the Economic Survey 2024-25, the Indian government highlighted the challenges associated with scaling up renewable energy and energy storage deployment – including the lack of investment for grid upgradation, speed of BESS deployment by large customers, access to critical minerals needed for indigenisation of storage technology, and delays in large-scale BESS agreements. The survey called for focusing on innovation and investment for resolving challenges in procuring battery storage, grid infrastructure, and critical minerals.

Innovative partnerships can help scale up BESS deployment. Using an alliance of public, private, and philanthropic entities can provide concessional funding and technical assistance for BESS.

Following the idea of leveraging collaboration to bring results, the BESS pilot project was initiated in Delhi by BSES Rajdhani Private Limited in partnership with IndiGrid Infrastructure Trust and Global Energy Alliance for People and Planet (GEAPP). The project marks a significant step forward toward India's goal of 47 GW of energy storage by 2030, creating a technical playbook for BESS adoption, supporting regulatory reforms, and incentivising future BESS projects.

Facilitating more such initiatives will be key to increasing BESS deployment in India, fulfilling SDG 7 commitments, enhancing energy security, and improving grid stability.

Emerging as a leader

India has been emerging as a leader in renewable energy deployment. The reasons for increasing renewables in the energy supply are to reduce emissions and create independence from imports of conventional fuels. However, the full potential of renewable energy cannot be achieved without energy storage. To become energy secure, India must complement its renewable energy capacity with BESS.

With partnerships, expeditious large-scale BESS projects for central and State grids, concessional financing, technological aid, manufacturing localisation, and recycling opportunities, India can utilise BESS to its fullest extent. This can make India a leader among emerging economies in terms of BESS projects.

As a member of the BESS consortium, founded by GEAPP, India has been focusing on deploying energy storage to ensure any increase in renewable energy power capacity can be utilised to its full potential. With more alliances, India can emerge as an energy-secure nation with flexible grids and increased renewable deployment.

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Battery Energy Storage Systems

SYLLABUS : GS Paper 3: Infrastructure: Energy
Newspaper : The Hindu **Page No :** 7

Why

- Renewable energy transition
- Grid stability - intermittancy
- Energy security, peak load management, EV integration

BESS Technologies

1. **Lithium-Ion Batteries** – Most common (high efficiency, fast response)
2. **Flow Batteries** – Long-duration storage, better cycle life
3. **Solid-State Batteries** – Emerging tech (higher energy density, safer)
4. **Lead-Acid Batteries** – Low-cost but shorter lifespan
5. **Chemical Energy Storage** – Stores energy in chemical bonds

Challenges in BESS

- **High Costs** – Expensive tech, import
- **Supply Chain Risks** – Li, Co, Ni
- **Environmental Concerns** – recycling & disposal risks
- **Efficiency Decline** – Battery degradation over time
- **Policy Uncertainty** – Lack of clear incentives
- **Safety Risks** – Fire hazards in Li-ion batteries

Govt Initiatives

- **National Energy Storage Mission** – for domestic manufacturing
- **PLI Scheme** – ₹18,100 crore for battery production
- **VGF for BESS** – ₹3,760 cr - 4 GWh projects
- **Energy Storage Obligation** – Mandates storage-backed renewables
- **Green Hydrogen Policy** – Promotes BESS for hydrogen projects
- **FAME, SECI & NTPC Pilots** – Boosts storage adoption

Redefining Energy Security

- 4 pillars: Availability, Accessibility, Affordability, Environmental Acceptability
- Clean energy access (SDG 7)
- Climate risks & geopolitical tensions

India's BESS Landscape

- **Targets**:
  - 500 GW non-fossil capacity by 2030 (217.62 GW achieved by Jan 2025)
  - 47 GW BESS by 2032
- **Challenges**:
  - Slow grid upgrades & BESS deployment
  - Critical mineral shortages (Li, Co)
  - Financing gaps for large-scale projects

Way Forward for India

- **Expedite large-scale BESS projects** for central/state grids
- **Boost local manufacturing** (gigafactories, alternative chemistries)
- **Secure critical minerals** via global partnerships & domestic mining
- **Enhance recycling** & second-life battery use
- **Leverage alliances** (e.g. BESS consortium)

The Analyst Handout

5th June 2025

Census of 1931

SYLLABUS : GS Paper 1: Modern Indian History - significant events, issues
Newspaper : Indian Express **Page No :** 22

EXPLAINED HISTORY

The Census of 1931

The last caste census took place in 1931. This data will form the baseline for the count of members of various castes in the upcoming Census. This is the story of Census of 1931, how it was conducted, and what it found

SHYAMLAL YADAV

THE CENTRE on Wednesday announced that the much delayed Census 2025 will be held in two phases beginning October 1, 2026 and March 1, 2027.

This will be the first Census since 1931 to capture granular caste data, beyond the broader classifications of Scheduled Castes [SCs] and Scheduled Tribes [STs] that have been enumerated in every post-Independence Census.

Some of the debates that took place around the exercise in 1931 continue to be relevant even today. As are questions of methodology, which were discussed in detail in the 518-page report compiled by Census Commissioner John Henry Hutton. Here's a brief history.

Context of the Census

In 1931, British-ruled India stretched from Baluchistan [Balochistan] in the west to Burma [Myanmar] in the east. Hutton, an ICS officer and an anthropologist by training, wrote about the logistical challenges in his report:

"The taking of the decennial census in India involves the cooperation of more than one-sixth of the world's population over an area of nearly two million square miles [around 50 lakh sq km]... Enumerators' duties were often an onerous physically... [For instance] in Baluchistan the average enumerator had a block of 836 square miles [2,165 sq km]..."

The Rajahs faced political challenges. The 1931 Census and preparations for it took place as civil disobedience swept across much of the country. "... [This] census like that of 1921 had the misfortune to coincide with a wave of non-cooperation, and the march of Mr Gandhi and his contrabandista to invest the salt-pans of Dharasana synchronised with the opening of census operations," Hutton complained.

The Gandhi-Irwin Pact of March 5, 1931, which effectively ended the Civil Disobedience Movement, was signed a week after the date of enumeration on February 27.

The Congress boycotted the Census, observing January 11, 1931 as "Census Boycott Sunday". Hutton's report, however, claimed that the boycott "was not taken up with any real enthusiasm" on the ground except for in some cities in Gujarat like "Ahmedabad (Ahmedabad), Broach (Bharuch) and Surat" and a few Mumbai suburbs like "Chat hapar and and Vilaparle (Vile Parle)". The Congress' boycott, Hutton wrote, "had very little ultimate effect on the taking of the census".

What did have an effect, however, was the Great Depression and the economic distress it brought. "It was another of the misfortunes of the 1931 census that it coincided with a fall in revenue and a period of economic depression which...left me no choice but to cut expenditure as fine as possible and to goad my Census Superintendents unremittingly in an attempt to finish sooner and spend less," Hutton wrote.

The 1931 Census cost the exchequer Rs 48.76 lakh compared to roughly Rs 40 lakh spent on the Census a decade previously. Even in absolute terms — not taking inflation into account — the 1931 Census was cheaper per capita than a decade earlier, costing Rs 12.8 per thousand population compared to Rs 14 per thousand population in 1921.

One way in which the Census depressed costs was by not paying the nearly 20 lakh enumerators who collected the data. These enumerators, often teachers or low-level government servants, had to collect and collate Census data in addition to other quotidian tasks.

Hutton also mentioned other challenges such as the Bhils refusing to have their houses numbered on "superstitious grounds", and of enumerators in "less law-abiding places" getting beaten up by locals.

At places, enumerators were attacked by wild animals. "Here and there wild beasts interfered instead of wild men, and the Administrator of Bastar State when inspecting census work on the right itself, was attacked by a tiger, which sprang onto the bonnet of his car, but finding the gaze and the radiator too hot for him failed to make an end either of the inspector or his inspection," Hutton wrote.

Key findings of Census

The 1931 Census captured crucial demographic data about [undivided] India and its people.

■ It found the total population of British India (including Burma and various princely states) to be 35.05 crore, up from 31.89 crores a decade ago. This equated to a decadal population growth rate of 10.03%, much higher than in the last three cycles. (It was 2.2% in 1891-1901, 7.4% in 1901-11, and 1.2% in 1911-21.)

Hutton cited significant improvements in public health (particularly a reduction of deaths from the bubonic plague, cholera, and smallpox), an absence of major epidemics and, interestingly, the "universality of marriage" as the reason for the population growth.

"...[It] is enough to point out that in India the birth rate is much higher than in Europe, largely on account of the universality of marriage, the Parsis being perhaps the only Indian community in which late marriage and small families are the rule instead of the exception," the report noted.

■ The distribution of this population, however, was far from uniform. While the overall population density was 85 persons/sq km, Chagai, Baluchistan, had a density of less than 1 person/sq km, the lowest in India. All of Baluchistan had a population density of only 2.5 persons/sq km.

On the other hand, Cochin State on the southwestern coast had a population density of 1800 persons/sq km, the highest in the country. One particular village in the princely state had a population density 1,635 persons/sq km.

Also populous was the Dhaka Division of the province of Bengal, with a population density of 375 persons/sq km.

"[The] variation of density of population in India depends not on industry, as in the United Kingdom, but on agriculture, and is greatest of course in the most fertile areas," Hutton's report said. However, "the actual rate of increase in population [was] the greatest in the less populated and less fertile areas", it noted.

This, Hutton reasoned, was due to dynamics of internal migration. "Where, therefore, there is a population already dense, there is a clearly perceptible spread towards the less profitable land," the report said.

■ Calcutta [now Kolkata], with a population of 14.85 lakh, was the most populous city in British India, followed by Bombay [Mumbai] with 11.81 lakh, Madras [Chennai] with 6.47 lakh, Hyderabad [4.66 lakh] and Delhi [4.47 lakh].

Besides these, Lahore, now in Pakistan, and Rangoon [Yangon] in Burma, were the only other cities that had a population of more than 4 lakh at the time.

The enumeration of castes

Like in earlier censuses, the 1931 Census enumerated individual castes among the Hindu population. This exercise faced strong opposition in Punjab; even in the previous Census of 1921, a total of 20,993 Hindus — about half of them from Bahawalpur State — had declared their caste as "unspecified" due to the influence of Arya Samaj.

Hutton wrote in his report: "[it is] difficult to see why the record of a fact that actually exists should tend to stabilize that existence. It is just as easy to argue and with at least as much truth, that it is impossible to get rid of any institution by ignoring its existence like the proverbial ostrich, and indeed facts themselves demonstrate that in spite of the recognition of caste in previous decades the institution itself is undergoing considerable modification. Indeed the treatment of caste at the 1931 census may claim to make a definite, if minute, contribution to Indian unity."

The 1931 Census put 15 questions to respondents, the eighth of which was on "Race, Tribe or Caste". This question had appeared in every Census from 1872 — when the first Census was conducted — onward.

Thus, in the questionnaire of 1872, the fifth of 17 questions was on "Caste or Class"; in 1881, the last of 13 questions asked for "Caste, if Hindu, sect, if of other religion"; in 1891, the fourth of 14 questions was on "Caste or race-Main caste", and the fifth was on "Sub-division of caste or race".

In the 20th century, the 1901 and 1911 censuses (16 questions each) had a question on "Caste of Hindus & Jains, Tribe, or race of others". In 1921, the eighth of 16 questions was "Caste, Tribe or Race".

In the 1931 Census, 18.83 lakh people, including 60,715 Hindus, gave the response "caste nil"; 98% of them were from Bengal. The report said that no return of caste was insisted on from Arya or Brahmo Hindus.

Given challenges such as the use of different surnames for the same caste, the Census report noted "the difficulty of getting a correct return of caste and likewise the difficulty of interpreting it for census purposes".

The Census Superintendent for Madras wrote: "Had caste terminology the stability of religious returns, caste sorting might be worthwhile. With the fluidity of present appellations it is certainly not... Individual fancy apparently has some part in caste nomenclature."

NEXT: THE CENSUS OF 1941

Key Takeaways

35.05 cr	185 cr	85	225
population of (undivided) India	estimated population of the world	persons per sq km density of population	number of dialects in India

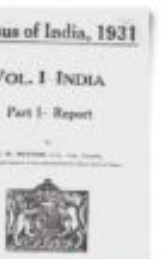
DENSITY OF POPULATION

LOWEST: Chagai (Baluchistan), less than 1 person per sq km

HIGHEST: South west coast, Cochin State, almost 1800 persons per sq km

THREE BIGGEST CASTES IN MAJOR PROVINCES

BENGAL	
Kaibartta	27.33 lakh
Namasudra	20.94 lakh
Rajbansi (Kshatriya)	18.06 lakh
BIHAR AND ORISSA	
Goala (Ahir)	34.55 lakh
Brahman	21.01 lakh
Kurmi	14.52 lakh
BOMBAY	
Kunbi (including Maratha)	64.34 lakh
Mahar (Holiya and Dhed)	14.38 lakh
Brahman	11.28 lakh
CENTRAL PROVINCES AND BERAR	
Mehra	13.07 lakh
Kunbi	12.81 lakh
Teli	10.22 lakh
MADRAS	
Brahman	14.73 lakh
Pallan	8.57 lakh
Telaga	6.99 lakh



PUNJAB (INCLUDING DELHI)	
Arain	13.34 lakh
Chamar	11.48 lakh
Chuhra	11.14 lakh
UNITED PROVINCES OF AGRA AND OUDH	
Chamar	63.12 lakh
Brahman	45.55 lakh
Ahir	38.96 lakh

POPULATION OF MAJOR RELIGIOUS GROUPS

*Census included 'Tribal' under religious groups

CENSUS STORY
PART 1

The Analyst Handout
5th June 2025

Census of 1931

SYLLABUS : GS Paper 1: Modern Indian History - significant events, issues
Newspaper : Indian Express **Page No :** 22

Upcoming Census (2026-27)

- Phases:
  - First phase: October 1, 2026
  - Second phase: March 1, 2027
- Key feature: First caste-based Census since 1931 (beyond SC/ST data)

Historical Context: 1931 Census

1. Logistical Challenges

- Covered British India (Balochistan to Myanmar)
- Enumerators faced:
  - Vast areas
  - NCM (Gandhi's Salt March coincided)
  - Economic distress (Great Depression reduced funding)
- Enumerators unpaid (20 lakh teachers/govt staff volunteered)

2. Political & Social Resistance

- Congress boycott ("Census Boycott Sunday" – Jan 11, 1931)
  - Limited impact except in Gujarat (Ahmedabad, Surat) & Mumbai
- Local challenges:
  - Bhils refused house numbering ("superstitious grounds")
  - Enumerators attacked in some regions
  - Tiger attack in Bastar (interrupted inspection)

3. Findings

- Population: 35.05 crore (10.6% growth vs. 1.2% in 1911-21)
  - Reasons: Improved healthcare, no major epidemics, universal marriage
- Population Density:
  - Lowest: Chagai, Baloch (<1/sq km)
  - Highest: Cochin State (800/sq km), Dhaka Division (375/sq km)
- Major Cities:
  - Kolkata (14.85L) > Mumbai (11.61L) > Chennai (6.47L)

Caste Enumeration in 1931

- "Race, Tribe or Caste" (asked since 1872)
- Opposition in Punjab: Arya Samaj influenced Hindus to declare "caste unspecified"
- 18.83 lakh people reported "caste nil" (98% from Bengal)
- Challenges:
  - Fluid caste terminology (e.g., same caste with different surnames)
  - Madras Superintendent: "Caste sorting is not worthwhile due to fluid appellations"

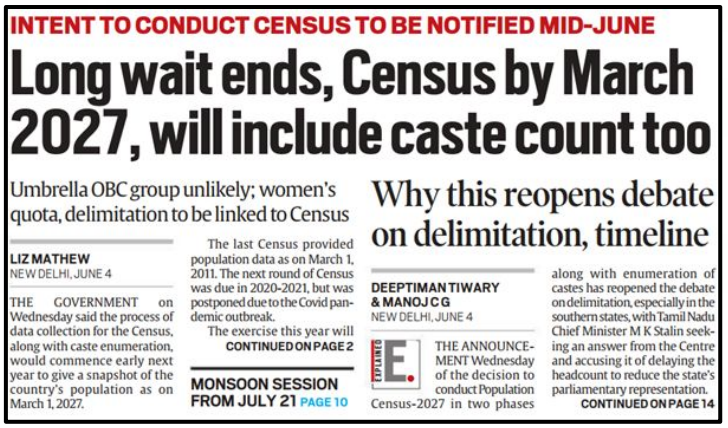
Relevance for Census 2026-27

- **Debates continue**: Methodology, caste data utility, political implications
- **Lessons from 1931**:
  - Balancing accuracy vs. social resistance
  - Addressing logistical hurdles in diverse regions

The Analyst Handout
5th June 2025

Census: Caste Count & Delimitation

SYLLABUS : GS Paper 1 : Population and Associated Issues
Newspaper : Indian Express **Page No :** 1



INTENT TO CONDUCT CENSUS TO BE NOTIFIED MID-JUNE

Long wait ends, Census by March 2027, will include caste count too

Umbrella OBC group unlikely; women's quota, delimitation to be linked to Census

LIZ MATHEW
NEW DELHI, JUNE 4

THE GOVERNMENT on Wednesday said the process of data collection for the Census, along with caste enumeration, would commence early next year to give a snapshot of the country's population as on March 1, 2027.

The last Census provided population data as on March 1, 2011. The next round of Census was due in 2020-2021, but was postponed due to the Covid pandemic outbreak.

The exercise this year will

CONTINUED ON PAGE 2

MONSOON SESSION FROM JULY 21 PAGE 10

Why this reopens debate on delimitation, timeline

DEEPTIMAN TIWARY & MANOJ C G
NEW DELHI, JUNE 4

EXPLAINED

THE ANNOUNCEMENT Wednesday of the decision to conduct Population Census-2027 in two phases along with enumeration of castes has reopened the debate on delimitation, especially in the southern states, with Tamil Nadu Chief Minister M K Stalin seeking an answer from the Centre and accusing it of delaying the headcount to reduce the state's parliamentary representation.

CONTINUED ON PAGE 14

- **Census 2027** to be conducted in two phases:
  - House listing
  - Population enumeration
- **Reference date**: March 1, 2027
- Digital enumeration for faster data processing
- Provisional data expected by March 2027; final report by late 2027
- Tamil Nadu CM: Centre delaying Census to reduce southern states' parliamentary representation
  - Demands "Fair Delimitation" and extension of 1971 Census-based delimitation until 2056

Delimitation Process & Concerns

- **Constitutional mandate**: Required after first Census post-2026 (Articles 81 & 82)
- **Steps**:
  - Delimitation Act to be passed by Parliament
  - Delimitation Commission formed (headed by retired SC judge + EC officials)
  - Formula devised (population/constituency) after stakeholder consultations
  - Constitutional amendment needed to increase Lok Sabha seats (capped at 550)
- **Southern states' fear**:
  - Loss of seats due to better population control vs. northern states
  - DMK resolution opposes Census-based delimitation

Women's Reservation Link

- 33% reservation for women in Parliament tied to delimitation
- Opposing delimitation risks being labeled "anti-women"

Historical Context

- Delimitation frozen since 1971 Census (42nd Amendment during Emergency)
- 2002 amendment (84th) extended freeze until first Census after 2026
- Current boundaries based on 2001 Census, but seat numbers remain as per 1971 Census

Operational Challenges

- 25-30 lakh enumerators to be deployed
- Digital process may reduce discrepancies between provisional & final data
- Gazette notification expected on June 16, 2024 for exact schedule

The Analyst Handout
5th June 2025

Daily Quiz

Q1. In which round of the World Trade Organization negotiations was the Dispute Settlement Mechanism established?

a) Doha Round (2001–present)
b) Uruguay Round (1986–1994)
c) Tokyo Round (1973–1979)
d) Bali Round (2013)

Answer: b

Q2. Consider the following statements regarding the India-Middle East-Europe Economic Corridor (IMEC):

1. It was launched during the G20 Summit 2023 in New Delhi.
2. Its Eastern corridor will connect the Gulf countries to Europe.

Which of the statements given above is/are correct?

a) 1 Only
b) 2 Only
c) Both 1 and 2
d) Neither 1 nor 2

Answer: a

Q3. Which of the following measures has Indian Railways adopted as part of its strategy to achieve net-zero carbon emissions by 2030?

1. Installing rooftop solar panels at stations.
2. Planting 1 crore trees annually
3. Deployment of bio-toilets in trains
4. Construction of new coal-fired power plants

Select the correct answer using the codes given below.

a) 1 and 2 only
b) 1, 2, and 3 only
c) 2, 3 and 4 only
d) 1, 3 and 4 only

Answer: b

Q4. Which of the following countries/groupings has introduced the carbon border adjustment mechanism?

a) United States
b) China
c) European Union
d) United Kingdom

Answer: c

Q5. How many of the following statements regarding the Delimitation Commission in India is/are correct?

1. Delimitation Commissions have been constituted 4 times since independence.
2. The orders of the Delimitation Commission cannot be challenged in a court of law.
3. It comprises a retired judge of the Supreme Court, the Chief Election Commissioner, and the Election Commissioners of the concerned states.

Select the correct answer using the codes given below.

a) Only One
b) Only Two
c) All Three
d) None

Answer: c

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