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The Analyst

CURRENT AFFAIRS Handout

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# "Manufacturing 2.0": India's Next Leap

CONTEXT: With global events likely to redefine the manufacturing sector, the focus must be on technical education, core engineering and innovation.

"Manufacturing 2.0": India's Next Leap

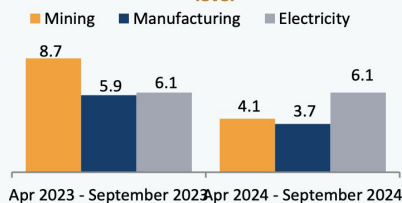### Status of the Manufacturing Sector in India

- **16.3%** to India's GDP (FY 2021-22) - **National Policy on Manufacturing - 25%** by 2025-26.
- **~ 50 million** directly and ~ **90 million** indirectly.
- Manufacturing - projected - CAGR of **12%** - 2021-2026.
- Major sectors - **automobiles, textiles, chemicals, pharmaceuticals, electronics, machinery, and steel**.
- Per capita **VA** in manufacturing: $0.32K($2K)
- Productivity: $8.9K($32K)
- **Total value added**: India ($461B), China ($4,658B), U.S. ($2,497B)
- **GERD**: 0.64%

Quarterly estimates of GVA at current prices (US$ billion)

Quarter	Value
Q1'20	620.7
Q1'21	495.3
Q1'22	626.5
Q1'23	713.0
Q1'24	770.1
Q1'25	842.1
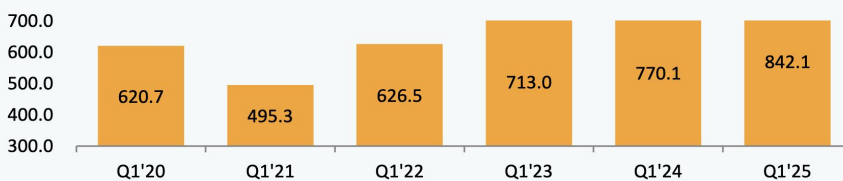
Note: FY - Indian Financial Year (April -March)

Annual Growth Rates of IIP (%) at Sectoral level

Legend: Mining, Manufacturing, Electricity

Period	Mining	Manufacturing	Electricity
Apr 2023 - September 2023	8.7	5.9	6.1
Apr 2024 - September 2024	4.1	3.7	6.1

Capacity Utilization in Manufacturing Sector (%)

Quarter	Value
Q3FY23	74.3
	76.3
Q1FY24	73.6
	74.0
Q3FY24	74.7
	76.8
Q1FY25	74.0

Total FDI equity inflow in the manufacturing subsectors between April 2000- September 2024

- Services — 16.3%
- Computer Software & Hardware — 15.1%
- Telecommunications — 5.6%
- Trading — 6.5%
- Automobile — 5.3%
- Construction (Infra) Activities — 5.0%
- Drugs & Pharma — 3.3%
- (others) — 3.2%
- (largest) — 39.8%
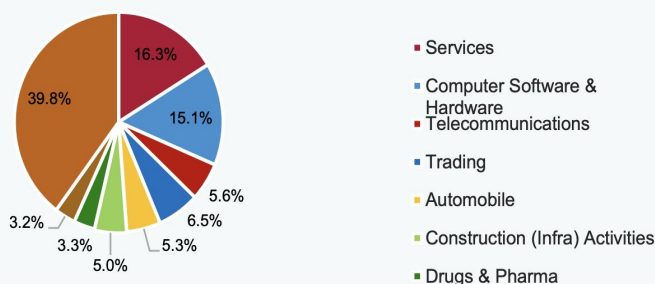
Government Schemes and Initiatives

- **National Manufacturing Competitiveness Programme**
- **Make in India, 2014**: Both domestic, foreign companies; across **25 sectors**; aims to increase the manufacturing sector's GDP share.
- **PLI Scheme: 2020**, Financial incentives - manufacturers for incremental production; various sectors; ~ **$26 billion** for various PLI schemes.
- **Atmanirbhar Bharat: 2020**: boost domestic manufacturing and reduce reliance on imports, especially in critical sectors; package include ~ **$265 billion**.
- **National Policy on Electronics:** global hub - **electronics manufacturing**; target - **$400 billion** by 2025-26.
- **Skill India and PMKVY:** Enhancing the skills of the workforce to meet the demands of the manufacturing sector.
- **MSME Support Schemes:** E.g. ECLGS, ~ **$40 billion** during the pandemic, etc.

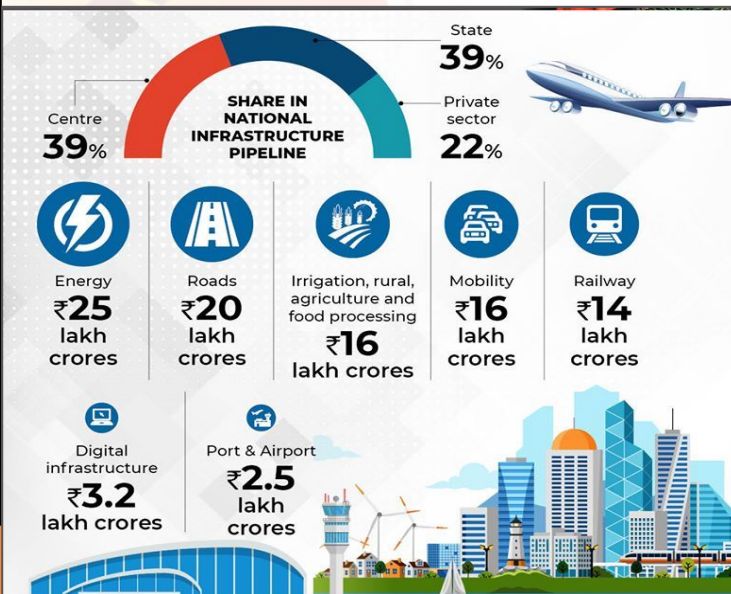# "Manufacturing 2.0": India's Next Leap

CONTEXT: With global events likely to redefine the manufacturing sector, the focus must be on technical education, core engineering and innovation.

Issues and Challenges

- **Infrastructure Deficiencies:** Logistics cost ~ **13-14%** of GDP; Capital Crunch; Project Delays
- **Labor Laws and Skills Gap:** Rigid labor laws - disincentive - formalise; Skill mismatch; Only **2%** of the workforce - formal skills.
- **Low Technological Adoption:** Limited adoption of **advanced technologies** hampers productivity; India ranked **39th** in the **Global Innovation Index, 2024**
- **Complex Land and Regulatory Issues:** Hurdles - Land acquisition; Numerous regulatory requirements; Less focus on CBA
- **High Cost of Capital:** Particularly - MSMEs, Dependence - Informal Sources; affects adoption of technology.
- **Global Supply Chain Disruptions:** The COVID-19 pandemic, availability of raw materials and exports.
- **Environmental and Sustainability Challenges:** Obsolete technology; Industries face pressure to adopt sustainable practices, CBAM

Way forward

investment in transport, power, and digital infrastructure. E.g. NIP; **EDITORIAL**: 1% GDP, State-specific manufacturing parks - in-house capabilities
- **Labor and Skill Development Reforms:** Reforms - labor laws- investments; technical and vocational education; **EDITORIAL**: Overhaul of Technical Education - meet demands - Fundamental SHIFT - advanced laboratories
- **Technological Upgradation:** Industry 4.0 technologies and invest in R&D; **EDITORIAL**: Silicon Valley, East Asian Economies

- **Strengthening MSMEs:** affordable credit and support; Incentives to formalise; **EDITORIAL**: Manufacturing Startups:
- **Streamlining Regulatory Processes:** Simplifying regulations and land acquisition processes; PLUG & PLAY
- **Focus on Exports:** Export hubs and negotiating FTAs - key markets; **EDITORIAL**: high-tech products
- **Sustainable Manufacturing:** Promote green technologies and sustainable practices; energy-efficient production; Carbon Credits

SHARE IN NATIONAL INFRASTRUCTURE PIPELINE

Centre 39%
State 39%
Private sector 22%

Energy ₹25 lakh crores
Roads ₹20 lakh crores
Irrigation, rural, agriculture and food processing ₹16 lakh crores
Mobility ₹16 lakh crores
Railway ₹14 lakh crores
Digital infrastructure ₹3.2 lakh crores
Port & Airport ₹2.5 lakh crores

श्रम-प्रधान निर्यातों के लक्ष्य को प्राप्त करने में बिनिर्माण क्षेत्रक की विफलता के कारण बताइए। पूंजी-प्रधान निर्यातों की अपेक्षा अधिक श्रम-प्रधान निर्यातों के लिए, उपायों को सुझाइए। (उत्तर 150 शब्दों में दें)

Account for the failure of manufacturing sector in achieving the goal of labour-intensive exports. Suggest measures for more labour-intensive rather than capital-intensive exports. (Answer in 150 words)   10

Mains Practise Question

Though India is witnessing continuous growth in the manufacturing sector, some issues still retard the realisation of its true potential. Elaborate.
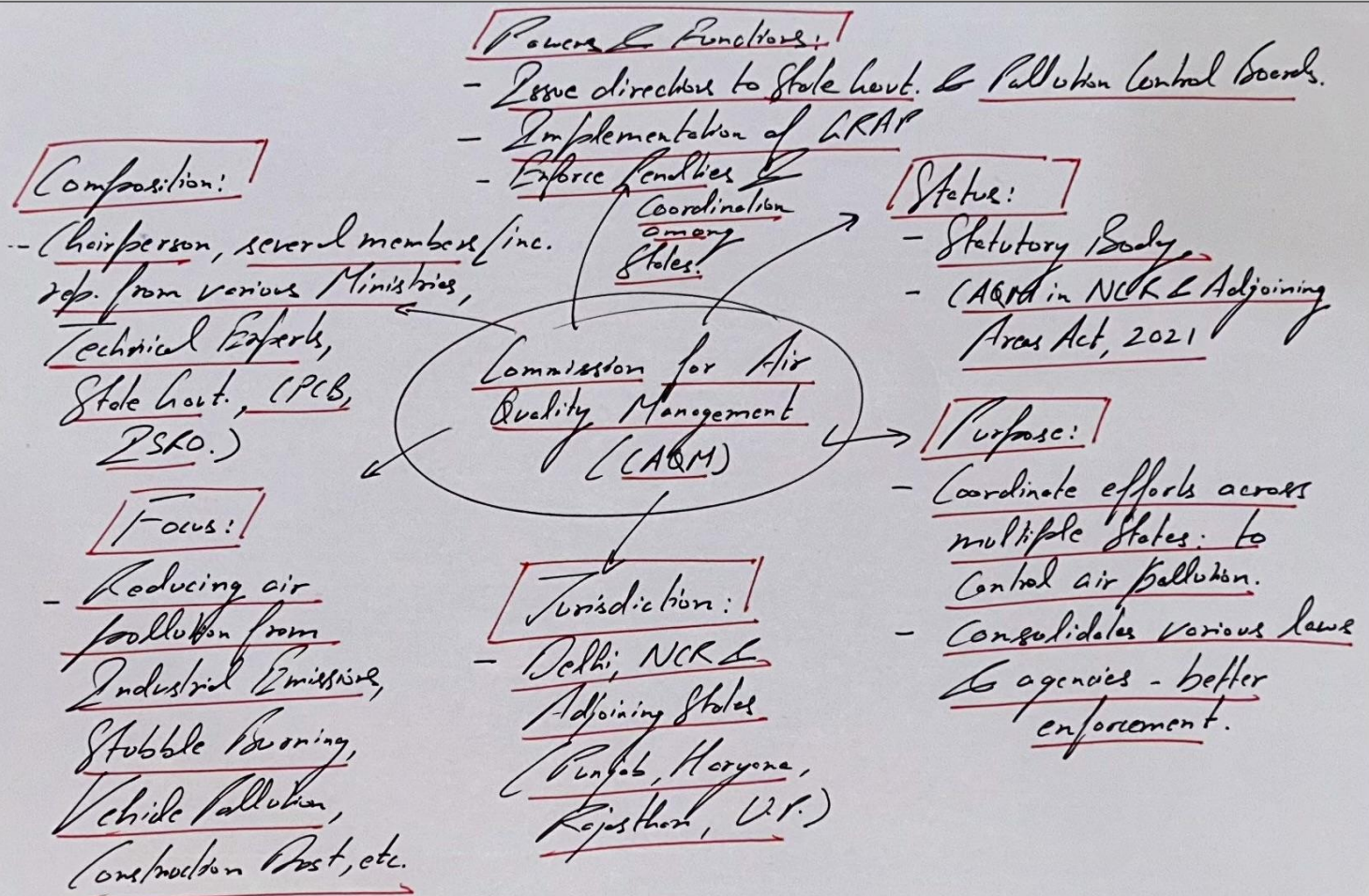*(15 Marks, 250 words)*

Can We End Stubble Burning?

CONTEXT: To Eliminate Stubble Burning, Air Panel issues 19-Point Plan.

राष्ट्रीय राजधानी क्षेत्र और निकटवर्ती क्षेत्रों में वायु गुणवत्ता प्रबंधन आयोग
Commission for Air Quality Management in National Capital Region and Adjoining Areas

Handwritten mind map centered on "Commission for Air Quality Management (CAQM)":

Powers & Functions:
- Issue directions to State Govt. & Pollution Control Boards.
- Implementation of GRAP
- Enforce penalties & Coordination among States.

Composition:
- Chairperson, several members (inc. rep. from various Ministries, Technical Experts, State Govt., CPCB, DSPO.)

Focus:
- Reducing air pollution from Industrial Emissions, Stubble Burning, Vehicle Pollution, Construction Dust, etc.

Jurisdiction:
- Delhi, NCR & Adjoining States (Punjab, Haryana, Rajasthan, UP.)

Status:
- Statutory Body
- CAQM in NCR & Adjoining Areas Act, 2021

Purpose:
- Coordinate efforts across multiple States: to control air pollution.
- Consolidates various laws & agencies - better enforcement.

What is Stubble?
- Straw left after the harvesting of grains, like paddy, wheat, etc.

Why is Stubble Burnt?
- To remove **paddy crop residues (Parali)** from fields to sow wheat
- Occurs around the **end of September**
- The easiest way of disposing owing to **lack of time, equipments and awareness**

Effects of Stubble Burning

- **Damage to the Environment**
  - Toxic gases - CO, CH4, PAH, and VOCs.
  - Pollutants - Blanket of smog - affecting air quality and health.
  - Delhi's air pollution.
- **Impact on Soil Properties**
  - Heat from burning - elevates soil temperature - death of beneficial soil organisms.

Can We End Stubble Burning?

VAJIRAM & RAVI

CONTEXT: To Eliminate Stubble Burning, Air Panel issues 19-Point Plan.

- Frequent burning - complete loss of microbial population - reduces levels of Nitrogen and Carbon
- **Impacts on Human Health**
  - Several health effects - skin irritation, severe neurological, cardiovascular, and respiratory problems.
  - Research - pollution exposure - adverse effect on mortality rates - the life expectancy of Delhi residents
- **Insufficient Stubble Management Infrastructure**
  - Farmers burn millions of tonnes - Lack of stubble management infrastructure
  - Preferred by farmers - cheaper and faster, helping them to clear the land in time
- **Negative Effects of Subsidies for Agriculture**
  - Easier access to credit - led to substantial increases in crop yields and agricultural productivity
  - Exacerbated stubble burning

Alternatives to Stubble Burning?

- **Bio Enzyme-PUSA**
  - By IARI - solution to stubble burning.
  - After it is sprayed, this enzyme starts decomposing the stubble - manure -improves the soil.
  - Increases organic carbon and soil health - reducing fertiliser expenses
- **Palletisation**
  - Paddy straw - dried and converted into pellets - mixed along with coal - thermal power plants, industries.
  - Save coal - reduce carbon emissions.
- **Happy Seeder**
  - Tractor-mounted machine - cuts and lifts rice straw, sows wheat and deposits the straw - mulch.
- **Chhattisgarh Innovative Model**
  - Gauthans - unused stubble or parali is collected - parali daan and turned into organic fertiliser - mixing cow dung with natural enzymes.

- **Additional Alternative Uses**
  - Cattle feed, compost manure, roofing in rural areas, packing materials, papers and bioethanol

Way Forward?

- **Strengthened Stubble Management**
  - Schemes - MGNREGA - harvesting and composting stubble burning, regulating post-harvest management
  - Incentives - farmers - reuse a
- **New and Improved seed varieties:** Short duration crop varieties - Pusa Basmati-1509 and PR-126 - mature quickly - improve the quality of the soil.
- **Farmer Awareness**:
  - Behavioural change
  - Farmers - informed - stubble burning - threat to human life inc. fertility of the soil
  - encouraged to adopt eco-friendly technologies.

THE KEY POINTS

- Setting up a dedicated 'Parali Protection Force'
- Intensifying patrolling to prevent evasion of satellite monitoring of farm fires
- Mapping each farm in all villages
- Optimal use of balers, rakers, among other machines for ex-situ management; plan machine movement based on harvesting patterns, schedules
- Plan for storage facilities; parcels of government or panchayat lands to be identified for storage of paddy straw bales
- Fix common procurement price for paddy straw in Punjab and UP
- Set up an online platform for real-time monitoring of crop residue and its utilisation
- Promotion of various government schemes for ex-situ management
- Set up a pilot common paddy straw-based boiler in industrial units
- Use paddy straw pellets for co-firing in brick kiln on line with TPPs
- Help citizens report complaints on social media platforms
- Ensure red entries and impose fines on violating farmers

Mains Practise Question
Stubble burning poses multidimensional risks and needs prompt corrective actions. Discuss.
(15 Marks, 250 words)

ON MAY 6, India and the UK concluded a landmark Free Trade Agreement (FTA), marked as a historic milestone by Prime Minister Narendra Modi. The deal grants India zero-duty access to all industrial goods and eliminates import tariffs on over 99.3 per cent of animal products, 99.8 per cent of vegetable/oil products, and 99.7 per cent processed foods. Currently, the UK imports goods worth $815.5 billion, primarily from countries like China (12 per cent, amounting to $99 billion), the US (11 per cent, amounting to $92 billion), and Germany (9 per cent, amounting to $76.2 billion). India is the 12th largest trading partner of the UK, but with a meagre 1.8 per cent ($15.3 billion) share in goods imported to the country. The UK exports goods worth $512.9 billion, mainly to the US ($71.3 billion), China ($46.4 billion) and Germany ($38.8 billion).

As of 2024, the India-UK total trade in goods was $23.3 billion, $8.06 billion of which was exports to India. The export basket largely comprises pearls, nuclear reactors, spirits, and vehicles, while the imports from India are machinery, mineral fuels, pharmaceuticals, apparel and footwear. The FTA has set an ambitious target of taking the trade partnership to $120 billion by 2030.

Currently, the UK imports T&A valued at $26.9 billion, of which apparel imports are $19.6 billion (72.8 per cent). The country's apparel imports are primarily from China (25 per cent share, $4.9 billion), followed by Bangladesh (20 per cent, $3.9 billion). India has a meagre 6 per cent ($1.19 billion) share. Before the FTA, the UK imposed average tariffs of around 11-12 per cent on apparel from major importing countries. After the FTA, India will get preferential treatment with zero tariff entry — this can be a game changer for it vis-à-vis its competitors. To take advantage of this, we need to set a few things in order in the T&A value chain.

How will this leap happen? For the promise of the FTA to translate into real gains, trade must open both ways. India is willing to let British whiskey and gin flow more freely and tariffs have been cut from the current 150 per cent to 75 per cent — they will go down to 40 per cent over the next 10 years. British cars can run on Indian roads with tariffs slashed from 100 per cent to 10 per cent. On the other hand, India can gain in labour-intensive sectors like footwear, toys, textiles and apparel (T&A) — a sector of particular interest to India because it employs over 45 million people, who can benefit from access to high-end markets.

But to make this happen, India needs to stitch several loose ends in its T&A value chain, especially in designing high-value apparel products for the UK market.
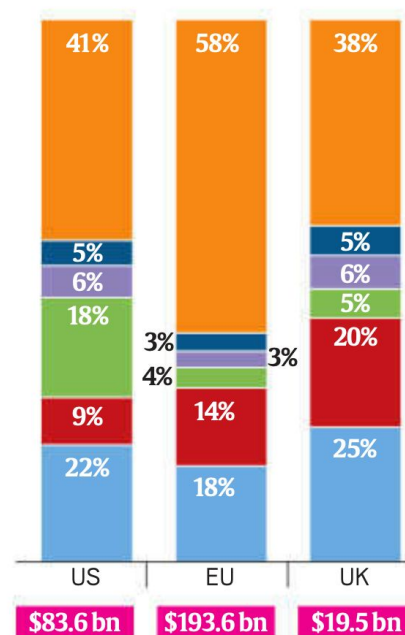
India's T&A sector has three structural challenges. The first is its fragmented manufacturing base, with MSMEs operating in silos across states. Second, is the disjointed value chain. Cotton is grown in Gujarat and Maharashtra, yarn is spun in Tamil Nadu, fabric is processed in other parts of the country and garments are stitched at several places across the country. This geographical dispersion raises the costs of logistics and causes delays — the time from order to delivery is 63 days compared to 50 days in Bangladesh (BGMEA, 2022). Third, India's policies around manmade fibres (MMF) lag global preferences hampered by an inverted GST structure and restrictive quality norms.

Cotton to Fabric process

Cotton → Ginning → Spinning → Yarn → Weaving/knitting → Fabric

the EU and the US, the biggest apparel importers (See graphics). EU imports $193.6 billion worth of apparel — competitors to India like Bangladesh and Vietnam enjoy duty-free access. Similarly, the US ($83.6 billion), presents a rare window of opportunity, having effectively eliminated Chinese dominance (22 per cent share) through the imposition of high reciprocal tariffs. Securing zero-duty access to these high-value markets can be a boon for India's T&A sector.

APPAREL IMPORTS BY MAJOR MARKETS AND EXPORTER SHARE (2024)

Legend: China | Bangladesh | Vietnam | India | Cambodia | Others (in %) | Value of apparel imports ($ billion)

Exporter	US	EU	UK
Others	41%	58%	38%
Cambodia	5%	3%	5%
India	6%	3%	6%
Vietnam	18%	4%	5%
Bangladesh	9%	14%	20%
China	22%	18%	25%
Value	$83.6 bn	$193.6 bn	$19.5 bn

Source: ITC Trade map

India-UK FTA & India's Textile Sector

PM MITRA Park sites approved by Government of India

Posted On: 17 MAR 2023 5:21PM by PIB Delhi

The Government of India today announced the sites for setting up of 7 PM Mega Integrated Textile Regions and Apparel (PM MITRA) Parks for the Textile industry. The Parks will come up in **Tamil Nadu, Telangana, Gujarat, Karnataka, Madhya Pradesh, Uttar Pradesh and Maharashtra.**

Inspired by the 5F vision of the Hon'ble Prime Minister (i.e. Farm to Fibre to Factory to Fashion to Foreign), the PM MITRA Parks are a major step forward in realising the Government's vision of making India a global hub for textile manufacturing and exports. It is expected that these parks will enhance the competitiveness of the textiles industry by helping it achieve economies of scale as well as attract global players to manufacture in India.

These 7 sites were chosen out of 18 proposals for PM MITRA parks which were received from 13 States. Eligible States and sites were evaluated using a transparent Challenge Method based on objective criteria taking into account a variety of factors such as connectivity, existing ecosystem, textile/industry policy, infrastructure, utility services etc. PM Gati Shakti- National Master Plan for Multi-modal Connectivity was also used for validation.

PM MITRA Parks will help in creating world-class industrial infrastructure that would attract large scale investment including foreign direct investment (FDI) and encourage innovation and job creation within the sector.

The Ministry of Textiles will oversee the execution of these projects. An SPV owned by Centre and State Government will be set up for each park which will oversee the implementation of the project. The Ministry of Textiles will provide financial support in the form of Development Capital Support upto Rs. 500 crore per park to the Park SPV. A Competitive Incentive Support (CIS) upto Rs 300 crore per park to the units in PM MITRA Park shall also be provided to incentivise speedy implementation. Convergence with other GOI schemes shall also be facilitated in order to ensure additional incentives to the Master Developer and investor units.

State governments will provide contiguous and encumbrance-free land parcel of at least 1000 acres of land and will also facilitate provision of all utilities, Reliable Power Supply and Water availability and Waste Water Disposal system, an effective single window clearance as well as a conducive and stable industrial/textile policy.

The parks will offer an excellent infrastructure, plug and play facilities as well as training and research facilities for the industry.

PM MITRA Parks represent a unique model where the Centre and State Governments will work together to increase investment, promote innovation, create job opportunities and ultimately make India a global hub for textile manufacturing and exports. Nearly Rs. 70,000 crores investment and 20 lakhs employment generation is envisaged through these parks.

In terms of practices, India must work to match up to global fashion aesthetics. Compliance is another area that requires attention. For example, with the EU implementing the Corporate Sustainability Due Diligence Directive (CSDDD) by 2029, Indian suppliers will need to embed ESG compliance, traceability and green audits in their supply chains. Finally, India must scale up towards value-added products like activewear, athleisure and technical textiles, which are dominated by MMFs. Indian firms also need to invest in functional and performance fabrics and develop capabilities to plug into global retail supply chains.

It is interesting to reflect on the irony of history. Once the heart of global T&A industry, the UK, with mills in Lancashire and James Hargreaves' Spinning Jenny, was the birthplace of the Industrial Revolution, which dismantled India's traditional spinning hubs. Today, in a reversal of sorts, India could be a major supplier of T&A to the UK.

The India-UK FTA also offers a timely blueprint for the ongoing trade negotiations with the US and the EU. But deals alone won't suffice. We must re-imagine India's textile future through integrated hubs, modern manufacturing, compliant supply chains, and demand-driven exports. The opportunity is massive, but so is the urgency. As the saying goes, a stitch in time saves nine and for India's textile sector, this is that critical stitch.

- **Athleisure:** A fashion trend where clothing designed for athletic activities is also worn in casual, everyday settings. **Examples:** Yoga pants, Joggers, or hoodies
- **Activewear:** Clothing specifically designed for physical activities like running, gym workouts, or sports, focusing on comfort, flexibility, and sweat absorption. **Examples:** Compression tights, running shorts or Gym wear
- **Technical Textiles:** High-performance fabrics designed not for fashion, but for functional use in industries like healthcare, defense, agriculture, and sports. **Examples:** Fire-resistant uniforms, Bulletproof vests (Kevlar), antibacterial hospital fabrics

India-UK FTA & India's Textile Sector

- **Functional fabrics** are textiles designed with specific **features or properties** (like waterproofing, UV protection, or anti-bacterial finish) beyond just basic clothing needs.
- **Performance fabrics** are a type of functional fabric specially made to **enhance comfort, efficiency, or protection** during physical activity or extreme conditions.

- **Examples**: Moisture-wicking fabric, Waterproof & breathable fabric, Anti-microbial fabric, UV-protective fabric, stretchable fabric
- **ESG (Environmental, Social, and Governance):** It refers to a set of standards for how a company operates with regard to the environment, social responsibilities, and internal governance. It helps investors evaluate companies beyond financial performance.

Example: *Infosys* publishes annual ESG reports showing how it reduces carbon emissions, supports employee diversity, and ensures transparent corporate governance. Globally, *Tesla* is often cited for its environmental focus, but gets mixed ESG scores due to labor and governance concerns.

- **Traceability:** It is the ability to track the origin, journey, and processing of a product or material throughout the supply chain — from source to consumer.

Example: *Amul* uses traceability systems to monitor milk from village-level collection centers to final packaging, ensuring quality and safety. In fashion, *Adidas* is tracking sustainable materials (like recycled polyester) used in its shoes and clothes to meet eco-friendly goals.

- **Green Audits:** It is a systematic review of how an organization affects the environment. It identifies areas where resources can be saved, pollution reduced, and sustainability improved.

Example: *IIT Delhi* conducts green audits to monitor its water, waste, and energy usage, helping reduce its environmental footprint. Some Indian state universities also require green audits before **NAAC accreditation**.

For a Robust Caste Census

SYLLABUS: GS 2: Governance, Public Policy, Social Sector
Newspaper : The Hindu; **Page No :** 8

The Narendra Modi government's decision to include caste enumeration in the next Census is one that is bold, transformative and commendable. Counting caste is not capitulation to identity politics. It is a mirror to the lived realities of millions. It marks a vital step towards evidence-based policymaking to build a more just and inclusive India. A nation that refuses to see itself cannot hope to heal itself.

Post-Independence, India attempted to abolish caste while simultaneously pursuing social justice – a textbook example of policy schizophrenia, as the two goals are fundamentally incompatible. The refusal to count caste in the Census was a corollary of the policy of caste blindness. But the Constitution explicitly mandates the pursuit of social justice through reservations in education, public employment, and electoral constituencies – measures that require precise, disaggregated caste data. Although the Constitution uses the term "class", the Supreme Court of India has repeatedly ruled that caste is a valid, and often necessary, proxy for identifying backwardness and has insisted on detailed caste-wise data to uphold reservation policies.

In his 1955 essay, 'Thoughts on Linguistic States', Dr. B.R. Ambedkar denounced the omission of caste tables from the 1951 Census as an act of "petty intelligence". Visibility in data is the first step toward meaningful inclusion. Caste data collection across all major social groups is essential not only for administering reservations, but also for equity-driven planning, targeted policymaking, and tracking disparities over time. Not collecting it has rendered many of India's marginalised communities invisible in official statistics. Worse, a narrow elite of upper castes and dominant Other Backward Classes (OBCs) has entrenched its grip over wealth, opportunity and power behind the smokescreen of caste anonymity. In hindsight, this ranks among India's gravest policy failures.

A legal and administrative necessity

Since 1951, the Census has enumerated Scheduled Castes (SCs) and Scheduled Tribes (STs) but excluded OBCs, even though all three groups are constitutionally eligible for reservations in education and public employment. The usual justification, that OBCs lack reserved seats in Lok Sabha and State Legislative Assemblies (that SC/ST have) collapsed with the 73rd and 74th Amendments, which mandated OBC reservation (in addition to SC/ST reservation) in electoral constituencies of panchayats and municipalities. Implementing these provisions requires granular, area-wise OBC data. With the introduction of reservations in education and public employment

for the Economically Weaker Sections (EWS) among upper castes (2019), a comprehensive enumeration of all castes has now become a legal imperative.

India's reservation policy currently operates in an evidence vacuum, leaving it vulnerable to arbitrary demands from powerful caste groups and politically expedient decisions by governments. With reliable caste data, the demands of the Marathas, Patidars, Jats, and others can be assessed transparently and on merit. The limited data we do have reveal deep inequities. According to submissions made by the Government of India to the Justice G. Rohini Commission, just 10 OBC castes cornered 25% of all public jobs and education seats reserved for OBCs, while a quarter of OBC castes secured 97% of the benefits. Shockingly, 38% of OBC castes received only 3% of the benefits, and another 37% got nothing at all.

Hence, caste enumeration is also an administrative imperative – to prevent the elite capture, enable rational sub-categorisation within social groups, and allow a more precise definition of the "creamy layer".

Collection of caste data must go beyond the decennial Census. All periodic government surveys should enumerate OBCs and upper castes alongside SCs and STs. The era of partial counting must end.

Learning from failure and success

In 2010, Parliament unanimously resolved to count caste in the 2011 Census. The 1931 Census had recorded 4,147 castes (excluding the then-called Depressed Classes). The Anthropological Survey of India has identified 6,325 castes. But the Socio-Economic and Caste Census (SECC) of 2011, conducted by the United Progressive Alliance-II government, was a debacle. It produced a ludicrous figure of 46 lakh castes and was never released.

What went wrong? First, the SECC-2011 was not conducted under the Census Act, 1948 and lacked legal authority. Second, it was conducted through the Union Ministries of Rural Development and Urban Development with no expertise for handling a complex socio-anthropological survey. Third, its open-ended questions about caste created confusion. Undertrained enumerators conflated castes, aliases, sub-castes, *gotras*, clan names, surnames and broader caste groups. The result was a chaotic, unusable data set. Was it sabotage or incompetence? Either way, a historic opportunity was squandered.

In contrast, in Bihar's caste survey, enumerators were given a vetted list of 214 castes specific to the State, with a 215th option for

"Other Castes". The survey was well-planned, well-executed, and showed that a credible caste count is entirely feasible.

Blueprint for a successful Caste Census

To avoid repeating the SECC-2011 fiasco, here is what must be done.

First, legal backing. Amend the Census Act, 1948 to explicitly mandate caste enumeration and insulate the process from shifting political agendas.

Second, the right institution. Entrust the exercise solely to the Office of the Registrar General and Census Commissioner of India, and not Ministries that lack domain expertise.

Third, a standardised questionnaire. Use closed-option questions with dropdown menus covering sub-caste, caste (including aliases), broader caste group, and caste-linked surname (optional). Having 'caste' alone as an option can lead to errors since some caste names such as Rao, Naik, Singh or Bhandari span multiple communities. Assign unique digital codes to avoid duplication and semantic confusion (e.g., grouping "Iyer" and "Aiyar" under one code).

For a Robust Caste Census

SYLLABUS: GS 2: Governance, Public Policy, Social Sector
Newspaper : The Hindu; **Page No :** 8

Fourth, State-specific caste lists. Develop draft lists in consultation with State governments, sociologists, and community leaders. Publish them online and invite public feedback before finalisation. Use a similar participatory approach for questionnaire design.

Fifth, enumerator training. Conduct region-specific training sessions with mock examples, clear dos and don'ts, and guidance on local caste nuances.

Sixth, digital tools. Equip enumerators with handheld devices that are preloaded with validated caste lists. Restrict data entry to predefined options to minimise human error.

Seventh, representative staffing. To ensure data integrity, deploy enumerators from diverse communities and in areas where they have no conflict of interest.

Eighth, independent oversight. Establish district-level committees to audit samples and monitor data integrity.

Ninth, pilot testing. Run trials in diverse States such as Tamil Nadu, Gujarat, Uttar Pradesh and Assam to refine methodology before nationwide rollout.

In every Census since 1951, the Government has successfully enumerated nearly 2,000 castes and tribes under the SC/ST categories. Counting the remaining 4,000-odd OBCs and upper castes (most of them State-specific) is not only doable but also long overdue. The delayed 2021 Census offers a rare chance to finally close this data gap. The time for denial and delay is over. The time to get the Caste Census right is now.

Census of India: The **Census** is the **official count of population** and collection of demographic, social and economic data about all individuals in India, conducted every **10 years**.

The **2011 Census** recorded India's population as **121 crore**. It provided data on literacy, sex ratio, rural-urban population, etc., which helps in planning and policy-making (e.g. schemes like *Beti Bachao, Beti Padhao* are based on sex ratio data).

Statutory Provisions:

- Governed by the **Census Act, 1948**
- Conducted by the **Office of the Registrar General & Census Commissioner**, under the Ministry of Home Affairs
- Participation is **legally mandatory**, and false information is punishable under the Act

SECC 2011 (Socio-Economic and Caste Census): The **SECC 2011** was a **one-time** exercise to collect **household-level data** on **socio-economic status** and **caste** across rural and urban India. It identifies the **deprivations and eligibility** for welfare schemes.

SECC 2011 data helped in identifying rural households for **housing (PMAY-G)**, **livelihood (MGNREGA)**, and **health insurance (Ayushman Bharat)**, using criteria like households with only one room, no adult member, or no literate adult.

Statutory Provisions:

- **Not governed by a specific law** like the Census
- Conducted by the Ministry of Rural Development (rural areas) and Ministry of Housing & Urban Affairs (urban areas)
- Data **not legally mandatory**; caste data (except for SCs/STs) was not released officially due to reliability concerns

Kerala's Waste Management Model

VAJIRAM & RAVI

The story so far:

Since October 2, 2024, Kerala has been aggressively advocating its latest campaign – 'Vruthi'. Meaning cleanliness of the body and mind, this campaign has involved everyone from all levels, from the Chief Minister and Malayalam film stars to school children, local self-government representatives, bureaucrats, and sanitation workers. In a five-day conclave, titled 'Vruthi 2025: The Clean Kerala Conclave' held at Thiruvananthapuram recently, in which around 25,000 people participated, it was stated by the Local Self-Government Minister that the State had reached formidable success in waste collection from houses – around 75% of houses have been reached, which was just 40% till a year back.

Why was this campaign necessary?

The State of Kerala has achieved a certain standard of hygiene, thanks to the various developmental factors associated with the State in the course of history.

In the early days, the waste generated from consumption (mostly organic) would mostly be put to use in the backyard of the same house (for example, as manure). However, post liberalisation, the materiality of production and consumption changed significantly. Kerala, being a rapidly urbanising society, both spatially and temporally, where the share of agriculture in the State's GDP is less than 10%, consumer behaviour also changed exponentially to market-driven products. The materiality of these new products led to a situation where, not only did the waste generated increase manifold, it also could not be disposed of or absorbed in the backyard. Hence, it started spreading within neighbourhoods and localities.

A senior bureaucrat, who is part of the Kerala Solid Waste Management Project (KSWMP), stated that during the UPSC interview, the foremost issue that she said she wanted to resolve, being head of the district, was waste management. While this was over a decade ago, she observed that this continues to be the foremost issue that many UPSC aspirants want to tackle. It is against this background that collective voices have now started emerging.

It is also to be noted that the basic principles of urban planning in the 17th and 18th centuries emerged and evolved due to a health epidemic – the plague in England. Health continues to be an important driver for urban reforms and hence, the Vruthi campaign is the need of the hour.

What is being done?

When the State government realised that the spirit of personal hygiene had not translated into clean and hygienic public spaces, a high-decibel campaign along with strategic and context-specific interventions was planned by local governments to make Kerala garbage-free. The campaign was titled '*Malinya Muktham Nava Keralam*' (waste-free Kerala), connecting all key stakeholders and agencies working in the domain of waste management.

Recent episodes of the drowning of a corporation sanitary worker in the Amayizhanjan canal at Thiruvananthapuram, along with increasing dog bites, and frequent outbreaks of Zoonotic diseases in the State, has brought all levels of administration and various sectoral agencies to engage and collaborate with their respective local self-governments. The need for clean and hygienic public spaces was understood as an imperative for healthy living in the State.

How is it different from the Swachh Bharat Mission?

The Swachh Bharat Mission (SBM) 1.0 and 2.0 are top-to-bottom mission modes for both rural and urban India. The SBM follows a framework where people at the top level decide how many toilets should be built, how many sewage treatment plants should be constructed, how many waste treatment plants should be sanctioned etc. It was and continues to be a supply-driven chain where cities try to fit themselves in that particular framework.

The *Malinya Muktham Nava Keralam* campaign, on the other hand, is primarily for behavioural change, where massive participation of the people is needed and ensured through various exercises. Moreover, the Vruthi conclave was not speaking the language of a particular technology and was thus technology neutral. It gave importance mainly to decentralised solutions, while also giving back some positive features of centralised solutions. From the 'Black Soldier Fly' to 'Windrow Composting', the conclave was a platform for cities to customise themselves and decide what solutions are best adapted to them.

While the Kerala government mobilised all key stakeholders, the larger civil society also helped in unlocking many unexplored pathways for this endeavour. These included strengthening the Haritha Karmasena, local government functionaries, locality-based campaigns, art and cultural activities, encouraging a competitive approach within local governments to achieve a 100% garbage-free status, and engaging children, youth, schools, colleges and various voluntary groups.

Are centralised or decentralised solutions better?

Moving away from the binary of centralised and decentralised form of governance in managing waste, the conclave emphasised lessons learnt from both the successes and failures of centralised and decentralised solutions. There are stories where centralised solutions were a great success – for example, the Guruvayur Municipality's waste treatment. However, it was the mismanagement of centralised systems that led to the failure of waste management initiatives in Kochi, as was evident in the infamous Brahmapuram fires of 2023. Likewise, the successes of decentralised solutions were also discussed. It was stated that this year there has been a phenomenal jump in allocation from the State government to local self-governments for waste management. However, the same could not be effectively deployed owing to huge gaps in their capacities. The Kerala Urban Policy Commission has recommended that professionalisation of services is a key driver for attaining success in urban governance, including waste management.

Kerala's Waste Management Model

What lies ahead?

As of now, while there is a visible change, the pattern continues to be linear. The current campaign is driven by the State government owing to the reasons discussed above. The moment the State government withdraws from it, will the trajectory continue in the same direction? This is a question that needs to be evaluated.

Additionally, Extended Producer Responsibility (EPR) laws need to be strengthened in the country. These laws shift the responsibility of managing a product's waste to the producer, rather than the local government or consumer.

There is also a need to break the current inertia in society; a behavioural change is of utmost importance. 'My waste, my responsibility', is the current slogan coined by the State and this should reach down to every level of governance and structures, including families.

Is building collectives important?

People's collectives have been built at various levels. This would include institutions such as schools, business enterprises, residents' welfare associations, workers' associations etc. Such collectives need to be brought on board the campaign for it to succeed effectively.

Kerala has consistently ranked first in the country on indices relating to human and sustainable development and is currently at crossroads on managing its waste. The way in which it would manage its waste problem, with an open mind and drawing on a large canvas, incorporating worldwide changes, will pave the way for a cleaner and healthier Kerala, which can be a shining model of a new age urban society, not just for the State but for the entire country.

Extended Producer Responsibility (EPR): It is an environmental policy approach where the **producer of a product is made responsible for the entire lifecycle of the product**, especially for the **take-back, recycling, and final disposal** of the product **after its use** by the consumer.

Examples:

1. **Plastic Packaging:** Companies that sell products in plastic packaging (like shampoo bottles, snack packets, etc.) must collect and recycle or dispose of the same amount of plastic they introduce into the market.
2. **E-Waste:** Mobile phone and laptop manufacturers must set up systems for collecting used electronics and ensuring proper recycling or disposal.
3. **Batteries (New Rules 2022):** Battery producers must collect used batteries and recycle or refurbish them to avoid pollution.

Statutory Provisions in India:

1. **Plastic Waste Management Rules, 2016 (amended in 2022):**
   - Mandates EPR for plastic producers, importers, and brand owners (PIBOs).
   - Producers must recycle or safely dispose of plastic waste generated from their products.
   - Targets and categories of plastic packaging defined for tracking compliance.
2. **E-Waste Management Rules, 2016 (amended in 2022):**
   - Producers of electrical and electronic equipment must register and meet collection and recycling targets.
   - Introduced a centralized online portal for compliance monitoring.
3. **Battery Waste Management Rules, 2022:**
   - Introduced EPR for all types of batteries.
   - Producers must ensure collection, recycling, or refurbishment and meet environmental safety norms.

SYLLABUS: GS 1: Population, Demography
Newspaper : The Hindu; **Page No :** 14

Vijaita Singh
NEW DELHI

The Total Fertility Rate (TFR), the average number of children born to women over their lifetime, in the country has remained at 2.0 in 2021, the same as in 2020, shows the Sample Registration System (SRS) report for 2021 released by the Registrar-General of India (RGI) on May 7.

Bihar reported the highest TFR at 3.0, while Delhi and West Bengal reported the lowest of 1.4.

The report said there had been a gradual decline in the share of population in the age group of 0-14 from 41.2% in 1971 to 24.8% in 2021. The "proportion of the economically active population between 15-59 years has increased from 53.4% to 66.2% during the same period", the report said.

The population has gone up from 5.3% to 5.9% for the 65-plus age group and 6% to 9% for the 60-plus age group.

A static trend

The Total Fertility Rate (TFR) for the country has remained at 2.0 in 2021 and 2020. The chart shows the TFR for 2016-2021
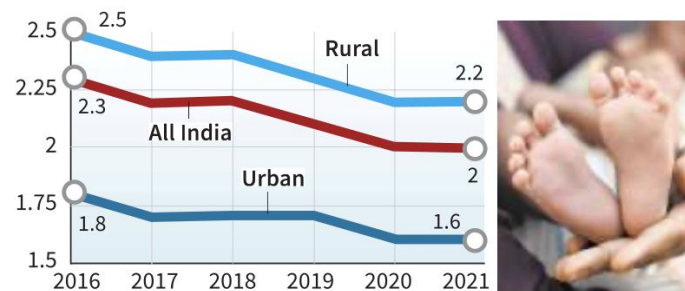
Source: SRS Statistical Report 2021

During the 2024 interim Budget, Union Finance Minister Nirmala Sitharaman had announced a high-power committee to consider the challenges arising from "population growth and demographic changes."

Though the committee is yet to be formed, the announcement suggested there has been "fast" population growth in the country, however the SRS data says otherwise.

A comprehensive pattern will emerge after the Census is conducted, pending since 2021 and which was last conducted in 2011.

As Census is usually counted every 10 years, the SRS is the largest demographic survey in the country mandated to provide annual estimates of fertility and mortality indicators at the State and national level.

The survey was conducted in 8,842 sample units across all States, covering about 84 lakh sample population.

Elderly population

Kerala recorded the highest percentage of population in the age group of 60 and above with 14.4% of the total population falling under this category.

Tamil Nadu 12.9% and Himachal Pradesh 12.3% are the other two States with the highest percentage of elderly population, the report said.

On the other hand, Bihar 6.9%, Assam 7% and Delhi 7.1% have the lowest percentage of the population in the age group of 60 and above.

The mean age at effective marriage for females has increased from 19.3 years in 1990 to 22.5 years in 2021.

"It is noteworthy that the replacement level TFR, viz. 2.1, has been attained at the national level, along with Delhi 1.4, West Bengal 1.4, Tamil Nadu 1.5, Andhra Pradesh 1.5, Jammu and Kashmir 1.5, Kerala 1.5, Maharashtra 1.5, Punjab 1.5, Himachal Pradesh 1.6, Telangana 1.6, Karnataka 1.6, Odisha 1.8, Uttarakhand 1.8, Gujarat 2.0, Haryana 2.0 and Assam 2.1," the report said.

- **Sample Registration System (SRS):** It is a large-scale demographic survey conducted by the Government of India to provide reliable annual estimates of birth rate, death rate, and other fertility indicators at the national and state levels.

Who conducts it?

- Conducted by the **Office of the Registrar General of India (RGI)** under the **Ministry of Home Affairs**. Based on the **Registration of Births and Deaths Act, 1969** (though SRS itself is a survey system, not a mandatory registration system).

TFR Levels in India

Example:
In 2023, the **SRS data** showed India's birth rate was around **19.5 per 1,000 population**, helping guide family welfare and health policies.

- **Total Fertility Rate (TFR):** It refers to the **average number of children a woman would have** over her reproductive years (typically 15–49), assuming current birth rates remain constant.

Example:
If the **TFR is 2.0**, it means, on average, every woman is having 2 children.

- **Replacement Level Fertility:** It is the TFR at which a population **exactly replaces itself** from one generation to the next, without migration.

For most countries: Replacement level = **2.1** (Slightly above 2 due to child mortality and other factors)

University Grants Commission

VAJIRAM & RAVI
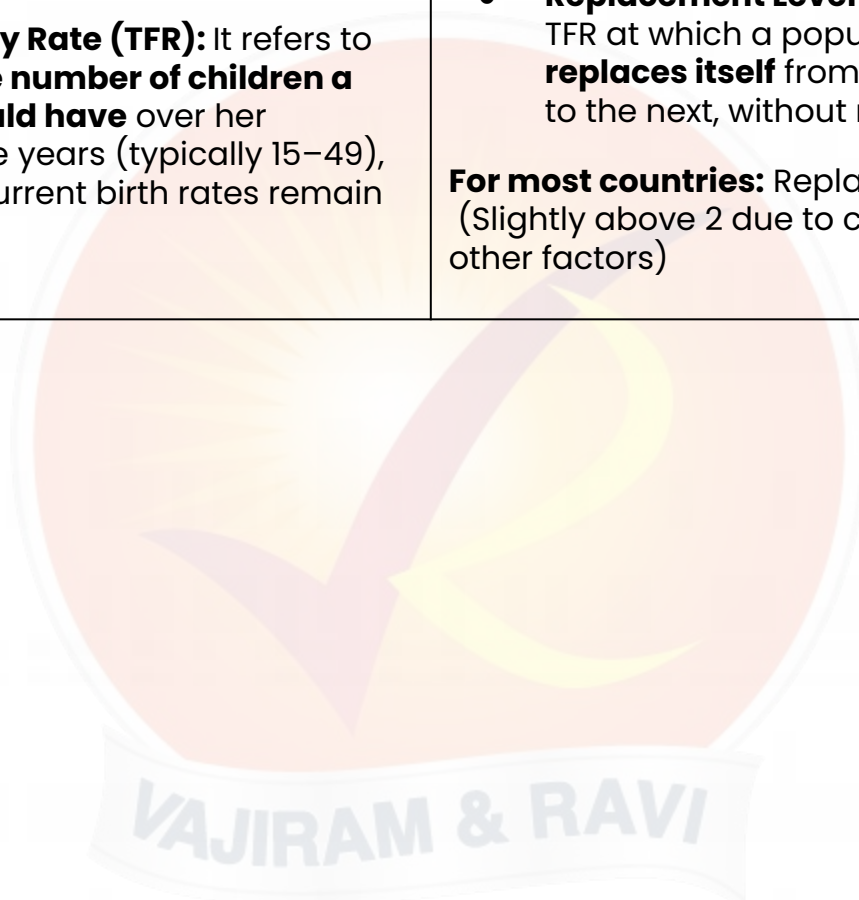
The Hindu Bureau
NEW DELHI

The University Grants Commission has asked all higher education institutions (HEIs), through a recent circular, to furnish the details of foreign students they have enrolled for their courses.

It advised the HEIs to implement a 2022 circular on creating up to 25% "supernumerary seats" for international students, over and above their total sanctioned enrolment for undergraduate and postgraduate programmes.

UGC Secretary Manish R. Joshi said in a letter to all HEIs that the implementation of the 2022 guidelines will facilitate smooth and viable admission of international students and a favourable environment will be created to make India a preferred destination for international students. Prof. Joshi said in the letter that internationalisation of

The UGC Secretary says internationalisation of higher education is one of the essential aspects of the NEP. SUSHIL KUMAR VERMA

higher education is one of the essential aspects of the National Education Policy (NEP), and many Indian HEIs are now committed to increasing their global outreach.

In letter and spirit
"Subsequently, in order to facilitate the internationalisation of Indian HEIs, the University Grants Commission has framed the guidelines for admission and creation of supernumerary seats for international student in undergraduate and postgraduate programmes in HEIs in India. The guidelines were circulated earlier by UGC to all HEIs for its implementation on September 30, 2022," Prof. Joshi said, adding that HEIs may create up to 25% additional seats for international students. He urged HEIs to adopt and implement the admission guidelines

The objective of the 2022 guidelines is to facilitate a simple admission process for international students in HEIs

and provide supernumerary seats for international students in letter and spirit. The objective of the 2022 guidelines was to facilitate a smooth and simple admission process for international students in HEIs, and it allowed Indian HEIs to admit international students based on the equivalence of entry qualification held by them.

"The equivalence is to be determined by the UGC or any other body recognised by UGC for such purpose or the concerned regulatory bodies of the country. HEIs may adopt a transparent admission process for admitting the international students," the circular had said.

Key Functions:

- Provides **recognition to universities and colleges**.
- Allocates **funds and grants** to higher education institutions.
- Frames **regulations** on quality, curriculum, and faculty standards.
- Ensures **minimum standards** of education are followed.

Examples:

- UGC recognizes institutions like **Delhi University**, **Jawaharlal Nehru University**, and **Banaras Hindu University**.
- UGC may **de-recognize** a university for violating norms (e.g., fake or unaccredited universities).
- It also funds and oversees bodies like **NAAC (National Assessment and Accreditation Council)** and **NET (National Eligibility Test)** for assistant professorship.

University Grants Commission

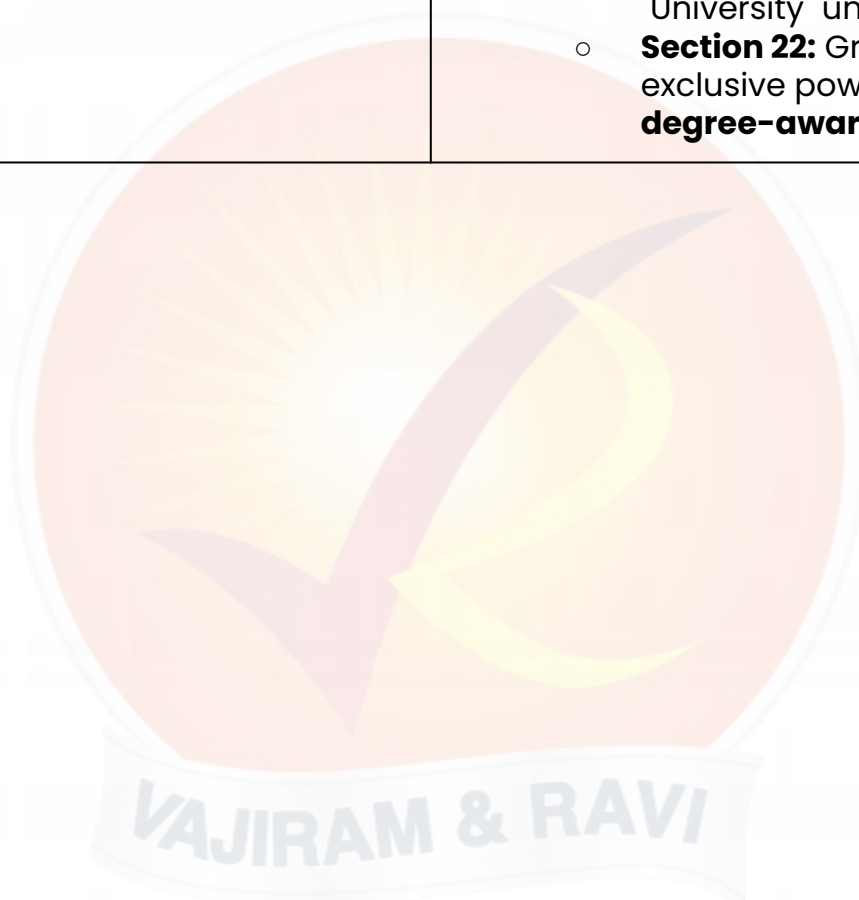| **Statutory Provisions:**	**● Relevant Sections:**
● **Established under:** UGC Act, 1956, passed by the **Parliament of India**.	○ **Section 12:** Empowers UGC to determine and maintain standards. ○ **Section 2(f):** Defines a "University" under the Act. ○ **Section 22:** Grants UGC the exclusive power to **authorize degree-awarding** institutions.

Q1. Regarding the manufacturing sector in India, consider the following statements:

1. As of FY 2021–22, manufacturing contributed over 20% to India's GDP.
2. The National Policy on Manufacturing targets a 25% share of GDP by 2025–26.
3. The sector directly employs over 90 million workers.
4. India's manufacturing value added per capita is lower than $500.
5. The sector's projected CAGR between 2021 and 2026 is below 10%.
6. Gross Expenditure on R&D as % of GDP is under 1%.

Which of the statements given above is/are correct?
a) 2, 4, and 6 only
b) 1, 3, and 5 only
c) 2, 4, 5, and 6 only
d) 1, 2, 3, and 6 only

Answer: a

Q2. Which of the following statements regarding alternatives to stubble burning is/are correct?
1. Happy Seeder technology avoids stubble burning by converting rice straw into bioethanol.
2. Paddy stubble is never suitable as cattle feed due to its high silica content.

Select the correct answer using the codes given below.
a) 1 Only
b) 2 Only
c) Both 1 and 2
d) Neither 1 nor 2

Answer: d

Q3. Regarding the Census of India and the Socio-Economic and Caste Census (SECC) 2011, consider the following statements:
1. The Census is conducted by the Ministry of Home Affairs, whereas SECC 2011 had separate nodal ministries for rural and urban data.
2. Census data collection is legally binding, while SECC data collection is voluntary.

3. Unlike Census data, SECC 2011 was used directly to determine eligibility for welfare schemes like PMAY-G and Ayushman Bharat.

How many of the statements given above is/are correct?
a) Only One
b) Only Two
c) All Three
d) None

Answer: c

Q4. Regarding the modern textile categories, consider the following statements:
1. All performance fabrics are functional fabrics, but not all functional fabrics qualify as performance fabrics.
2. Athleisure includes garments made from technical textiles with industrial-grade protection.
3. Activewear is always considered athleisure, but not all athleisure is activewear.
4. Technical textiles focus primarily on comfort rather than utility.

How many of the pairs given above is/are correct?
a) Only One
b) Only Two
c) Only Three
d) All four

Answer: a

Q5. Regarding Replacement Level Fertility (RLF), consider the following statements:
1. It accounts for child mortality and sex ratio at birth.
2. A Total Fertility Rate below RLF eventually leads to population decline in the absence of immigration.
3. RLF is always exactly 2.0 children per woman in all populations.

Which of the statements given above is/are correct?
a) 1 and 2 only
b) 1 only
c) 2 only
d) 2 and 3 only

Answer: a

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