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The Index of Industrial Production (IIP) is a key indicator of the industrial activity in India, reflecting the performance of manufacturing, mining, and electricity sectors. In August, IIP growth slowed to 4%, down from a six-month high of 4.3% in July 2025. The decline was primarily due to weak performance in consumer durables, non-durables, and slower growth in manufacturing and capital goods.

Industrial output growth slows to 4% in August

Country's IIP growth gets pulled down by consumer-related sectors; primary goods sector sees a turnaround with seven-month-high of 5.2%; experts say no effect of GST reforms that came in later

The Hindu Bureau
NEW DELHI

Growth in industrial activity in India slowed to 4% in August from its six-month high growth of 4.3% in July.

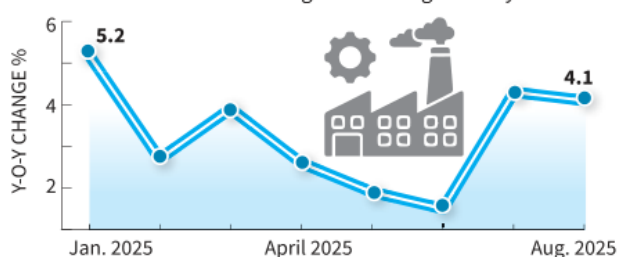
Growth was dragged down by the consumer durables and non-durables sectors, as well as slower growth in manufacturing, capital goods, and infrastructure sectors, government data showed.

On the other hand, mining activity, the primary goods sector, and electricity output saw a positive turnaround.

Data on the Index of Industrial Production (IIP), released by the Ministry of Statistics and Programme Implementation on Monday, showed that growth in the index this August was

Slowing growth

The year-on-year change (in %) in the Index of Industrial Production. The index saw 0% growth in August last year



SOURCE: CENTRE FOR MONITORING INDIAN ECONOMY

considerably faster than the 0% seen in August last year.

"This data should be read with caution as it captures neither the tariff nor GST effect which have been in the news and affected sentiment in business," Madan Sabnavis, chief economist at the Bank of Baroda, said. "Tariffs were implemented

from August 27 while GST benefits kicked in late September."

The mining and quarrying sector in particular saw a significant turnaround. It grew 6% in August, a 14-month high, snapping a four-month streak of contractions.

The second sector to see a robust turnaround was the primary goods sector,

which saw growth coming in at a seven-month high of 5.2%. The electricity sector grew at a five-month high of 4.1%.

The manufacturing sector, however, slowed to 3.8% in August, down from 6% in July. This was quicker than the 1.2% growth the sector saw in August last year. Similarly, growth in the capital goods sector slowed in August to 4.4% from 6.7% in July. This was, however, quicker than the 0% seen in August last year.

The growth in the consumer durables sector slowed to 3.5% in August from 7.3% in July and 5.4% in August last year. The consumer non-durables sector saw activity contracting 6.3%, the worst performance in eight months.

Current Context

• **Headline Data:**

- IIP growth in August 2025 – 4%, compared to 4.3% in July 2025 and 0% in August 2024.

• **Sectors Driving Growth:**

- Mining & Quarrying: 6% (14-month high).
- Primary Goods: 5.2% (7-month high).
- Electricity: 4.1% (5-month high).
- **Sectors Dragging Growth:**
 - Manufacturing: 3.8% (down from 6% in July).
 - Capital Goods: 4.4% (down from 6.7% in July).
 - Consumer Durables: 3.5% (down from 7.3% in July).
 - Consumer Non-Durables: (-6.3%), the sharpest contraction in 8 months.
- **Policy Context:**
 - Tariff revisions (effective Aug 27) and GST reforms (from late September) not yet reflected in data.

Static Context

- **Index of Industrial Production (IIP):**
 - Released by MoSPI (Ministry of Statistics and Programme Implementation) every month.
 - Base year: 2011-12.
 - Broad sectors: Manufacturing (77.63%), Mining (14.37%), Electricity (7.99%).
 - Use-based classification: Primary goods, Capital goods, Intermediate goods, Infrastructure goods, Consumer durables, Consumer non-durables.
- **Significance of IIP:**
 - Short-term measure of industrial growth.
 - Indicator for GDP estimates.
 - Helps in policy formulation (industrial, monetary, fiscal).

Implications for Mains

1. Positive Aspects:

- Mining sector revival after four months of contraction boosts raw material supply.
- Primary goods growth indicates rising demand in core sectors.
- Electricity growth shows improving energy demand and infrastructure activity.

2. Concerns:

- Manufacturing slowdown (core of IIP) reflects weak demand and supply-side bottlenecks.
- Consumer non-durables contraction points to rural distress and reduced consumption.
- Decline in capital goods growth suggests sluggish investment activity.
- Industrial recovery remains uneven and fragile, with consumption-led sectors under stress.

3. Policy Relevance:

- Need for targeted fiscal support for consumption demand.

- Infrastructure push under schemes like PM Gati Shakti and PLI (Production Linked Incentives) may offset sectoral weaknesses.
- Monetary easing or sector-specific credit support could help manufacturing and capital goods.

Conclusion

While India's IIP growth at 4% in August marks an improvement over last year's stagnation, the slowdown from July highlights sectoral imbalances. Mining, primary goods, and electricity show resilience, but manufacturing and consumer-driven sectors remain weak. For a sustainable industrial recovery, policy measures must address demand revival, investment push, and supply chain strengthening. The coming months will reveal whether GST reforms and tariff changes improve industrial momentum.

UPSC Prelims Practice Question

Ques: Consider the following statements about the Index of Industrial Production (IIP):

1. It is released monthly by the Central Statistical Organisation under MoSPI.
2. The base year of IIP is 2011–12.
3. The manufacturing sector has the largest weight in IIP.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: d)

UPSC Mains Practice Question

Ques: Consumer durables and non-durables sectors have shown contraction in recent IIP data. What does this indicate about the consumption demand in India? Suggest policy measures to address this issue. (250 Words)

India and Bhutan share a unique "special relationship" rooted in history, geography, culture, and strategic cooperation. Strengthening connectivity is a core pillar of this partnership. In this context, the announcement of two new railway links — Kokrajhar–Gelephu (Assam–Bhutan) and Banarhat–Samtse (West Bengal–Bhutan) — marks a significant step in deepening bilateral ties.

Two railway links to offer easy connectivity to Bhutan

Kokrajhar-Gelephu and Banarhat-Samtse lines will run to a total distance of 89 km; they will be developed at a cost of ₹4,033 crore; Railway Minister says project will boost economy, tourism

The Hindu Bureau
NEW DELHI

The Centre on Monday announced two rail links with a total distance of 89 km between India and Bhutan — Kokrajhar-Gelephu (Assam) and Banarhat-Samtse (West Bengal) — at a cost of ₹4,033 crore.

These two projects are part of the first set of rail connectivity projects between India and Bhutan, Foreign Secretary Vikram Misri announced at a press conference.

The memorandum of understanding (MoU) for these projects was signed during Prime Minister Narendra Modi's visit to Bhutan in March 2024 and a formal agreement was signed here on the occasion of the Bhutanese Foreign Secretary's visit to New Delhi.

"India is the largest trading partner of Bhutan. Most of the EXIM trade of Bhutan is through Indian ports, therefore, it becomes very important to have seamless rail connectivity for the Bhutanese economy to grow, and for the Bhutanese people to have better access to the



Strategic link: Railway Board CEO Satish Kumar, Union Minister Ashwini Vaishnaw, Foreign Secretary Vikram Misri, and MEA spokesperson Randhir Jaiswal announcing the Bhutan rail link on Monday. ANI

global network," Railway Minister Ashwini Vaishnaw said.

For Vande Bharat trains

The Minister said the two rail links would provide Bhutan access to 1,50,000 km of the Indian railway network. While the Kokrajhar-Gelephu rail link would be developed over the next four years, the Banarhat-Samtse line would be constructed over a period of three years. The railway lines would be designed for running Vande Bharat trains. The former will have six stations, two

viaducts, 29 major bridges, 65 minor bridges, two good sheds, one flyover and 39 underpasses. The latter will include two stations, one major flyover, 24 minor flyovers, and 37 underpasses. It will be developed at a cost of ₹577 crore.

"This will provide a lot of economic benefits to the people, in terms of tourism, industrial growth, people-to-people movement, and goods movement. Practically, every benefit that railway brings will happen with this," Mr. Vaishnaw added.

The Government of India has pledged ₹10,000 crore in development assistance to Bhutan for its 13th Five-Year Plan running from 2024 to 2029. This funding doubles the support provided during the 12th Plan.

Bhutan is also set to benefit from the Jogighopha Inland Waterways Transport Terminal, opened in February. The two nations have also collaborated on five major hydropower projects — Chukha, Tala, Mangdechhu, Kurichhu, and the recently completed Punatsangchhu II.

Current Context

• **Projects Announced:**

- Kokrajhar–Gelephu line (Assam–Bhutan): Lengthy alignment, to be completed in 4 years.
- Banarhat–Samtse line (West Bengal–Bhutan): To be completed in 3 years.
- Total Distance: 89 km.
- Total Cost: ₹4,033 crore (Banarhat–Samtse alone ₹577 crore).
- Design: Both lines will be capable of running Vande Bharat trains.
- Features: Bridges, viaducts, stations, flyovers, and underpasses to handle passenger and freight movement.
- Economic Scope: Boost to tourism, trade, industrial growth, and people-to-people connectivity.
- Strategic Assistance: India pledged ₹10,000 crore development aid to Bhutan's 13th Five-Year Plan (2024–29), double of previous plan support.
- Other Connectivity/Cooperation: Jogighopha Inland Waterways Terminal (Feb 2025), and hydropower projects like Chukha, Tala, Mangdechhu, Kurichhu, Punatsangchhu II.

Static Context

1. **India–Bhutan Relations:**

- Treaty of Friendship (1949, revised 2007): Basis of bilateral ties.
- Economic Cooperation: India is Bhutan's largest trading partner and development aid contributor.
- Hydropower Diplomacy: "Hydropower cooperation" is the centerpiece of economic partnership.

2. **Strategic Significance of Bhutan for India:**

- Acts as a buffer state between India and China.
- Location critical for security of Siliguri Corridor (Chicken's Neck).
- Stability in Bhutan contributes to India's Northeast security.

3. **Transport & Connectivity Diplomacy:**

- Enhanced connectivity strengthens regional integration under Act East Policy and BBIN (Bangladesh, Bhutan, India, Nepal) framework.
- Supports BIMSTEC connectivity agenda.

Implications

1. **Economic:**

- Boosts Bhutan's exports via Indian ports.
- Facilitates tourism and industrial development in Bhutan.
- Improves cross-border trade and regional supply chains.

2. Strategic:

- Counters Chinese influence in Bhutan by deepening economic interdependence with India.
- Strengthens India's hold in the Himalayan frontier, especially near sensitive border regions.

3. Social & Cultural:

- Enhances people-to-people contact through easier mobility.
- Encourages cross-cultural exchange and educational linkages.

4. Regional Integration:

- Complements inland waterways projects and existing road/air networks.
- Helps realize India's vision of multi-modal connectivity in the Northeast.

Conclusion

The two India–Bhutan railway links are more than just infrastructure projects — they symbolize economic integration, strategic trust, and cultural connectivity between the two nations. By enhancing Bhutan's access to India's 1,50,000 km railway network, these projects will not only strengthen bilateral relations but also serve India's strategic interest in the Himalayas. As India doubles its development assistance to Bhutan, connectivity projects will remain central to ensuring shared prosperity and security in the region.

UPSC Prelims Practice Question

Ques: Consider the following pairs of projects and countries:

1. Punatsangchhu Hydropower Project – Bhutan
2. Upper Karnali Hydropower Project – Nepal
3. Myitsone Dam Project – Myanmar

Which of the pairs given above is/are correctly matched?

- (a) 1 only (b) 1 and 2 only
(c) 2 and 3 only (d) 1, 2 and 3

Ans: (d)

UPSC Mains Practice Question

Ques: The proposed BRICS Grain Exchange reflects both economic cooperation and geopolitical strategy. Critically analyze its implications for India's food security and foreign policy. **(150 Words)**

Agriculture remains the backbone of India's rural economy and employs the largest share of women workers (42%). Recent trends show a sharp rise in women's employment in agriculture, but nearly half of them are unpaid family workers, reflecting structural inequities. This "feminisation of agriculture" without empowerment poses challenges to women-led development, even as global trade and digital technologies open new opportunities.

More women employed in agriculture, but half of them are unpaid

Global trade trends, technology, and land and labour reforms can help bridge the gap

DATA POINT

Shravani Prakash
Anjhana Ramesh

Women-led development has been recognised as a structural game-changer for advancing India's economic ambitions, yet its full potential remains under-leveraged. Nowhere is harnessing this potential more urgently than in the agriculture sector, the backbone of India's economy and the largest employer of its women.

Despite their growing presence on farms, women's contributions remain systematically unremunerative. By leveraging recent shifts in trade and technology, India has an unprecedented opportunity to unlock pathways that recognise women as equal partners in agricultural transformation.

In the past decade, structural shifts in the Indian workforce have drawn rural men into higher-paying non-farm jobs, leaving women to replace them to do the agricultural work. As a result, women's employment in agriculture surged by 135%, and they now account for over 42% of the sector's workforce. Two out of every three working women are now in agriculture.

Yet, this rise has come with diminishing returns. Nearly half of the women in agriculture are unpaid family workers, with their numbers jumping 2.5 times from 23.6 million to 59.1 million in just eight years (Chart 1). As a result, today, one in three working women in India is unpaid. In States such as Bihar and Uttar Pradesh, more than 80% of women workers are in agriculture, and over half of them receive no wages (Map 2).

Much of this invisibility stems from systemic inequities. Women are not officially recognised as farmers, own only 13-14% of land holdings, and earn 20-30% less than men for equivalent work. Asset ownership, decision-making power, and access to credit and go-

vernment support remain male-dominated, trapping women in low-value activities.

As a result, women's greater participation has not translated into higher income for the economy, as agriculture's share of the national GVA fell from 15.3% in 2017-18 to 14.4% in 2024-25. Therefore, the 'feminisation of agriculture'; has, in a way, reinforced inequities rather than enabling women's economic empowerment.

Global trade trends are opening new windows for women's economic inclusion in agriculture. The India-U.K. Free Trade Agreement (FTA), for example, is projected to boost Indian agricultural exports by 20% within three years, granting duty-free access to over 95% of agricultural and processed food products. From rice, spices, and dairy to ready-to-eat meals, Indian producers will benefit from premium market access, with safeguards in place for sensitive sectors. Many of these export-oriented value chains employ a significant share of women (Chart 3). If FTA-embedded provisions for women, such as training, credit access, and market linkages, are catalysed, it could enable women's transition from farm labourers to income-generating entrepreneurs.

The greatest opportunity lies in enabling women to move from unpaid, low-value tasks into higher-margin segments such as processing, packaging, branding, and exporting. With global demand rising for organic products and superfoods, India's value chains for tea, spices, millets and certified organic produce are poised for expansion – sectors where women are already strongly represented. Geographical Indications, branding initiatives, and support for meeting export standards can help women producers shift from subsistence farming toward premium, value-added product markets.

Without targeted measures, women risk being excluded from the export-led opportunities emerging in Indian agriculture. Digital inno-

ventions can play a decisive role in bridging this gap. Platforms such as e-NAM, mobile-based advisory services, voice-assisted applications, and precision agriculture tools are already connecting women to markets, knowledge systems, and financial services. These solutions help formalise women's labour while expanding access to schemes, credit, and fair pricing.

However, these benefits are contingent on overcoming structural barriers such as low digital literacy, language gaps, and limited access to affordable devices. Tackling these challenges requires collective action by all ecosystem actors – government, private sector, NGOs, self-help groups, and Farmer Producer Organisations (FPOs).

Encouragingly, promising models are emerging. AI-enabled solutions such as the government's BHASHINI platform and Micro-soft-AI4Bharat's Jugabandi are extending multilingual, voice-first access to government services. L&T Finance's Digital Sakhi programme has trained rural women in digital and financial literacy across seven States.

At the State level, Odisha's Swayam Sampurna FPOs showcase how technology can position women farmers at the forefront of export competitiveness. The Jhalawari Mahila Kisan Producer Company in Rajasthan leverages digital tools for direct sales and branding. Multi-stakeholder training programs for women farmers in Assam's tea sector focus on diverse areas. It is important to scale up and emulate these platforms.

To transform women's role in agriculture, land and labour reforms are equally vital. Policies must recognise women as independent farmers by promoting joint or individual land ownership, which in turn strengthens their eligibility for credit, insurance, and institutional support.

Shravani Prakash and Anjhana Ramesh are with ICRIER's EPWD (Economic Policies for Women Led Development) Programme

All work, no pay

The data for the charts were sourced from the Periodic Labour Force Survey (PLFS), 2023-24



Chart 1: The number of women in the agriculture sector who are unpaid family workers

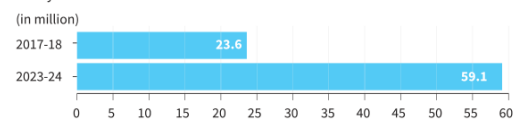


Chart 2: Proportion of women (in %) in agriculture who received no wages according to the Periodic Labour Force Survey (PLFS), 2023-24

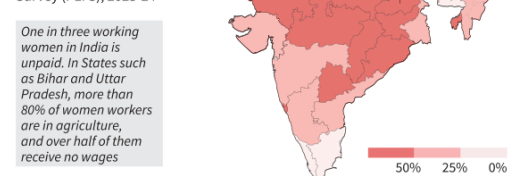
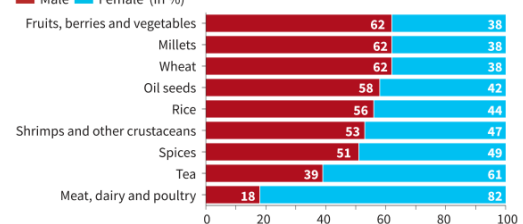


Chart 3: Proportion of men and women involved with crops with high export value



Current Context

- Women's employment in agriculture increased 135% in the last decade.

- 2/3 of all working women are now engaged in agriculture.
- Unpaid work: Women working as unpaid family labourers rose 2.5 times (from 23.6 mn → 59.1 mn in 8 years).
- In Bihar & Uttar Pradesh: Over 80% of women workers in agriculture; more than half unpaid.
- Land ownership: Women own only 13–14% of landholdings.
- Wage gap: Women earn 20–30% less than men for equivalent work.
- GVA share of agriculture declined from 15.3% (2017-18) → 14.4% (2024-25) despite higher female participation.

Structural Issues

- Women often not officially recognised as farmers → poor access to credit, insurance, subsidies.
- Asset ownership & decision-making power remains male-dominated.
- Trapped in low-value, subsistence activities instead of high-margin segments.

Opportunities Emerging

1. Global Trade Trends

- India–U.K. FTA → projected to boost agricultural exports by 20% in 3 years.
- Export-oriented value chains (rice, spices, dairy, processed food) employ a large share of women.
- If trade agreements include gender provisions (training, credit, market linkages) → women can move from farm labourers to entrepreneurs/exporters.

2. Technology & Digital Inclusion

- Platforms like e-NAM, precision agriculture tools, mobile-based advisory apps → connect women to markets, knowledge, and credit.
- AI-enabled tools: BHASHINI, Microsoft–AI4Bharat's Jugalbandi → multilingual, voice-first access to schemes.
- Best practices:
 - Odisha's *Swayam Sampurna FPOs*.
 - Rajasthan's *Jhalawari Mahila Kisan Producer Company*.
 - Assam's tea sector training programmes.
 - L&T Finance's *Digital Sakhi* for digital/financial literacy.

3. Value-Addition & Branding

- Women strongly represented in tea, spices, millets, organic produce.

- GI tags, branding, packaging, and meeting export standards → higher margins for women producers.

4. Land & Labour Reforms

- Promoting joint/individual land ownership for women.
- Recognising women as independent farmers → eligibility for institutional support, credit, and insurance.

Static Context

- Feminisation of Agriculture: Concept where women's share in agricultural workforce increases, often due to male migration to non-farm jobs.
- Schemes relevant:
 - *Mahila Kisan Sashaktikaran Pariyojana (MKSP).*
 - *Deendayal Antyodaya Yojana – NRLM.*
 - *PM Formalisation of Micro Food Processing Enterprises Scheme.*
 - *PM Kisan Samman Nidhi* (debate on women's inclusion).

Implications

Positive Outlook:

- Women's rising share in agri-workforce = potential to boost rural incomes.
- Digital and trade reforms can make women agri-entrepreneurs.
- Women's collectives (SHGs, FPOs) can drive *inclusive growth*.

Concerns:

- High unpaid work = hidden gendered inequality.
- Landlessness + low asset ownership = weak bargaining power.
- Without reforms, "feminisation of agriculture" will reinforce inequities rather than empower women.

Conclusion

India's agricultural transformation cannot succeed without women as equal stakeholders. While rising participation indicates resilience, unpaid and low-value work reflects systemic inequities. By aligning trade opportunities, digital innovations, and land-labour reforms with women-led development, India can turn feminisation of agriculture from a challenge into a pathway for inclusive, sustainable, and export-oriented growth.

UPSC Prelims Practice Question

Ques: As of recent data, what percentage of India's agricultural workforce is comprised of women?

- A) 33%
- B) 42%
- C) 50%
- D) 60%

Ans: (b)

UPSC Mains Practice Question

Ques: Examine the role of digital technologies and trade reforms in improving women's participation and income in Indian agriculture. **(150 Words)**

Global governance of sensitive goods, technologies, and digital infrastructure is increasingly becoming critical in the era of cloud computing, AI, surveillance tech, and cybersecurity. The Wassenaar Arrangement (WA), a multilateral export control regime, was designed to prevent the proliferation of dual-use goods and technologies. However, with technological advancements, its traditional frameworks have become inadequate, leading to grey areas in areas such as intrusion software, cloud services, and digital surveillance systems.



An overhaul: Demonstrators march in support of Palestinians near the Microsoft Build conference, calling for the termination of Microsoft's Azure contracts with Israel in Washington, U.S. on May 21, 2024. REUTERS

The Wassenaar Arrangement: the need to reform export control regimes

While the Arrangement has expanded to include controls on 'intrusion software', the structure of the Arrangement is such that control means physical exports of devices, chips, and hardware modules. As a result, many information flows related to cloud services fall in grey areas

Yasudevan Mukunth

The modern Internet is built on vast computing backbones that a very small number of companies control. Among them, Microsoft has become indispensable to governments worldwide. But when its infrastructure was used to deepen Israel's repression of Palestinians, the episode raised difficult questions about how export regimes can govern services they may never have imagined when those rules were drafted. Export regimes are international agreements between supplier countries to control the export of sensitive goods and technologies to prevent the proliferation of weapons of mass destruction.

The Wassenaar Arrangement

A particularly important instrument is the Wassenaar Arrangement, a multilateral "export control regime" for conventional arms and dual-use goods and technologies. In a voluntary coordination framework, its participating states commit to control lists and exchange information while allowing each government to retain its discretion on licensing, implementation, and enforcement.

In 2013, the Arrangement expanded to include controls on "intrusion software", that is, software designed to bypass or defeat security protections of networks and certain surveillance or cyber-surveillance systems. The structure of the Arrangement was however conceived in an era when control meant physical exports of devices, chips, hardware modules, etc., and software transfers were written off as incidental.

As a result, many technology and information flows related to cloud services fall in grey areas. For example, the Arrangement doesn't always treat the access, use or administration of software to be an export in every context, and allows countries to differ on how they interpret a technology transfer. The software-as-a-service (SaaS) model in particular complicates matters because

here the user remotely invokes a functionality instead of installing it locally, and the Arrangement can't say whether that's an export of a controlled technology.

Moreover, as the Arrangement is based on consensus, any member can block modifications. And even when a technology is controlled, the Arrangement requires individual countries to implement controls as per their domestic export control legislation, which often differs in ambition and political will. As a result, the Arrangement's coverage is patchy and many states have loopholes to allow "defensive security research" and internal technology transfers.

A need to re-evaluate

India joined the Wassenaar Arrangement in 2017 and incorporated its lists into its Special Chemicals, Organisms, Materials, Equipment, and Technologies framework. Yet like many participating states, its engagement has largely been about securing legitimacy in global export-control regimes rather than pressing for the Arrangement to adapt to the era of the cloud. As a result, even as membership of the forum has been widening, the regime remains unable to address the technologies most likely to be misused for surveillance and repression.

To bring the Arrangement into operational relevance, its scope needs to expand significantly. For example, its list of controlled technologies should explicitly include infrastructure and services that enable large scale surveillance, profiling, discrimination, and real-time control and systems that break national boundaries (for example, regional biometric systems or cross-border data transfers linked to policing). Including such technologies in the control lists would require devising criteria for capacity thresholds and carving out defensive, benign uses under strict safeguards and licensing.

Second, a major obstacle is that many control regimes still conceptualise 'export' as physical transfer or download.

In the cloud, an export can also be remotely executed or invoked in API calls. The Arrangement thus needs binding guidance that treats remote enablement, authorisation, and granting administration rights as equivalent to export if they provide access to a controlled technology. The Arrangement should also embed end-use controls more systematically. While classical export control is about military use or the proliferation of weapons of mass destruction, for cloud services and digital surveillance the risk is mass human rights abuses. For instance, the license to use some technology should depend on the item's technical specs as well as on the identity of the user, the jurisdiction, the oversight regime, the legal mandate, and the risk of misuse.

Third, the Arrangement's voluntary nature is a weakness in high risk settings. States should instead adopt a binding treaty or framework with obligations that include mandatory minimum standards for licensing, mandatory export denial in atrocity-prone jurisdictions, and supervision by peer review.

Fourth, cloud services are global: a user in one country can trigger concerns in another. National licensing authorities must share information and align their policy decisions. To this end, the Arrangement should include technical interoperability standards, a shared watchlist of flagged customers or entities, and exchange red alerts in real-time, for example, when a cloud provider offers certain services to a blacklisted state.

Fifth, cloud and AI technology move at high velocity, and the Arrangement needs to be equally agile. This can be facilitated by a specialised technical committee or secretariat that's empowered to propose interim updates, fast-track high priority controls, and receive inputs from independent experts. The Arrangement should consider adopting a sunset mechanism that causes items to fall out of the control list unless their inclusion is renewed. In fact, given the additional challenge of global consensus, the Arrangement may also consider hosting a

domain-specific control regime for AI, digital surveillance, cyber weapons, etc. which aligns with the overall regime while possessing the ability to evolve faster.

Is such reform realistic?

Some powerful states may resist stricter controls of cloud services by arguing it would stifle innovation, sovereignty and/or impose undue regulations on private industry. A small number of holdouts can still block changes to the Arrangement as it exists, especially those that benefit from providing surveillance technologies abroad. Further, mapping cloud systems to control categories, define thresholds, distinguishing benign versus malign use, and implementing cross-border licensing is an extremely intricate enterprise.

Still, a pragmatic path is possible – and perhaps necessarily under the Arrangement. Some states, especially in the EU, are already pushing national export controls on 'high technologies' currently beyond the Arrangement's reach. The EU's dual-use regulation now treats the transmission of cloud services as potentially subject to rules that apply to dual-use technologies.

There's also leverage, as specified under the UN Guiding Principles, because cloud providers are large and interconnected.

Stricter export controls could join corporate human rights duty frameworks and limits on public procurement to reinforce incentives on providers to refuse certain customers.

At present, the Arrangement still retains normative weight, with many national export control systems, but especially the U.S. Export Administration Regulations and the EU dual use rules, drawing from it.

Microsoft's own whitepaper on export controls refers to such regimes as part of its compliance framework. In practice, however, the realities of cloud services and SaaS expose significant gaps, rendering the Arrangement incapable of being a credible shield against the misuse of cloud services.

Static Context

1. About Wassenaar Arrangement (WA)

- Established in 1996 (Vienna-based).
- A voluntary multilateral export control regime with 42 participating states (India joined in 2017).
- Objective: To contribute to international security and stability by promoting transparency in transfers of conventional arms and dual-use goods and technologies.
- Works through control lists – Munitions List & Dual-use Goods and Technologies List.

2. Relevance for India

- India's membership enhances its credentials in non-proliferation.
- Helps India in access to high-technology items.
- Strengthens India's case for Nuclear Suppliers Group (NSG) membership.

3. General Role of Export Control Regimes

- Aim: Prevent proliferation of weapons of mass destruction (WMDs).
- Examples: Nuclear Suppliers Group (NSG), Missile Technology Control Regime (MTCR), Australia Group, Wassenaar Arrangement (WA).

Current Context

1. Problem with Current WA Framework

- Originally meant for physical exports (weapons, chips, hardware modules).
- But digital age → grey areas: intrusion software, AI tools, cloud services, APIs, remote admin rights.
- National licensing authorities often lack clarity on new technologies → patchy implementation.

2. Example Highlighted

- Microsoft's cloud infrastructure reportedly used in Israeli surveillance operations, raising questions on governance.
- WA unable to define whether remote software functions constitute "exports".

3. Gaps in Present Mechanism

- Patchy coverage → many loopholes for "defensive cyber research" and dual-use tools.
- No binding treaty obligations, unlike nuclear regimes.
- Lack of adaptability to emerging tech like AI, big data, and cloud.

Analysis

1. Why Reform is Needed?

- Globalisation of digital networks → borderless nature of software exports.
- Misuse of surveillance tech in authoritarian regimes → human rights issues.

- Growing threat of cyber warfare & intrusion software.

2. Challenges in Reforming WA

- Divergent national interests of member countries.
- Technology evolves faster than regulations.
- Private sector's dominance in innovation (Microsoft, Google, etc.) → regulation gap.

3. Way Forward

- Introduce binding obligations for transparency in dual-use technologies.
- Strengthen domain-specific control regimes (for AI, cloud, and cyber tools).
- Establish independent oversight bodies for licensing and accountability.
- Enhance cooperation among export control regimes (WA, NSG, MTCR, Australia Group).
- Promote balance between security needs and free trade.

Conclusion

The Wassenaar Arrangement, though historically significant, is increasingly outdated in the era of cloud computing, AI, and intrusion software. Reform is essential to make export controls relevant to 21st-century digital technologies, ensuring that they protect global security while also upholding human rights and innovation freedom. For India, active participation in reform debates not only safeguards its technological and strategic interests but also enhances its standing as a responsible global power.

UPSC Prelims Practice Question

Ques: Consider the following statements regarding the Wassenaar Arrangement (WA):

1. It is a binding treaty under the United Nations Security Council.
2. It deals with export controls on conventional arms and dual-use goods and technologies.
3. India joined the Wassenaar Arrangement in 2017.

Which of the above statements is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (b) 2 and 3 only

UPSC Mains Practice Question

Ques: The Wassenaar Arrangement, though important in the 20th century, is inadequate to deal with emerging technologies such as AI, cloud computing, and intrusion software. Discuss the need for reforms in global export control regimes. **(150 Words)**

E-waste (Electronic Waste) has emerged as one of the most pressing environmental and economic challenges of the digital age. With the exponential rise in consumer electronics, India generated 4.17 million metric tonnes of e-waste in 2022, of which only one-third was processed through formal channels. The dominance of the informal sector and gaps in regulatory mechanisms have created a serious dilemma for policymakers.

E-waste collection faces gaps as informal sector plays huge role

Aroon Deep
NEW DELHI

Even as the Centre nudges local electronics manufacturing via the push for semiconductor fabrication and the Electronics Component Manufacturing Scheme – gaps have emerged in a critical sector that may assume more importance in the years to come: e-waste recycling.

With millions of tonnes of consumer electronics and appliances disposed of in recent years, policymakers see extracting expensive and scarce metals and elements as key as electronics use is set to boom in the coming years.

While hundreds of millions of mobile phones are in use in India, with TRAI pegging the number of mobile broadband connections in excess of 93.9 crore, India constitutes only about 4%, of global electronics consumption.

As global electronics' supply chains stay fragile, the Centre has pushed to boost local manufacturing capacity as well as a ₹1,500 crore mineral recycling scheme announced in early September.

Recycling elements such as copper, aluminum, nickel, cobalt and lithium, has shown growing importance, with the Centre introducing an "extended producer responsibility" (EPR) framework for appliances and electronics to be collected by the original manufacturers, for harvesting materials expensive to procure from the open market, or suffer from geopolitical risks such as China's decision to curb the exports of rare earth elements (REEs).



Major irritant: Informal set-ups have frustrated policymakers, as they focus on repairing products by harvesting components.

A 2023 report by the Indian Cellular and Electronics Association pointed to a key hurdle in creating a "circular economy" for such products – where metals and elements from so-called end-of-life products can be reintroduced into supply chain – viz. domination of informal sector".

Policymakers' dilemma

These set-ups have frustrated policymakers, as they focus on repairing products by harvesting parts from used goods and operate outside any formal framework that can eventually lead to recycling being a viable source of key raw materials for manufacturing firms. Even within the government's EPR framework, accusations of "paper trading" abound, with recyclers allegedly overstating the goods they are recycling to win incentive payments.

"Some players are indulging in malpractices to earn financial benefits without having either the capability or the capacity for metal extraction, which needs to be exposed," Sandip Chatterjee, an adviser to think tank Sustainable Electronics Recycling In-

ternational (SERI), who worked on e-waste issues for decades at the Ministry of Electronics and Information Technology, told *The Hindu*. These copper, steel, gold and aluminium extracting operations need "third-party auditing to ensure best practices on environmental safeguarding, [and] due diligence of downstream vendors for the fate of those materials till disposal," he added.

Material traceability

Dr. Chatterjee also said "material traceability" was a huge problem, since irregularities (or impossibility) in inventorying products floating around in informal markets and even registered recyclers were hampering visibility into what materials can actually be recycled and used in products. He also pushed for repairing products more and prolonging their life as a measure in e-waste management. But even there it was important for for visibility in the life cycle of individual products.

Inventorying is critical as western countries count a product sold as potential e-waste soon after sale unlike in India, where gadgets

may go through multiple owners before wearing out beyond repair. "Presently, inventory has been entrusted to State Pollution Control Boards," he said. "They never use a uniform method suited to India and international figures of e-waste generation are always different."

But the statistics, as they are, still represent major volumes. Dr. Chatterjee cited an estimate of 4.17 million metric tonne of e-waste generated in 2022 alone in India, and said that only a third of this waste is processed through "proper channels"

Nitin Gupta, founder, Attero, an electronics recycling firm, said the Central Pollution Control Board, which operates the portal recyclers use, "has started carrying out audits of various recyclers in the last five months," and over 50 firms were audited, with those showing discrepancies being acted against.

Mandi-style unit

Attero has set up a large metals recycling operation, aggregating even informal set-ups into a "mandi"-style stream. While the current proportion of recycled precious metals and rare-earths in domestic supply chains is "negligible," as per Mr. Gupta, he asserted with the right policy push, "India can meet 70% of its rare earth materials requirements in the next 18 months."

The "percentage of how much impact recycling has had, has been improving year on year," Mr. Gupta added. "In India, gold, copper, aluminium and steel are majorly recovered," Dr. Chatterjee said.

Static Context

1. Definition of E-Waste

- Electronic and electrical equipment discarded after the end of their life cycle.
- Contains valuable metals (gold, silver, platinum), rare earth elements, and hazardous substances (lead, mercury, cadmium).

2. Legal Framework in India

- E-Waste (Management) Rules, 2016→ Introduced Extended Producer Responsibility (EPR).
- Producers are responsible for collection and recycling of waste generated from their products.
- CPCB (Central Pollution Control Board) monitors compliance.

3. Global Context

- According to the Global E-Waste Monitor (2020), more than 50 million tonnes of e-waste is generated annually worldwide.
- India is the third-largest generator, after China and the USA.

Current Context

1. Gaps and Challenges

- Dominance of Informal Sector: Scrap dealers and small recyclers handle most of India's e-waste.
- Lack of Transparency: Material traceability is poor, inventory records inconsistent.
- Paper Trading: Even registered recyclers overstate recycling to claim incentives.
- Improper Disposal: Toxic substances like lead and mercury are not safely processed.

2. Government Efforts

- ₹1,500 crore seminal recycling scheme announced.
- Push for local electronics and semiconductor manufacturing.
- CPCB audited 50+ recyclers recently; discrepancies found.

3. Role of Informal Sector

- Encourages reuse and repair culture.
- Provides affordable recycling and employment.
- Emergence of "Mandi-style units" as informal aggregation hubs.

Policy Dilemma & Analysis

1. Advantages of Informal Sector

- Promotes low-cost repair and reuse.
- Generates employment for unskilled workers.
- Helps increase recycling at grassroots level.

2. Challenges

- Environmental hazards due to unsafe processing.
- Lack of accountability and formal reporting.
- Difficulty in material traceability and monitoring.

3. Way Forward

- Integration of formal + informal sector models.
- Strict enforcement of EPR compliance.
- Use of technology-enabled recycling hubs.
- Public awareness campaigns on safe disposal.
- Focus on recovery of rare earth metals to reduce import dependence.

Conclusion

E-waste management in India is not just an environmental concern but also a strategic economic issue, as it involves critical raw materials essential for electronics and renewable energy. To move towards a circular economy, India must integrate the informal sector into a formal framework while ensuring strict monitoring, technological innovation, and awareness. With the right policies, India can transform e-waste from a liability into a valuable resource and emerge as a global leader in sustainable resource management.

UPSC Prelims Practice Question

Ques : Consider the following statements about E-waste in India:

1. India is the world's second-largest generator of e-waste after China.
2. The E-Waste (Management) Rules, 2016 introduced Extended Producer Responsibility (EPR).
3. Central Pollution Control Board (CPCB) is responsible for monitoring compliance of e-waste rules.

Which of the above statements are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (b) 2 and 3 only

UPSC Mains Practice Question

Ques: "E-waste management in India is more of an economic and governance challenge than merely an environmental concern." Discuss. **(150 Words)**

An anti-terror role that defies logic

From harbouring Osama bin Laden in a house that was just a stone's throw away from its own military academy, to training and backing groups such as the Lashkar-e-Taiba (LeT) and Jaish-e-Mohammad (JeM), Pakistan's role in fuelling cross-border terrorism is no longer an allegation. It is a matter of record. The 2008 Mumbai attacks, the 2019 Pulwama bombing and the attack on tourists in Pahalgam on April 22, 2025, are events that bear the unmistakable marks of a terror infrastructure being nurtured across the border. In response to the Pahalgam attack, India launched Operation Sindoor, striking at the roots of this terror network along the Line of Control. Pakistan faces growing accusations not only from India but also from Afghanistan to Balochistan – of fostering regional instability, crushing dissent and deepening unrest.

Just a few days ago, India delivered a sharp rebuttal to Pakistan Prime Minister Shehbaz Sharif's speech at the United Nations General Assembly. Therefore, when a nation long accused of harbouring terrorists is given the reins of global counter-terrorism efforts – despite clear evidence of its terror links – the world should pause and ask questions.

In June this year, in a decision that sparked disbelief, Pakistan was to lead two critical United Nations bodies: the Taliban Sanctions Committee of the United Nations Security Council (UNSC) and as the vice-chair of the Counter-Terrorism Committee of the 15-nation UN body. This development also came at a time when Pakistan's credibility on counter-terrorism was under scrutiny. On July 1, Pakistan also officially assumed the Presidency of the UNSC for the month of July.

In the past, the UN's decisions to make Libya as the chair of the UN Human Rights Commission and Saudi Arabia as the chair of UN Women's Rights Commission have come under scrutiny. In May 2025, the International Monetary Fund (IMF) approved a \$1 billion loan to Pakistan, despite concerns over its potential misuse for terror financing. These developments expose significant loopholes in the UN's foreign policy and raise questions about the UN's commitment to combating global terrorism.

Terror shelter

The Pahalgam attack highlighted Pakistan's continuing role as a haven for terror groups. Hafiz Saeed, a UN-designated terrorist, has made several public appearances in recent years despite serving a sentence for terror financing. He has often been seen at terror launchpads in Pakistan-Occupied Kashmir (PoK) but is "in custody" on paper. The presence of Pakistani



Gauri Mishra

is a highly decorated naval officer with a career of around two decades in the Indian Navy, from where she retired as Commander. She is also a motivational speaker, author, skydiver and an international track cyclist representing India

The world should pause and ask why Pakistan, a nation with evidence of terror links, has been allowed to oversee global counter-terrorism efforts at the United Nations

Army personnel, the Pakistani police and members of civil bureaucracy at the funeral procession of terrorists killed in Operation Sindoor, further indicates Pakistan's open support for terrorist organisations.

The inclusion of Pakistan in the UN's counter terrorism mechanisms exposes troubling gaps and issues with the global body's moral and strategic compass.

First, Pakistan's long-standing support for terror groups such as the LeT and JeM, directly contradicts the objectives of the Counter-Terrorism Committee. There is adequate evidence linking Pakistan's military and Inter-Services Intelligence (ISI) to logistical and tactical support for terror modules. Yet, the UN prioritised geopolitical considerations over moral and security imperatives.

Second, the UN's selection process for committee leadership lacks stringent vetting for a country's compliance with counter-terrorism standards. Pakistan's removal from the Financial Action Task Force (FATF) grey list in October 2022, despite ongoing concerns about terror financing, exemplifies this leniency.

Third, the decision also reflects a broader trend of geopolitical manoeuvring within the UN, where powerful nations support Pakistan's elevation to secure economic or strategic interests. This bias compromises the UN's impartiality and risks legitimising Pakistan's duplicitous stance on terrorism.

Fourth, by rewarding duplicity with leadership, the UN sends a dangerous message: state-sponsored terror can be overlooked if packaged diplomatically.

The IMF loan to Pakistan – part of a \$7 billion Extended Fund Facility – fuelled controversy despite India abstaining from the vote. The risk of funds being misused for terror activities was cited. However, the timing of the loan, just weeks after the Pahalgam attack raised ethical questions on the UN's commitment to combat global terrorism.

The UN's dangerous gamble

In May this year, the Pakistan government announced a compensation of ₹14 crore to the families of terrorists, including relatives of JeM chief Masood Azhar, who were killed in Indian strikes. When a nation equates terrorists with martyrs, one does not need to imagine its commitment to peace.

The UN's decision to entrust Pakistan with key counter-terrorism roles, despite its explicit ties to terrorism, casts a shadow over UN's integrity and suggests a troubling disconnect between the UN's stated goals and its actions.

Such moves will only help Pakistan legitimise

its narrative and project itself as a responsible global actor in counter-terrorism. It will also undermine India's efforts to portray Pakistan as a state sponsor of terrorism. Pakistan could shape narratives around regional stability, potentially deflecting blame for regional terrorism on India, particularly in the context of Balochistan.

Pakistan's role as vice-chair in the Counter Terrorism Committee allows it to influence global counter-terrorism policies. This may have serious repercussions for India's push to bring Pakistan-based terrorists under UN sanctions. Pakistan could also derail India's growing diplomatic ties with the Taliban.

Counter-measures by India

India's failure to block Pakistan's appointments, despite its outreach to most UNSC members following the Pahalgam attack, signals a diplomatic challenge.

In counter strategies, India must leverage its strategic alliances with other UNSC members to counterbalance Pakistan's influence.

That Pakistan is at the centre of attention at the White House also raises doubts on the U.S.'s commitment to combat terrorism for the sake of trade and business.

India should actively participate in discussions at crucial UN bodies to highlight Pakistan's history of harbouring terrorists. These committees are operated by consensus and India's growing global influence can limit Pakistan's ability to push biased agendas. It is essential that India and its allies monitor Pakistan's role and push for periodic performance reviews and stringent accountability.

India should aim to deepen its ties with the Taliban regime – humanitarian aid missions in Kabul is one possibility – to counter Pakistan's influence in the Taliban Sanctions Committee.

India must proactively pursue an international campaign that engages the global media, academia and diaspora, exposing Pakistan's terror links and pushing for more accountability.

Pakistan's enhanced diplomatic position is likely to encourage asymmetric warfare, infiltration and cyber-attacks. Therefore, India must strengthen its national security and intelligence networks.

The Indian government's silence on the appointments suggests a cautious approach, but proactive diplomacy will be crucial to maintain India's narrative on the global stage. The world must be alert because what begins as a seat at the table can turn into control over the agenda. The real danger is not about Pakistan at the high table. It is the world pretending that it does not matter.

GS. Paper 02– International Relations

UPSC Mains Practice Question: What role can India play in reforming the UN's counter-terrorism mechanisms to ensure credibility and accountability in global anti-terror efforts?(150 Words)

Context :

Terrorism remains one of the gravest threats to international peace and security. While Pakistan has long been accused of harbouring and sponsoring terror groups such as Lashkar-e-Taiba (LeT) and Jaish-e-Mohammad (JeM), it simultaneously seeks legitimacy on global counter-terrorism platforms like the UN Security Council (UNSC) and the Counter-Terrorism Committee (CTC). This contradictory role undermines the credibility of global anti-terror frameworks and poses challenges for India's security and diplomacy.

Static Context

1. UN Counter-Terrorism Framework

- UNSC has a Counter-Terrorism Committee (CTC) established by Resolution 1373 (2001) post 9/11 attacks.
- Monitors member states' measures against terrorism (financing, safe havens, logistics).
- Members rotate periodically, often leading to controversial inclusions.

2. Pakistan and Terrorism

- Historical record of hosting terrorist leaders (e.g., Osama bin Laden in Abbottabad).
- Training and logistical support to groups targeting India.
- Accusations of using terrorism as a state policy to achieve strategic depth in Afghanistan and Kashmir.

3. India's Stand

- India has consistently highlighted Pakistan's role in sponsoring cross-border terrorism in international forums.
- India is part of FATF (Financial Action Task Force) efforts against terror financing.

Current Context

- Pahalgam terror attack (April 2025)→ Renewed proof of Pakistan-based terror networks.
- India's Operation Sindoor→ Targeted roots of terror network along LoC.
- Despite this, Pakistan was made:
 - Chair of UNSC Taliban Sanctions Committee (June 2025).
 - Vice-Chair of UN Counter-Terrorism Committee.
- Pakistan also facing FATF scrutiny but still managed to gain positions in UN mechanisms.
- This raises moral, strategic, and credibility issues for the UN system.

Analysis

1. Contradictions in UN's Approach

- Pakistan supports terror groups but is given leadership in counter-terrorism forums.
- Sends wrong signals → undermines credibility of multilateral institutions.

2. Implications for India

- India faces continuous cross-border terrorism despite global recognition of Pakistan's duplicity.
- Pakistan uses its UN positions to:
 - Block action against its terror groups.
 - Influence narratives in its favour.

3. Why This Happens?

- Geopolitics: Major powers often overlook Pakistan's record due to strategic needs (Afghanistan, China factor, US interests).
- UN Structure: Rotational leadership, absence of binding criteria for counter-terrorism positions.

4. Way Forward for India

- Use diplomacy to expose Pakistan's duplicity in international forums.
- Strengthen role in FATF, QUAD, BRICS counter-terror cooperation.
- Push for objective criteria for membership in UN counter-terror bodies.
- Build global consensus for accountability and transparency in counter-terrorism regimes.

Conclusion

Pakistan's contradictory position—being both a sponsor and supposed controller of terrorism—undermines the credibility of the UN's counter-terrorism mechanisms. For India, it is essential to continue exposing Pakistan's double standards and mobilise international opinion for reforms in global counter-terrorism structures. Only through consistent diplomatic efforts and strong domestic preparedness can India ensure its security and uphold the integrity of global anti-terror frameworks.