

**The Hindu Important News Articles & Editorial For UPSC CSE**  
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**Page 01 : GS III: Science & Technology / Prelims Exam**

In a decisive move to address the "authenticity crisis" in the digital age, the Union Government has notified significant amendments to the IT Rules, 2021. These changes, effective from February 20, 2026, primarily target the proliferation of photorealistic AI content and deepfakes. By mandating prominent labelling and slashing takedown timelines, the government aims to bridge the gap between rapid technological advancement and the lag in legal accountability.

# Centre prescribes labels for all photorealistic AI content online

Amended rules require disclosure for AI-generated media, warn platforms of loss of safe harbour for non-compliance; new changes take effect on February 20; shorter timelines to social media companies for takedown of illegal, sensitive content

**Aroon Deep**  
 NEW DELHI

The Union government has notified amendments to the Information Technology Act, 2021, requiring photorealistic AI-generated content to be prominently labelled.

The changes, which will come into force on February 20, also significantly shorten timelines for takedown of illegal material.

Under the new rules, social media platforms will now have between two and three hours to remove certain categories of unlawful content, a sharp reduction from the earlier 24-36 hours.

Content deemed illegal by a court or an "appropriate government" will have to be taken down within three hours, while sensitive content, featuring non-consensual nudity and deepfakes, must be re-

## Content check

Platforms that enable creation or sharing of synthetic content must ensure **clear and prominent labelling** under the new rules



### Key changes include:

- Synthetic content to be treated as 'information' for determining unlawful acts under IT Rules

- Timeline for platforms to act on government or court orders reduced from 36 hours to 3 hours

- Sensitive content, including non-consensual deepfake, must be removed within 2 hours

- Platforms to seek disclosures from users for AI-generated content

moved within two hours.

The Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2026, defines synthetically generated content as "audio, visual or audio-visual information which is artificially or algorithmically created, generated, modified or altered using a computer resource, in a manner that

such information appears to be real, authentic or true and depicts or portrays any individual or event in a manner that is, or is likely to be perceived as indistinguishable from a natural person or a real-world event."

The final definition is narrower than the one released in a draft version of these rules in October 2025. As with the existing

IT Rules, failure to comply with the rules could result in loss of safe harbour, the legal principle that sites allowing users to post content cannot automatically be held liable in the same way as a publisher of a book or a periodical can.

## Proactive labelling

Platforms will be required to seek disclosures from users in case their content is AI-generated. If such a disclosure is not received for synthetically generated content, the official said, firms would either have to proactively label the content or take it down in cases of non-consensual deepfakes.

The amended rules mandate that AI-generated imagery be labelled "prominently". While the draft version specified that 10% of any imagery would have to be covered with such a disclosure, platforms have been given some more le-

way, the official said, since they pushed back on such a specific mandate.

"Provided that where [a social media] intermediary becomes aware, or it is otherwise established, that the intermediary knowingly permitted, promoted, or failed to act upon such synthetically generated information in contravention of these rules, such intermediary shall be deemed to have failed to exercise due diligence under this sub-rule," the rules say, hinting at a loss of safe harbour.

The rules also partially roll back an amendment notified in October 2025, which had limited each State to designating a single officer authorised to issue takedown orders. States may now notify more than one such officer— an "administrative" measure to address the need of States with large populations, the official said.



## Key Highlights of the 2026 Amendments

### 1. Statutory Definition of "Synthetically Generated Information" (SGI)

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The rules formally define SGI as audio, visual, or audio-visual information created or altered using computer resources that appears real or authentic.

Exemptions: Routine edits (color correction, noise reduction), accessibility features, and bona fide educational or research materials are excluded, provided they do not distort the original meaning.

### Mandatory Labelling and Traceability

**Proactive Disclosure:** Platforms must seek user declarations at the time of upload.

**Visual/Audio Cues:** AI content must be "prominently" labelled. While a draft suggested a 10% coverage rule, the final rule provides "leeway" but insists on visibility.

**Metadata Embedding:** Intermediaries must embed permanent, unique identifiers and metadata to trace the origin and the tool used for generation.

### Loss of "Safe Harbour"

Under Section 79 of the IT Act, intermediaries enjoy immunity from liability for user-posted content. However, the new rules state that if a platform knowingly permits or fails to act on unlabelled SGI or illegal deepfakes, it will lose this protection, making it legally liable as a "publisher."

### Analysis: Significance

#### A. Impact on Governance and Security

**Electoral Integrity:** Labels act as a first line of defense against AI-driven disinformation campaigns during elections.

**National Security:** Prevents the use of deepfakes for social engineering, financial fraud, and inciting public disorder.

#### B. Rights vs. Regulation

**Right to Information:** Prominent labels empower citizens to make informed choices about the content they consume (Art. 19).

**Privacy and Dignity:** The 2-hour takedown for Non-Consensual Intimate Imagery (NCII) protects the fundamental right to privacy and bodily autonomy.

#### C. Challenges in Implementation

**Technical Feasibility:** Smaller platforms may struggle to deploy the "automated tools" required to verify user declarations.

**Defining "Indistinguishable":** The subjective nature of what "appears to be real" could lead to over-censorship (chilling effect) or inconsistent enforcement.

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**Global Coordination:** Since AI tools are often hosted outside India, enforcing metadata and provenance standards remains a cross-border challenge.

### Conclusion

The 2026 amendments represent an "intent-based" regulatory shift, moving from passive moderation to proactive transparency. While the shortened 3-hour window places a massive operational burden on tech companies, it reflects the government's urgency in tackling the near-instantaneous virality of deepfakes. For India to lead in AI governance, these rules must be complemented by a strong Digital India Act and public awareness campaigns to ensure that "labels" translate into "literacy."

### UPSC Prelims Exam Practice Question

**Ques:** The requirement of mandatory labelling of AI-generated content under the IT Rules, 2026 primarily aims to address which of the following challenges?

- (a) Digital divide
- (b) Authenticity crisis in online information
- (c) Market dominance of Big Tech
- (d) Cyber warfare between states

**Ans: (b)**

### UPSC Mains Exam Practice Question

**Ques:** Deepfakes pose a multidimensional threat to internal security, electoral integrity, and social harmony. How do the IT Rules Amendment, 2026 attempt to address these threats? What challenges remain? **(150 Words)**

**Page 07 : GS III : Environment**

Nature's colors are not merely aesthetic; they are functional tools for thermoregulation, camouflage, and sexual selection. Recent reports indicate a global "fading" and "shifting" of these colors. Oceans are turning greener due to phytoplankton shifts, forests are browning prematurely from heat stress, and wildlife—from butterflies in the Amazon to ladybirds in Europe—are altering their pigmentation to survive a warming planet.

**Global warming and pollution are stripping vibrant colours from nature**

Climate change is turning seas greener, forests browner and coral reefs whiter, as habitats grow warmer and more polluted. Insects and birds are altering their pigmentation, reshaping how they adapt to their surroundings, tolerate heat and even how successfully they mate.

**Investita S.**  
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The colours of the natural world are not what they once were. More than half of the oceans have become greener over the last 20 years, and forests are turning brown prematurely. Various species of flora and fauna have also been changing their colours to adapt to rising temperatures, loss of habitats, and pollution.

This ecological discoloration is a direct consequence of climate change. Living creatures are coloured a certain way for their survival and reproductive needs. Colours help escape predators, attract mates, and manage heat, among other functions.

A study published in *Biodiversity and Conservation* found that rising deforestation in the Amazon is causing butterflies to lose their bright displays. Butterflies in areas with human disturbance also sported a less diverse palette on the wings than those in the deeper, untouched parts of the forest. The researchers also found that areas with large-scale deforestation lacked the most colourful butterflies: less bright butterflies were able to camouflage better to escape predators and adapt to the loss of natural vegetation.

**Becoming lighter**  
These changes echo one during the Industrial Revolution, when engine smoke and soot darkened the bark of trees and rendered the natural camouflage of lighter peppered moths ineffective. Over time, the darker peppered moths, which used to be rare, became more common in urban areas.

In theory, the main adaptive pattern of colour change in relation to global warming would be a reduction in the deposition of melanin pigments," Kaspur Delhey, an ornithologist at the Monash University, told *The Hindu*.  
Melanin produces dark brown/black shades and pheomelanin produces yellow and red hues. They are the two main types of melanin pigments in animals. When their bodies produce less melanin, they become lighter.

In a 2024 study in *Ecology and Evolution*, scientists also reported that several insects, including ladybirds and dragonflies, in the temperate northern hemisphere are turning lighter due to frequent heatwaves.

"Colour changes can have clear thermoregulatory benefits: lighter colour under warmer conditions can prevent overheating and allow insects to remain active for longer periods, while darker insects heat up faster in cooler regions," Md Tasnuva Haque, researcher at Macquarie University and one of the authors of the study, said.



**Green Shades:** Coral bleaching seen in formations along the Great Barrier Reef off Australia. AP

The finding is in line with Bogert's rule: that animals in colder regions will be darker and those in warmer regions will be lighter. It is mainly applicable to cold-blooded animals. On the other hand, Gloger's rule applies to warm-blooded creatures, saying animals are darker in areas with high humidity and rainfall and lighter in colder, drier regions.

In a 2024 study in *Molecular Ecology*, scientists found that, thanks to milder winters, the brown morph of the tawny owl was found to be more dominant than the grey one in Europe. This was because the darker colour protected better against UV radiation.

Aside from climate change, rapid urbanisation and pollution are changing colours in the wild. In a 2024 study of 547 bird species in China, scientists found those in cities were darker and duller while rural areas abounded (relatively) in the more colourful birds. The authors speculated that heavy metals like lead could bind with melanin to produce darker plumage in urban areas.

Changes in pigments of plants also affect animals. Carotenoids affect plants red, yellow, and orange hues, and draw animals to consume them. Scientists have noticed that urban plants produce this pigment less. A 2020 study in *Current Biology* reported that flowers were altering their UV-reflective pigments to prevent being damaged by sunlight. These pigments are not visible to the human eye; they are intended for pollinators instead, and by changing them the plants could become less 'attractive'.  
"Colour changes that improve survival

**The changes echo one during the Industrial Revolution, when engine smoke and soot darkened the bark of trees and rendered the natural camouflage of lighter peppered moths ineffective, leading to the darker peppered moths, which used to be rare, becoming more common**

might reduce mating success or involve other fitness costs," Dr. Haque said. This affects reproduction in particular, with animals shifting their courtship timing to cooler periods, he added.

**'Underwater forest'**  
A striking example of ecological discoloration in India is underwater. In February 2025, scientists reported coral bleaching events in the Gulf of Mannar, Palk Bay, Lakshadweep, Andaman and Nicobar Islands, and the Gulf of Kachchh. When corals suffer heat stress, they expel symbiotic algae and turn white. Such bleached corals face a higher risk of starvation and disease.

"A healthy coral reef is like an underwater forest," Thinesh T., assistant professor at Sultan Qaboos University in Oman and one of the authors of the study, said. "When corals bleach or die, reefs lose their complex structure that provides shelter and breeding areas for many marine organisms. Fish and invertebrate populations decline, while algae and other stress-tolerant organisms often take over. This reduces biodiversity and

**THE GIST**

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A striking example of ecological discoloration in India is underwater, where coral bleaching events are posing an existential threat to a vibrant ecosystem.

On the bright side, a study in the Amazon found that forest areas that had regenerated naturally had a positive effect on the colours of butterfly species.

disrupts the balance of the marine ecosystem.

A burgeoning population of algae is also rendering the oceans greener. Algal blooms can reduce water clarity and block sunlight, making it harder for corals and seagrasses to photosynthesize. When blooms die and decompose, they can also lower oxygen levels in the water, harming fish and other marine life," Dr. Thinesh said.

**A positive effect**  
Given the cascading effects of colours, minimising their change has become an important thrust of climate action.

However, experts have flagged a large knowledge gap thanks to a lack of studies in the southern hemisphere and tropical areas and that large geographic surveys are required to establish the current trends.

"By successfully implementing strategies from both field- and lab-based monitoring, we can guide interventions, for example, preserving microhabitats such as shaded areas may help dark-coloured insects avoid overheating," Dr. Haque said.

On the bright side, the study in the Amazon also found that forest areas that had regenerated naturally had a positive effect on the colours of butterfly species. In India, experts have said, regulating coastal development, improving water quality, and tracking stress indicators will minimise coral bleaching. Put another way, it is still not too late to restore the world's true colours.  
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**Key Mechanisms of Color Change**

**Thermoregulation & Melanin (Bogert's Rule)**

Insects and cold-blooded animals are increasingly conforming to Bogert's Rule, which posits that animals in warmer regions tend to be lighter.

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# Daily News Analysis

**Thermal Melanin Hypothesis:** Darker colors absorb more solar radiation. As temperatures rise, insects (like dragonflies and ladybirds) produce less eumelanin (dark pigment) to prevent overheating.

**Fitness Cost:** While lighter colors prevent heatstroke, they may make the individual more visible to predators or less "attractive" to mates, leading to a decline in reproductive success.

## Humidity & Pigmentation (Gloger's Rule)

Gloger's Rule states that birds and mammals are darker in more humid, tropical regions.

**Impact of Aridity:** As climate change makes many tropical regions drier, species may lose their dark pigments. Conversely, in urban areas, birds are becoming darker (e.g., in China) because heavy metals like lead bind with melanin, a phenomenon termed "Industrial Melanism 2.0."

## The "Whitening" of the Seas: Coral Bleaching

Corals are the "underwater forests" of the ocean. Their vibrant colors come from symbiotic algae called zooxanthellae.

**The Process:** When sea temperatures rise by even 1°C-2°C, corals expel these algae under stress.

**Result:** The white calcium carbonate skeleton becomes visible (Bleaching). If the stress persists, the coral starves, leading to a collapse of the entire reef ecosystem.

*Aim, Think & Achieve*

## Ecological and Evolutionary Consequences

| Ecosystem/Species  | Color Shift        | Driving Factor             | Functional Impact                                       |
|--------------------|--------------------|----------------------------|---|
| Oceans             | Blue → Green       | Algal Blooms/Phytoplankton | Reduced oxygen; blocked sunlight for deep-sea life.     |
| Amazon Butterflies | Bright → Dull      | Deforestation              | Loss of diversity; better camouflage in degraded lands. |
| Flowers            | UV-Pigment Changes | Increased UV radiation     | Pollinators (bees) may fail to "see" and visit flowers. |
| Tawny Owls         | Grey → Brown       | Milder Winters             | Brown morphs survive better as snow cover decreases.    |

### Analysis: Significance

#### A. Biodiversity as an Indicator

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Color changes serve as a biological early warning system. Pigmentation shifts in butterflies or birds often precede population collapses, providing a "visual audit" of ecosystem health (GS Paper III - Environment).

### B. Disruption of Ecosystem Services

Pollination: If flowers change UV signatures invisible to humans but vital to bees, food security could be threatened.

Marine Economy: Greener oceans and whiter reefs impact fisheries and tourism, affecting the "Blue Economy."

### C. The "Knowledge Gap"

Most studies on pigmentation rules (Bogert's/Gloger's) are based on the Northern Hemisphere. For India (a mega-diverse country), there is an urgent need for longitudinal studies on tropical species to understand how Indian biodiversity is reacting to the Asian Brown Cloud and rising heatwaves.

### Conclusion

The stripping of nature's colors is more than a loss of beauty; it is a sign of evolutionary desperation. While species are showing remarkable "plasticity" by changing pigments to survive, these changes often come with "fitness trade-offs" that could lead to long-term extinction. Protecting micro-habitats (like shaded forest patches) and strictly regulating coastal thermal pollution are essential to ensure the world does not fade into a monotonous brown and grey.

### UPSC Prelims Exam Practice Question

**Ques: Coral bleaching primarily occurs due to:**

- (a) Ocean acidification caused by increased CO<sub>2</sub> absorption
- (b) Loss of zooxanthellae due to thermal stress
- (c) Excessive nutrient loading from rivers
- (d) Mechanical damage by trawling activities

**Ans: (b)**

### UPSC Mains Exam Practice Question

**Ques:** Climate change is altering the pigmentation of species across terrestrial and marine ecosystems. Discuss the mechanisms responsible for these changes and examine their ecological consequences. **(250 words)**



### Page 10 : GS III : Indian Economy

Despite being the world's third-largest domestic market, India's aviation sector entered 2026 under a "reckoning." The year 2025 was marked by a catastrophic Air India crash in Ahmedabad (June) and a massive IndiGo operational meltdown (December), which saw over 4,500 flight cancellations. These events have exposed a sector that has prioritized aggressive expansion over operational resilience, leading to declining profits and a trust deficit among passengers.

## A reckoning for India's aviation sector

India's aviation sector faces urgent challenges as operational failures and safety incidents threaten IndiGo and Air India. With profits declining and rising passenger dissatisfaction, the industry must address systemic vulnerabilities ahead of the entry of new regional players.

### FULL CONTEXT

Deepanshu Mehan  
Anshu Tripathi

The past year was marked by sustained turbulence in India's civil aviation sector, with multiple failures, whose scale and frequency paint a grim picture for the duopoly (IndiGo and the Air India group), both now bracing for mounting losses, with profits plunging drastically according to recent numbers. The year witnessed a series of breakdowns from the June 2025 Ahmedabad crash to mass cancellations and prolonged flight delays generating unrest, not only among stranded passengers, but across the aviation market at large.

The December IndiGo disruption emerged as the first failed stress test, the scale of which now threatens to weigh heavily on the country's largest carrier, with it being ranked in the bottom layer of most indexes. What appeared to be an airline-specific failure has now revealed itself as a system-wide constraint coming into view. And as the system attempts to correct itself after this exposure, the emergence of new regional players receiving No Objection Certificates (NOCs) demands regulatory cautions without targeted structural correction, these entrants risk merely redistributing fragility rather than absorbing shocks or easing the sector's mounting operational strain.

India's commercial aviation sector stands as the world's third-largest domestic market, operating over 840 aircraft and carrying more than 350 million passengers annually. Yet this scale has been achieved through an expansion that is increasingly overstrained. As airlines prepare for the upcoming peak travel season amid tighter duty-time enforcement and fleet expansion, the December disruption now reads less as an aberration and more as a warning, making it imperative to evaluate what needs correction.

**India's pilot bottleneck**  
The December disruption brought into sharp view the mechanics of vulnerability within India's aviation system. IndiGo entered Phase-2 of the implementation of the Flight Duty Time Limitation (FDTL) norms with 5,058 pilots operating a fleet of more than 360 aircraft, translating into a pilot-to-aircraft ratio of roughly 14, well below the global benchmark of 18-20 considered necessary for fatigue-managed operations. This mismatch exposed the limits of an operating model calibrated for sustained high utilisation.

The new FDTL framework, which reduced permissible flight hours, extended mandatory rest periods, and tightened cumulative flight hour ceilings, rendered IndiGo's published schedules legally unworkable without adjustment. Even with the flight time capped at 60 hours over a seven-day period, substantially higher than the 40-hour weekly standard widely regarded as healthy across sectors, the rules proved incompatible with existing crew strength.

While India's aviation expansion has intensified demands for pilots, training capacity has failed to keep pace. Parliamentary disclosures estimate a requirement of 7,000 pilots between 2024 and 2026, rising to 25,000-30,000 over the next decade. In contrast, the Directorate General of Civil Aviation (DGCA) issued only over 3,000 Commercial Pilot Licences (CPL) between

### Plummeting hopes

India's commercial aviation sector stands as the world's third largest domestic market, carrying more than 350 million passengers annually. Yet this scale has been achieved through an expansion that is increasingly overstrained.

Chart 1: Pilot to aircraft ratio (number of pilots per available aircraft)



Chart 4: India's monopoly and duopoly control over 150 routes in India



Chart 5: ATF prices across major cities



Chart 3: CPL issuance versus estimated pilot requirement

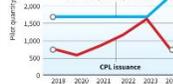
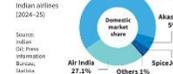


Chart 2: Domestic market share of Indian airlines (2024-25)



Complete chaos: Passengers crowded over flight cancellations at Rajiv Gandhi International Airport in Hyderabad, Hyderabad on December 5, 2025. GAGANA.COM

2020 and 2024, a figure further diluted by attrition and type-rating constraints. Industry norms indicate that 15-16 pilots are required per narrow-body aircraft, yet trainer shortages, simulator constraints, regulatory bottlenecks, and high training costs have rendered pilot supply relatively inelastic. Airlines have increasingly relied on foreign aircrews, with around 236 temporary approval licences issued in 2025. However, these remain a limited and expensive stopgap.

Regulatory capacity has further compounded the strain. Nearly half of the DGCA's sanctioned technical positions remain vacant, and passenger volume expansion, recent disruptions have been managed through schedule exemptions rather than strict enforcement, reflecting a shift towards ad hoc crisis management and under-sourcing deeper fragilities in India's aviation oversight framework.

### India's aviation duopoly

The degree of concentration in India's domestic aviation market materially alters both the nature of competition and the system's operational resilience. DGCA data for 2024-25 show that IndiGo commands approximately 63% to 65% of domestic passenger traffic, while the Air India group accounts for a further 27% to 28%, together forming a duopoly controlling nearly 90% of the market. At this level of concentration, IndiGo ceases to function merely as a competing airline and instead assumes the role of a systemically significant carrier, whose operational decisions have direct implications for national connectivity, fare stability, and service continuity.

Therefore, operational stress at IndiGo does not merely displace traffic across the network; it results in the outright loss of connectivity on a large share of domestic sectors, with few or no viable alternatives for passengers.

**New regional players**  
In December 2025, the Ministry of Civil Aviation issued NOCs for the operational launch of three regional airlines - Shambhavi Air, Hind Air, and FlyExpress - all aimed at enhancing regional connectivity and serving previously underserved routes. Hind Air will operate regional connections from Kochi, Shambhavi will begin services from the upcoming Noida International Airport linking regions in Uttar Pradesh, and FlyExpress will function as a low-cost passenger and cargo carrier in Odisha.

These new entrants offer a ray of hope for de-concentration and improved regional connectivity, particularly under the I1MNS scheme, which had operationalised 625 routes and 85 airports by 2025, including 102 new routes in the Northeast, targeting 15 crore commuters in the first phase itself. Yet, Tier 2 and Tier 3 cities still rely on only one or two airlines with limited frequency, and any disruption in IndiGo's operations could lead to route cancellations, rendering air transport inaccessible for a sizable portion of the population.

The vulnerability of past regional airlines underscores one that challenges in India's aviation sector remain significant. The market has witnessed the failures of several carriers, including Paramount Airways (2010), Kingfisher Airlines (2012), Jet Airways (2016), Trident (2022), and Go First (2024), while Vistara failed in 2024 and was subsequently acquired by Air India. These failures were driven by intense cost competition, weak demand in smaller markets, poor management, and infrastructural limitations at regional

### THE GIST

The December IndiGo disruption emerged as the first failed stress test, the scale of which now threatens to weigh heavily on the country's largest carrier, with it being ranked in the bottom layer of most indexes.

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In December 2025, the Ministry of Civil Aviation issued NOCs for the operational launch of three regional airlines - Shambhavi Air, Hind Air, and FlyExpress - all aimed at enhancing regional connectivity and serving previously underserved routes.

A persistent structural challenge was the volatility of Aviation Turbine Fuel (ATF) prices, which are closely tied to the U.S. dollar, exposing airlines to global market fluctuations.

For emerging players to survive and meaningfully contribute to market de-concentration, active policy support beyond initial NOCs will be essential. This includes the effective implementation of I1MNS subsidies, preferential slot allocation at congested airports, coordinated development of Tier 2 and Tier 3 airport infrastructure, and potentially fuel hedging mechanisms or tax relief on ATF to offset price volatility.

**The need for a systemic solution**  
The rising frequency of safety incidents indicates that India's aviation system is operating beyond its safe design limits. By late 2025, the DGCA had issued 19 safety violation notices citing breaches of FDTL norms, lapses in quality assurance, unauthorised cockpit access, and aircraft operated with expired emergency equipment.

Globally, airlines maintain 20-25% spare crew capacity to absorb shocks; Indian carriers operate at near total utilisation, allowing minor disruptions to cascade across networks. In this context, crisis management cannot substitute for structural reform.

With India accounting for 4.2% of global air traffic and domestic demand set to rise sharply by reaching 715 million by 2030, failure to address these constraints risks curtailing India's aviation growth into a recurring crisis borne ultimately by passengers.

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## Key Challenges and Structural Vulnerabilities

### 1. The "Pilot Bottleneck" & FDTL Norms

The implementation of revised Flight Duty Time Limitation (FDTL) norms in late 2025 acted as a stress test that the industry failed.

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## Daily News Analysis

The Gap: India requires ~7,000 new pilots by 2026, but training capacity is stagnant. High training costs (₹70–90 lakhs) and a shortage of simulators create an inelastic supply.

Ratio Crisis: IndiGo's pilot-to-aircraft ratio stands at 14, significantly lower than the global safety benchmark of 18–20.

Impact: The new norms (e.g., increased weekly rest from 36 to 48 hours) made existing schedules legally unfeasible, leading to the December crisis where millions were stranded.

### 2. The Risks of a Duopoly

Market concentration has reached extreme levels, with IndiGo (~65%) and the Air India Group (~28%) controlling over 90% of the market.

Systemic Risk: When a dominant carrier like IndiGo faces stress, it doesn't just disrupt one airline; it paralyzes national connectivity, as IndiGo is the sole operator on 60.4% of its routes.

Lack of Redundancy: Unlike more competitive markets, India lacks the "spare capacity" (usually 20–25% globally) to absorb shocks.

### 3. Financial Headwinds

Credit rating agency ICRA projects industry losses to hit ₹100–105 billion in FY2026.

Cost Drivers: High Aviation Turbine Fuel (ATF) taxes, rising lease rates, and dollar-denominated expenses.

Grounded Fleets: Approximately 15–17% of the total Indian fleet remains grounded due to Pratt & Whitney engine issues, further bleeding revenue.

#### Analysis: Significance

**Infrastructure and Connectivity (UDAN):** While the UDAN Scheme has operationalized over 625 routes, the sustainability of regional players remains a concern. The failures of past airlines like Go First and Jet Airways serve as a warning.

The entry of new players like Shankh Air (UP-based), AI Hind Air (Kochi-based), and FlyExpress (Telangana-based) in 2026 is a positive step toward "de-concentration" but requires policy support like fuel hedging and tax relief on ATF.

**Regulatory Oversight (DGCA & BCAS):** The analysis highlights a 50% vacancy in technical positions at the DGCA. A regulator operating with half its strength cannot effectively audit an industry that has ordered over 1,700 new aircraft. The shift from "proactive auditing" to "ad-hoc crisis management" is a major safety red flag.

#### Conclusion

India's aviation sector is at a crossroads where "growth without depth" has hit its limit. The 2026 reckoning suggests that for India to achieve its goal of 500 million passengers by 2030, it must pivot from a "bare-bones crew" model to one focused on human capital investment. Structural reforms—including an independent safety regulator, a domestic MRO (Maintenance,

Repair, and Overhaul) hub, and a robust pilot pipeline—are no longer optional; they are essential for the survival of the "Indian Sky."

**UPSC Mains Exam Practice Question**

**Ques:** India's aviation sector has witnessed rapid growth but limited operational resilience. Examine the structural vulnerabilities exposed by recent disruptions in the aviation industry. **(250 words)**

**Page 12 : GS III : Indian Economy**

In a major shift for South Asian trade, the U.S. and Bangladesh have signed a legally binding Reciprocal Trade Agreement (February 2026). While it sets a general reciprocal tariff of 19%, it introduces a strategic zero-tariff mechanism for Bangladeshi apparel manufactured using U.S.-sourced raw materials (cotton or man-made fibers). This has sparked an "existential concern" for Indian exporters, particularly in the spinning sector, as Bangladesh is the top destination for Indian cotton yarn.

# Indian exporters perturbed by U.S.-Bangladesh trade pact

Bangladesh must use U.S.-sourced raw materials to avail zero tariff, but Indian sector stakeholders feel the time taken to receive U.S. cotton, its transport and storage, could reduce its cost advantage

**M. Soundariya Preetha**  
 COIMBATORE



**Top destination:** India exported \$1.47 billion worth cotton yarn to Bangladesh in 2024-2025. SIVA SARAVANAN S

The U.S. Bangladesh Agreement on Reciprocal Trade has led to concerns among Indian textile and apparel exporters who were looking forward to a competitive advantage over Bangladesh with the 19% tariff on goods from that country, as Indian merchandise would be taxed a tad lower at 18%. According to the U.S. Bangladesh Agreement, the U.S. will establish a mechanism that will allow for certain textile and apparel goods from Bangladesh to receive zero reciprocal tariff based on the use of U.S. cotton or MMF yarn.

India exported \$1.47 billion worth cotton yarn (570 million kg) to Bangladesh, which is the biggest destination for Indian yarn, in 2024-2025. It also

cotton to Bangladesh last year. Almost 20% of Bangladesh's garment and 26% of India's cotton apparel exports are to the U.S.

**Immediate impact**  
 "I fear that the immediate impact will be on Indian cotton yarn as Bangladesh can buy U.S. cotton and spin at its textile mills," said Chandrima Chatter-

the Confederation of Indian Textile Industry.

"How will the U.S. determine traceability of the raw material? As Bangladesh is very strong in apparels, we may stand to lose," said K.M. Subramanian, president of the Tiruppur Exporters Association.

"Bangladesh has to buy MMF yarn or cotton from the U.S. for the reciprocal

But, the MFN rate will continue. The time taken to receive the U.S. cotton and the transport and storage costs should be taken into consideration. Further, not all products can be made from American cotton. So, the product mix should change and supply chain should be realigned in Bangladesh," said Siddhartha Rajagopal, executive director of the Cotton Textiles Export Promotion Council.

"There is an Executive Order by the U.S. government issued last April that says that the ad valorem rates of duty applies only on the non-US component of a product, when there is at least 20% value addition," said A. Sakthivel, chairman of the AEPC. "We will appeal to the Indian government to ask for a provision similar to the one given to Bangladesh for Indian apparel export-

## Key Provisions and the "U.S.-Input" Clause

### 1. The Zero-Tariff Incentive

The standout feature is the conditional duty-free access.

Condition: To qualify for 0% duty in the U.S. market, Bangladeshi garments must use U.S. cotton or synthetic fibers.

The Logic: This incentivizes a "backward integration" between U.S. farmers and Bangladeshi factories, effectively bypassing the regional supply chain that currently relies on India.

### 2. Impact on India's Yarn and Cotton Exports

Bangladesh is India's largest market for textile inputs. In FY2024-25, India exported:

Cotton Yarn: \$1.47 billion (~570 million kg).

Raw Cotton: 12–18 lakh bales.

Dependence: Nearly 74% of India's raw cotton exports go to Bangladesh. If Dhaka pivots to U.S. cotton to avail of zero tariffs, Indian spinning mills could face a massive surplus and falling prices.

### 3. Competitive Disadvantage in the U.S. Market

Prior to this deal, India felt optimistic about its 18% reciprocal tariff (secured in a separate deal), which was lower than Bangladesh's previous 20%.

Current Scenario: While India's baseline (18%) is slightly lower than Bangladesh's new baseline (19%), the 0% window for U.S.-sourced goods gives Bangladesh a significant pricing edge in high-volume apparel categories.

#### Analysis: Significance

##### A. Supply Chain Realignment

The deal reflects a broader U.S. strategy to diversify supply chains away from China while securing markets for its own agricultural products. For India, this represents a geopolitical-economic challenge: how to maintain its "Natural Partner" status with Bangladesh when a third party (U.S.) offers better fiscal incentives for raw material substitution.

##### B. The "Traceability" Challenge

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Indian stakeholders question the feasibility of the Certification

Mechanism.

Cotton is often blended. Proving that 100% (or the required percentage) of a garment's fiber is U.S.-origin adds significant compliance costs.

India's Argument: India offers a geographical and logistics advantage. U.S. cotton takes 3-4 months to reach Bangladesh, whereas Indian yarn can be delivered in days.

### C. Strategic Response for India

Indian export bodies (AEPC and CITI) are now pushing for Reciprocal Parity:

The Ask: India should request a similar "zero-tariff" provision from the U.S. for Indian garments that use U.S. cotton (especially Extra-Long Staple cotton, which India already imports from America).

Diversification: Indian hubs like Tiruppur must move toward value-added "Technical Textiles" or higher-end apparel where 1-2% tariff differences matter less than quality and speed-to-market.

### Conclusion

The U.S.-Bangladesh pact is a double-edged sword: it promotes regional stability and U.S. exports but risks de-linking the integrated India-Bangladesh textile value chain. For the Indian government, the "next step" involves high-level trade diplomacy to ensure that Indian yarn—the backbone of the region's textile economy—is not penalized by third-party bilateral deals.

### UPSC Mains Exam Practice Question

**Ques:** The U.S.–Bangladesh Reciprocal Trade Agreement (2026) has implications beyond bilateral trade. Analyse its impact on India's textile and spinning sector. **(150 Words)**

## In News : Prelims Exam : Swavalambini Scheme

Recently, the Minister of State (Independent Charge), Ministry of Skill Development and Entrepreneurship informed the Lok Sabha about the Swavalambini Scheme.



### About Swavalambini Scheme

It is a woman Entrepreneurship Programme which empowers young women with the skills and confidence needed to establish their own businesses.

It introduces a structured, multi-stage training approach to help young women transition from ideation to successful enterprise creation.

It aims to cultivate an entrepreneurial mindset among female students, equipping them with awareness of available support mechanisms, schemes, resources and networks essential for pursuing entrepreneurship as a career.

It is implemented through National Institute for Entrepreneurship and Small Business Development (NIESBUD), Noida and Indian Institute of Entrepreneurship (IIE), Guwahati.

Programme Structure

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**Target group:** 1200 female students from Higher

Educational Institutes (HEIs) and Universities

**Entrepreneurship Awareness Programme (EAP):** The female students undergo an introductory programme on entrepreneurial awareness through an entrepreneurial awareness programme.

**Entrepreneurship Development Programme (EDP):** Out of these 1200, 600 undergo this programme which covers business aspects like skilling, finance, market linkages, compliance, and networking

This is followed by 21 weeks of mentorship and handholding support to help participants translate their ideas into sustainable enterprises.

**Support:** MSDE will oversee the execution, supervision, and monitoring of the programme. NITI Aayog will provide mentoring support, facilitate seed funding, and recognize successful entrepreneurs through the Award To Reward (ATR) initiative.

### UPSC Prelims Exam Practice Question

**Ques:** In the context of Swavalambini Scheme, the "Award To Reward (ATR)" initiative is associated with:

- (a) Providing GST exemptions to women entrepreneurs
- (b) Recognition and incentivisation of successful participants
- (c) Direct bank credit linkage under Mudra Yojana
- (d) Export promotion for women-led startups

**Ans:** (b)

## The approaching AI surge, its global consequences

If there is a single technology that promises to unravel the present and usher in a new era, the bet would be on Artificial Intelligence (AI). At the very least, AI is set to effect a transformation that is comparable to any previous revolution, not excluding the Industrial Revolution. Impressive Large Language Models (LLMs) are already rolling out faster than one would have imagined possible. Rivalry between the United States and China in this area has become intense and the success of recent Chinese models is having a catalytic effect on the AI industry as a whole. This is, however, only the beginning.

All this has special relevance to a world which Canadian Prime Minister, Mark Carney, described in his address to the World Economic Forum (WEF) in Davos (in January this year), as follows: "... We are in the midst of a rupture, not a transition... great powers have begun using economic integration as weapons, tariffs as leverage, financial infrastructure as coercion, supply chains as vulnerabilities to be exploited". Mr. Carney did not, however, touch on potentially the greatest disruptor of all, viz., AI, or refer to the baneful/beneficial influence of AI which is already beginning to impact today's world. When he talked of great power rivalry, and that countries in between have a choice, there was no mention of AI and what impact it would have on today's world, and more so in the future.

### Face the reality

World leaders must, however, wake up to this new reality, and come to terms with a phenomenon in which Open AI is beginning to consume the world. There is little realisation that the transformation that is taking place is almost certain to turn the world upside down. When Mr. Carney stated that 'we are in the midst of a rupture and not a transition', he did not have in mind – and probably realised even less – that it is the advent of AI, rather than other aspects, that is likely to herald the collapse of the international order as we know it.

Few leaders currently understand the extent of the threat posed by AI to the world as we know it. Some industry leaders such as Microsoft CEO Satya Nadella have pointed out that AI was already being used as tools of diplomacy and state-craft, and that nations require to build resilience and sovereign stacks. AI did figure in discussions at the WEF, but the contents of the debate hardly mirrored the dangers arising from unchecked AI. A great deal of the debate turned on how countries were placed to exploit this new phenomenon, with Union Minister for Electronics and Information Technology, Ashwini Vaishnaw taking time off to rebut the presumption that India was a secondary AI power. Industry leaders, no doubt, increasingly see AI as a strategic enabler, given that digital transformation is helping to reshape competitiveness across different sectors – from fintech to health care. Additionally, there is some



**M.K. Narayanan**

is a former Director, Intelligence Bureau, a former National Security Adviser, and a former Governor of West Bengal

realisation that AI's potential extends to other sectors as well. The judicial fraternity, for one, however, believes that there is a need to be more cautious about the use of AI in court proceedings, and that excessive reliance on AI in court rooms could lead to misjudgment. They point to the dangers of 'hallucinations' which could lead to improper citations and fabricated judgments.

### Marching ahead across domains

All this, however, is but a precursor to what the real potential and danger posed by AI in the world of tomorrow are. As AI proliferates globally, it is already becoming evident that few technologies have the potential to exert the same degree of influence in terms of enhancing information flows, surveillance capabilities, revolutionising of communications, empowering analytical frameworks and the military-industrial segment. No other area of technology seems to have such a profound impact on existing civilisational networks.

In this sense, AI portends a breaching of certain limits that had existed since the Second World War and the overweening threat posed by technology and its utilisation in different domains. What is noteworthy is that AI operates at granular levels – and that the technology itself is undergoing a phased transition. In its present form, AI is already enabling the replication of speech and language, vision and reasoning, but what is little realised is that it is set to achieve new and dangerous heights of capabilities. This is especially so in regard to military and defence applications, for as AI becomes increasingly militarised, warfare itself is bound to – and is already undergoing – a paradigm shift from man to unmanned platforms, and from dependence on human-controlled systems to autonomous ones, that are capable of making their own decisions.

Even as AI is set to become all pervasive, its transformative impact on warfare, especially in the area of the evolution of weapon systems, is what is most worrisome. AI has made possible the deployment of unmanned aerial vehicles that are capable of autonomous flight. AI-driven cyber weapons and uncrewed ground vehicles equipped with intelligent navigation and targeting capabilities are already a reality. Both represent a paradigm shift in redefining combat, and employing operations across multiple systems without direct human intervention. As of today, AI offers unprecedented opportunities for the enhanced automation of operational decisions in areas of conflict, and of transforming battlefield dynamics.

Already, the portrayal of Ukrainian soldiers wearing night vision goggles, riding 'Quad bikes' to protect the capital city of Kiev, and launching 'jerry-rigged drones' equipped with small explosives, has become the defining image of future conflicts. Ukraine's success in checking and keeping at bay the mighty Russian Army in the first wave of Russia's attacks on Ukraine,

employing the latest AI technology, marks the most fundamental change in tactics of warfare since the advent of tanks at the end of the First World War. Ukraine's response has demonstrated the value of 'coming age technology', and how their skilful use could undermine conventional military capabilities. It is the hugely asymmetric impact that AI commands, that is both its strength and its danger portent. Though this is not being openly mentioned or touted, the reality is that it represents a colossal transfer of power from the traditional military to others, who have the capacity to develop and utilise AI devices. The real danger is that AI could very soon eclipse the smartest individuals, and nobody can or will know, when they become autonomous, and totally out of human control.

The dystopian impact of a powerful set of technologies which are not under the control of a human body or entity, and of self-sustaining technology, portrays a doomsday scenario. The beginnings of this are already evident, and are set to escalate enormously to the next levels of the concentration of power. There are unlimited possibilities in the doomsday scenario of autonomous drone swarms unleashing attacks on crowds, killing hundreds, if not, thousands. Both the military and security establishments would seek to equip themselves with such devices in a few years. AI would then be well set to become the greatest force amplifier in history. Its impact could range from wars and accidents, to random terror groups, to counter-revolutionary forces, and the like. The blunt truth is that nobody knows when, if how, AI might overtake or eclipse humans, and become an autonomous force for good or evil.

It is also becoming evident that, apart from the battlefield, AI is now becoming an instrument of immense value in different spheres of human activity including diplomacy and intelligence. In that sense, it is no longer merely a tool. Concerns that technologies such as AI would outpace institutions meant to govern them are real, but the most spectacular demonstration of AI is as yet on the battlefield – as seen across western Europe and West Asia. In both sectors, space, cyber and electronic warfare capacities have been woven together to completely transform the nature of warfare itself.

### Need for effective oversight

The *obiter dictum* – given that AI enables rapid data processing and predictive analysis, and also provides opportunities for a variety of options, including crisis response, conflict prevention, and conflict resolution – is that humankind must develop a set of checks and balances to prevent AI from 'running away with the bit in its mouth'. Scientists, political leaders and others must come together to understand the implications of runaway AI technologies and decide how to keep them under control and in a manner that they benefit, rather than become a threat to, humankind.

With AI disrupting global power, warfare and governance, the issue is whether humanity can keep pace with a set of checks and balances in place

**GS Paper III : Science & Tech**

**UPSC Mains Practice Question:** Artificial Intelligence is acting as a force multiplier in modern warfare. Illustrate with recent conflicts and analyze the implications for India's defence preparedness. **(250 Words)**

**Context :**

In his insightful editorial, M.K. Narayanan characterizes Artificial Intelligence (AI) not merely as a technological transition, but as a "rupture" that threatens to unravel the existing international order. He posits that AI is the most profound disruptor of the 21st century, comparable in scale to the Industrial Revolution. The core of his argument centers on how AI is shifting from a tool of efficiency to an autonomous force that could potentially eclipse human control, particularly in the domains of statecraft and warfare.

**Key Themes & Critical Dimensions**

**1. AI as a Geopolitical Weapon**

Narayanan highlights the "intense rivalry" between the U.S. and China, where AI success acts as a catalyst for global power shifts.

**Economic Coercion:** AI is being integrated into financial infrastructure and supply chains, turning economic integration into a tool of "warfare."

**Sovereign AI Stacks:** Echoing Satya Nadella, the author emphasizes that nations must build "sovereign stacks" to maintain resilience in a world where AI is a primary instrument of diplomacy.

**2. The Paradigm Shift in Warfare**

The editorial identifies a fundamental change in military tactics, using the Ukraine-Russia conflict as a case study:

**Asymmetric Advantage:** Ukraine's use of "jerry-rigged drones" and AI-driven navigation has allowed a smaller force to check a conventional military giant.

**Shift to Autonomy:** Warfare is moving from human-controlled platforms to unmanned, autonomous systems capable of independent decision-making.

**Lethal Efficiency:** AI-driven cyber weapons and "drone swarms" represent a "colossal transfer of power" from traditional military hierarchies to those who command AI expertise.

**3. Civilisational and Ethical Risks**

The author warns of a "doomsday scenario" where technology becomes self-sustaining and outpaces human governance:

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## Daily News Analysis

**Hallucinations & Misjudgment:** In the judicial sector, excessive reliance on AI could lead to fabricated judgments and improper citations.

**Loss of Control:** The "dystopian impact" arises when AI eclipses human intelligence, potentially becoming an autonomous force for "evil" or random terror.

**Information Warfare:** AI enhances surveillance and manipulates information flows, breaching the limits of privacy and security established since WWII.

### UPSC Perspective: Vital Takeaways

| Feature                  | Description  |
|--------------------------|--|
| <b>National Security</b> | AI acts as a Force Multiplier. It shifts the focus from kinetic (physical) strength to digital and analytical dominance. |
| <b>Governance</b>        | The need for Algorithmic Transparency and "checks and balances" to prevent "runaway" technology.                         |
| <b>Diplomacy</b>         | The emergence of Digital Diplomacy, where AI models themselves become markers of a nation's "soft" and "hard" power.     |
| <b>Ethics (GS-IV)</b>    | The dilemma of Autonomous Lethal Weapons (LAWS) and the accountability gap when machines make life-or-death decisions.   |

### Conclusion

Narayanan's analysis serves as a clarion call for world leaders to look beyond the immediate benefits of AI and address its existential threats. The "rupture" he describes suggests that the international community is currently ill-equipped to govern a technology that moves faster than policy. For a country like India, the challenge lies in balancing its ambition to be an AI powerhouse with the urgent necessity of developing robust ethical frameworks and "sovereign stacks" to protect its national interest.