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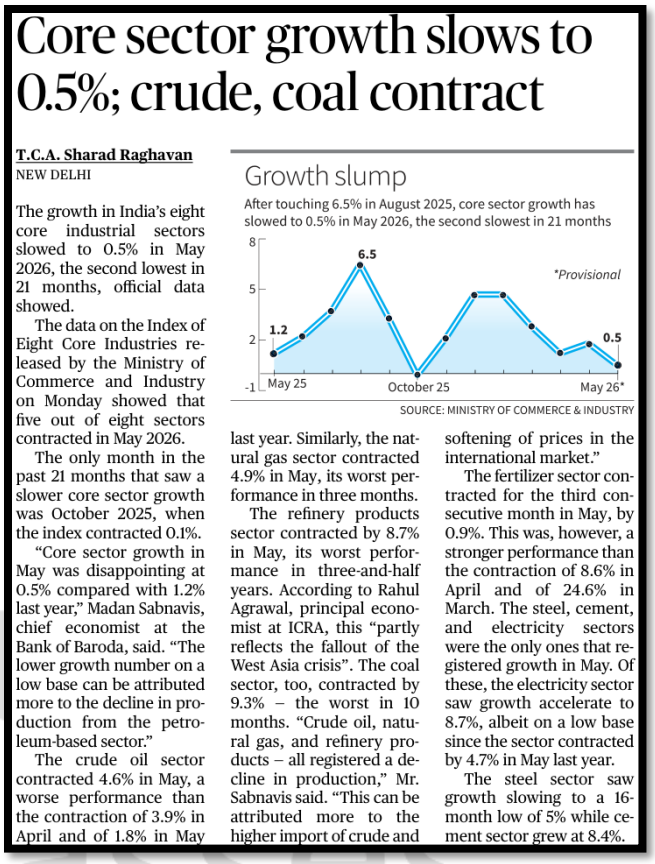
According to the latest data released by the Ministry of Commerce and Industry, the growth rate of India's eight core industrial sectors dropped to a mere 0.5% in May 2026. This marks the second-lowest level in the last 21 months (the worst performance being in October 2025, when it witnessed a contraction of 0.1%). The contraction registered in five out of the eight core sectors raises a major question mark over the country's industrial production momentum, which could subsequently drag down the Index of Industrial Production (IIP) in the coming months.



Core sector growth slows to 0.5%; crude, coal contract

T.C.A. Sharad Raghavan
NEW DELHI

The growth in India's eight core industrial sectors slowed to 0.5% in May 2026, the second lowest in 21 months, official data showed.

The data on the Index of Eight Core Industries released by the Ministry of Commerce and Industry on Monday showed that five out of eight sectors contracted in May 2026.

The only month in the past 21 months that saw a slower core sector growth was October 2025, when the index contracted 0.1%.

"Core sector growth in May was disappointing at 0.5% compared with 1.2% last year," Madan Sabnavis, chief economist at the Bank of Baroda, said. "The lower growth number on a low base can be attributed more to the decline in production from the petroleum-based sector."

The crude oil sector contracted 4.6% in May, a worse performance than the contraction of 3.9% in April and of 1.8% in May last year. Similarly, the natural gas sector contracted 4.9% in May, its worst performance in three months.

The refinery products sector contracted by 8.7% in May, its worst performance in three-and-half years. According to Rahul Agrawal, principal economist at ICRA, this "partly reflects the fallout of the West Asia crisis". The coal sector, too, contracted by 9.3% – the worst in 10 months. "Crude oil, natural gas, and refinery products – all registered a decline in production," Mr. Sabnavis said. "This can be attributed more to the higher import of crude and softening of prices in the international market."

The fertilizer sector contracted for the third consecutive month in May, by 0.9%. This was, however, a stronger performance than the contraction of 8.6% in April and of 24.6% in March. The steel, cement, and electricity sectors were the only ones that registered growth in May. Of these, the electricity sector saw growth accelerate to 8.7%, albeit on a low base since the sector contracted by 4.7% in May last year.

The steel sector saw growth slowing to a 16-month low of 5% while cement sector grew at 8.4%.

1. Key Economic Data and Sector-wise Performance

The analysis of the data for May 2026 can be categorized into three distinct segments based on performance:

- **Major Contracting Sectors:**
  - **Coal:** Registered a sharp decline of 9.3%, marking its worst performance in the last 10 months.
  - **Refinery Products:** Witnessed a contraction of 8.7%, hitting its lowest level in the last three and a half years.
  - **Natural Gas:** Declined by 4.9%, posting its worst figure in the last three months.
  - **Crude Oil:** Recorded a contraction of 4.6% (deepening further from the 3.9% decline observed in April).
- **Sectors with Sustained Decline:**
  - **Fertilizer:** Suffered a contraction of 0.9% in May. Although this marks the third consecutive month of negative growth for the fertilizer sector, the pace of decline has moderated compared to April (-8.6%) and March (-24.6%).
- **Sectors with Positive Growth:**
  - **Electricity:** Clocked a robust growth rate of 8.7%. However, economists point out that this surge is largely amplified by a 'low base effect' (as electricity had registered a contraction of -4.7% in May of the previous year).
  - **Cement:** Posted a healthy growth of 8.4%, reflecting ongoing government-driven infrastructure activities.
  - **Steel:** Grew by 5%, but this represents its lowest growth rate in the last 16 months.

2. Primary Reasons for the Slowdown

According to prominent economists (including Madan Sabnavis, Chief Economist at Bank of Baroda, and Rahul Agrawal from ICRA), the following factors are primarily responsible for this deceleration:

- **Slump in Petroleum and Energy Sectors:** Petroleum-based products carry an exceptionally high weightage in the core index. The simultaneous steep decline in crude oil, natural gas, and refinery products severely dragged down the overall index.
- **Impact of International Markets and Imports:** The softening of crude oil prices in the international market, coupled with an increase in India's crude oil imports, led to a scaling down of domestic production.
- **West Asia Crisis:** On-going geopolitical tensions and conflicts in West Asia (Middle East) have exerted an adverse impact on the export cycles and production schedules of refinery products.

3. Core Concepts for the UPSC Examination (UPSC Concept Booster)

- **The Eight Core Industries:** This index comprises Coal, Crude Oil, Natural Gas, Refinery Products, Fertilizers, Steel, Cement, and Electricity.
- **Share in IIP:** These eight core industries constitute approximately **40.27%** of the total weightage of items included in the Index of Industrial Production (IIP). Consequently, any slowdown in the core sector directly impacts the country's overall industrial growth trajectory.
- **Relative Weightage Order (In Descending Order):** Refinery Products (Highest Weightage) > Electricity > Steel > Coal > Crude Oil > Natural Gas > Cement > Fertilizers (Lowest Weightage).

Conclusion

The collapse of the core sector's growth rate to 0.5% in May 2026 signals a temporary phase of sluggishness in the industrial engine of the Indian economy. While sustained growth in infrastructure-linked segments (cement and electricity) shows that construction activities are moving ahead, the crisis within the energy and fuel matrix (coal, oil, and gas) runs deep. Amid persistent international geopolitical instabilities like the West Asia crisis, the government urgently needs to bolster self-reliance in the energy vertical, accelerate domestic crude oil exploration, and build more resilient supply chains to steer industrial growth back on track in the upcoming quarters.

UPSC Prelims Exam Study Questions

Question: Which of the following industries is not included in the 'Index of Eight Core Industries'?

(a) Steel

(b) Cement

(c) Textiles

(d) Natural Gas

Ans: (c)

UPSC Mains Practice Questions

Question: Analyze the major reasons for the slowdown in India's energy sector.(**10Marks, 150Words)**

Page 04 :GS II :International Relations / Preliminary Examination

Amidst profound ongoing geopolitical tensions and conflicts in West Asia (Middle East), India, under its BRICS presidency, is hosting the high-level two-day 'BRICS National Security Advisors' meeting in New Delhi. Indian National Security Advisor (NSA) Ajit Doval welcomed top security representatives from member states including Iran, China, and Brazil to review the global security architecture at this forum. This meeting takes place at a time when the mandate and scope of BRICS have expanded beyond economic cooperation to encompass global security and strategic issues.

Doval hosts NSAs of BRICS nations amid West Asia tensions

Doval holds talks with Iran official Ghadir Nezamipour and Chinese Foreign Minister Wang Yi at meeting to survey global security issues

Kallol Bhattacherjee
NEW DELHI

Developments in West Asia formed the dominant backdrop as National Security Adviser (NSA) Ajit Doval hosted his counterparts from BRICS grouping in New Delhi for the BRICS NSAs meeting.

Mr. Doval met Ghadir Nezamipour, Deputy Secretary for Defence Affairs of Iran's Supreme National Security Council (SNSC), Chinese Foreign Minister Wang Yi, and Secretary of Multilateral and Political Affairs of Brazil Carlos Cozendey among others who are here to attend the two-day event that will survey the security architecture of the world.

"Both sides reviewed the ongoing situation in West Asia. They also discussed cooperation under the BRICS platform and India-Iran bilateral ties," said the Ministry of External Affairs (MEA) after Mr. Doval met Mr. Nezamipour.

The MEA said the meeting between Mr. Doval and Mr. Wang was "forward looking" and added, "The two sides reviewed recent developments in bilateral relations and noted progress towards gradual normalisation. The NSA underlined that stable, predictable and constructive bilateral relations contribute to building of trust and better understanding between the two sides."

National Security Advisor Ajit Doval and Deputy Secretary for Defence Affairs of Iran's SNSC, Ghadir Nezamipour in New Delhi. PTI

Tehran and Beijing

The Iranian delegation held a detailed meeting with the Chinese side on the sidelines of the BRICS meeting, informed the Embassy of Iran. Mr. Nezami "expressed appreciation" for "China's political support and emphasised the importance of strengthening the strategic partnership between Tehran and Beijing, as well as Iran's readiness to respond to any potential threats."

"China's Foreign Minister reaffirmed support for Iran's security and territorial integrity, welcomed the improvement of Iran's relations with regional countries and expressed Beijing's willingness to contribute to diplomatic efforts aimed at promoting regional stability," said the Iranian Embassy, informing that the two sides will continue to "maintain close consultations".

The June 22-23 meeting of the NSAs of the BRICS countries will focus on 'non-traditional security challenges confronting the world today'. The meeting will include a review of the outcomes of BRICS Joint Working Groups on Counter-Terrorism.

1. Central Theme and Agenda of the Meeting

- **Core Theme:** The central theme of the BRICS NSA meeting this year is "Non-traditional security challenges confronting the world today."
- **Technological Threats:** The deliberations are extensively focusing on the rapidly evolving nature of national security challenges and the critical role played by new technologies, alongside Information and Communication Technologies (ICT), in emerging security threats.
- **Counter-Terrorism Mechanism:** Under this vertical, the outcomes of the 'BRICS Joint Working Groups on Counter-Terrorism' were reviewed to enhance collective anti-terror frameworks.

2. India-Iran Bilateral Engagement

- **Focus on West Asia:** NSA Ajit Doval and Ghadir Nezamipour, the Deputy Secretary for Defense Affairs of Iran's Supreme National Security Council (SNSC), undertook a detailed review of the current sensitive situation prevailing in West Asia.
- **Strategic Context:** This dialogue holds immense significance as it marks the first visit of a senior Iranian official to India following Iran's recent peace agreement with the United States. Both sides discussed reinforcing bilateral ties and strengthening cooperation under the BRICS umbrella.

3. India-China Relations

- **Steps Toward Normalization:** The meeting between NSA Ajit Doval and Chinese Foreign Minister Wang Yi was characterized by the Ministry of External Affairs (MEA) as "positive and forward-looking." Both nations noted the gradual progress made toward normalizing bilateral relations since the 2020 border standoff.
- **Emphasis on Confidence Building:** The Indian NSA placed special emphasis on the fact that stable, predictable, and constructive bilateral relations between the two major powers are indispensable for building mutual trust and fostering a better understanding.

4. The Tehran-Beijing Axis: Trilateral Dynamics

- **Chinese Support:** Intense parallel talks took place between the Iranian and Chinese delegations on the sidelines of the BRICS meeting. Chinese Foreign Minister Wang Yi reiterated Beijing's absolute support for Iran's sovereignty, security, and territorial integrity.

- **Strategic Partnership:** Expressing appreciation for China's consistent political support, Iran conveyed its readiness to further fortify the strategic partnership between Tehran and Beijing and to collectively counter any potential external threats.

5. Geopolitical Significance of the Expanded BRICS (BRICS-11)

- **Expansion of Membership:** Following the expansions undertaken in 2024 and 2025, BRICS has now evolved into a formidable 11-member bloc. Its membership includes the founding nations (Brazil, Russia, India, China, South Africa) alongside Egypt, Ethiopia, Indonesia, Iran, Saudi Arabia, and the United Arab Emirates (UAE).

- **The Challenge of Consensus:** Forging a consensus on this platform represents a major diplomatic test for India, given the divergent strategic perspectives held by member states (particularly Iran and the UAE) regarding West Asian dynamics.

Conclusion

This BRICS NSA meeting hosted in New Delhi underscores India's growing global mediation capabilities and its expanding diplomatic footprint. Navigating the crises of West Asia and ongoing border negotiations with China, India has effectively leveraged this forum not only to shape the multilateral security agenda but also to secure its national interests with major global competitors. Aligning BRICS nations against non-traditional threats like terrorism, cyber vulnerability, and emerging disruptive technologies marks a significant step toward global stability. This meeting lays down a robust security foundation ahead of the upcoming BRICS Summit scheduled to be held in India in September 2026.

UPSC Prelims Exam Study Questions

Question: What is the primary objective of the "New Development Bank" (NDB) in the context of BRICS?

(a) To enhance military cooperation

(b) To provide development and infrastructure financing to member countries

(c) To formulate global trade rules

(d) To promote nuclear cooperation

Ans: b)

UPSC Mains Exam Study Questions

Question:"BRICS has now evolved from being merely an economic forum into an emerging geopolitical and strategic grouping." Critically examine this statement.**(10 Marks, 150 Words)**

Page 07 :GS II :SocialJustcie/ Preliminary Examination

The geopolitics of global scientific research and scholarly publishing has witnessed more revolutionary transformations over the past 18 months than it did in the preceding two decades. Historically, the global academic landscape has been dominated by a handful of international commercial publishers, who charge exorbitant subscription fees for access to knowledge or levy high 'Article Processing Charges' (APCs) on researchers. Currently, global players such as China, the United States, Australia, Europe, and Africa are actively reducing their financial dependence on these publishers, moving toward the democratization of knowledge and 'Open Access.' In this shifting paradigm, it is highly critical to review India's current standing and its future strategy.

World is moving on from paying publishers — India should too

The geopolitics of scholarly publishing has shifted more in the past 18 months than in the past two decades; China is building sovereignty, the U.S. is scrutinising costs, Australia is prioritising immediate access, Europe and Africa are building public infrastructure, but where is India?

Moumita Koley

A number of activities are underway in the global scholarly publishing policy space. Within a span of 18 months, from late 2024 to mid-2026, the United States has placed the economics of academic publishing under Congressional scrutiny, Australia has mandated immediate open access to all publicly funded peer-reviewed research, Europe has launched a publicly owned publishing platform called Open Research Europe, and China has begun building an integrated domestic scholarly publishing ecosystem explicitly designed to redirect research prestige and publishing revenue away from foreign publishers.

India, meanwhile, committed ₹6,000 crore over three years to pay those same publishers for access to knowledge — a considerable part of which was generated by its own researchers.

The contrast is not incidental. It reflects an essential divergence in how the world's major research-producing nations are thinking about knowledge sovereignty. And it raises a question India's science policy community has not yet answered with sufficient seriousness: what comes after 'One Nation One Subscription' — and are we really building towards it?

Building sovereignty

As Ashutosh Ghildiyal, Ning Zhang, Gareth Dyke, and Yanli Wang wrote in *The Scholarly Kitchen*, China's strategy is elaborate. In its vision, the country is no longer simply a major contributor to global research output but is increasingly a central actor shaping the future of scholarly publishing.

To that end, China is changing research evaluation practices by discouraging metrics like the 'impact factor', investing in journal infrastructure, instituting a credible peer-review system, and increasing international visibility. (A journal's impact factor is meant to show its impact on the field based on how much the papers it publishes are cited.) As a result, China wishes to position its domestic journals to compete globally.

The country has also made policy choices to encourage Chinese researchers to publish in domestic journals. They include evaluating research by its quality rather than by the journal it appeared in and paying attention to whether research is addressing national needs.

As part of this upgrade, the second phase of its Journal Excellence Action Plan, China is building an integrated scholarly publishing ecosystem in which funding, publication venues, evaluation systems, editorial networks, and policy incentives reinforce one another. As a result, it plans to create more than 400 world-class Chinese-owned journals, capture publishing revenues currently flowing to foreign publishers, and establish Chinese platforms as credible alternatives to the likes of *Nature*, *Science*, and *Cell*.

The Chinese Academy of Sciences, which has more than 50,000 researchers across 100 institutes, also announced in early 2026 that it would stop paying article processing charges (APCs) for more than 30 high-cost international journals, explicitly including *Nature Communications*, *Science Advances*, and *Cell Reports*. The APC is a fee levied by journals to publish open-access papers; the fee is supposed to 'compensate' the revenue the journal will lose since others won't have to buy the paper to read it. Each of these three journals charges over $5,000 per paper in APCs.

The message to publishers is clear: China will not subsidise the prestige economy of foreign publishers while building its own. The message to its researchers is equally clear: publishing in domestic journals will count for career progression and should not be treated as a second-class choice.

Checking expenses

The situation in the U.S. is more volatile and ideologically complex. A congressional hearing in April brought together lawmakers, researchers, and publishing industry representatives to examine the rise of paper mills and the costs of open access publishing. The questions included whether the U.S. government is getting enough value for the billions it spends annually on journal subscriptions and APCs, and whether the current system serves the public interest.

The Office of Management and Budget proposed curtailing the subscription and journal publication costs, including APCs and other fees, and suggested disallowing them under federal awards. While policy has yet to be changed, the fact remains that the U.S. government is viewing journal publishers' profits — and whose margins rival those of Big Tech — as a fiscal and transparency concern rather than solely as an open access one.

This scrutiny offers both a policy opportunity and a cautionary tale for India. If the world's two most powerful research funders are reconsidering what they are paying for scholarly publishing, the negotiating environment that has kept publisher pricing confidential and non-negotiable is beginning to shift.

A clear new mandate

As it happens, Australia has moved with the least ambiguity of any major research system. The Australian Research Council (ARC) Open Access Policy, especially the v2026.1 update, takes effect on July 1, 2026, and requires journal articles and conference papers arising from ARC-funded research to be made openly accessible immediately upon publication, with no exceptions.

Crucially, the compliance burden falls on the organisations administering the grants — i.e. the universities and research institutions. The policy is aligned with large international funding bodies such as the U.S. National Institutes of Health and the Wellcome Trust in the U.K. This matters because it means that when Australian researchers co-author with U.S. or U.K. colleagues, a single rights-retention approach serves all funder requirements simultaneously, reducing the transaction costs that have previously allowed publishers to exploit policy fragmentation across borders.

The ARC first introduced its policy in 2013, and the 2026 version represents the culmination of a decade-long trajectory from encouragement to hard mandate. It is also careful to mention green open access: once ready, a copy of the paper will be archived in an openly accessible repository. Aside from guaranteeing access, doing so will also allow the paper's authors to retain the rights to it.

Publicly owned infrastructure

Europe's approach is also ambitious and relevant to what India should be building towards. Instead of negotiating with existing publishers — including the 'One Nation One Subscription' scheme — or requiring researchers to publish their papers to be open access by paying an APC, the European Commission has concluded that the long-term solution is to create publicly owned publishing infrastructure that removes commercial publishers from the equation entirely.

Open Research Europe, which is the European Commission's own publishing platform, is entering a new phase backed by a nearly €17 million budget for 2026-2031, co-funded by the European Commission by up to €10 million. The operating platform will be provided by the European Organisation for Nuclear Research (better known as CERN). The platform is expected to begin operating as a collectively supported publishing service later this year. Once it is live, researchers from 11 participating national research systems — Austria, France, Germany, Italy, the Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, and Switzerland — will be able to publish without paying.

This is open access but it is also the European research ecosystem taking back the publishing function that it had outsourced to commercial publishers over the last four decades.

In parallel with Open Research Europe, Europe has operationalised the diamond open access model at scale. In this paradigm, a journal publishes open access papers without levying an APC; the costs are instead borne by the funders and the research institutions. With some support from the French National Research Agency, the European Diamond Capacity Hub needs to strengthen diamond open-access publishing infrastructure across Europe.

What ONOS does and does not do

India's 'One Nation One Subscription' (ONOS) scheme, which has been operational since January 2025, was a genuine step forward in addressing a real and urgent problem. ONOS provides access to more than 13,000 journals from 30 publishers to approximately 6,300 government, academic, and research institutions at a total committed budget of ₹6,000 crore over three years (2025-2027). For researchers at tier-2 and tier-3 institutions who have never had access to the journals their fields require, this is transformative.

However, while ONOS solves the reading problem, it does not address the publishing problem. ONOS comes with an APC fund of ₹150 crore per year, replenished from what India allocates for research, which is already dwindling. Further, with more than half of research worldwide already being freely accessible, a significant proportion of what ONOS is paying to access is already available at zero cost. That is, India is partly paying ₹6,000 crore to access content that is already free and partly to subsidise a subscription model whose foundations are being dismantled everywhere else in the world.

The structural problem runs deeper. ONOS is opaque on publisher pricing, protection against future cost inflation, investment in Indian journals, and a post-2027 strategy. Every future negotiation is to be conducted from a position of demonstrated dependence, with journal publishers aware that India has no credible alternative — and that the political cost of losing ONOS access is too high for any government to bear.

In this sense, ONOS should be seen as a bridge, not a destination.

India's stated ambition to become more self-sufficient is inconsistent with indefinitely subsidising a small group of foreign commercial publishers to access knowledge produced by Indian researchers with Indian public funds. A better strategy would be to combine immediate green open-access mandates for publicly funded research, rights retention policies for researchers, more investments in Indian journals and publishing platforms, transparent APC expenses, and participating in international efforts to develop community-governed publishing infrastructure.

Window is now

The geopolitics of scholarly publishing has shifted more in the last 18 months than in the last two decades. China is building sovereignty. The U.S. is scrutinising costs. Australia is prioritising immediate access. Europe is building public infrastructure. Africa is also moving forward with local infrastructure, and Latin America was and still is the leader in self-reliant, community-governed local publishing infrastructure.

The direction of change across every major research system is the same: away from commercial dependencies and towards public ownership, public access, and public benefits.

In this context, India has both an opportunity and a time constraint. ONOS has established that the Government of India recognises knowledge access as a public good worth funding at scale. The Anusandhan National Research Foundation also has a mandate to reform the conditions in which Indian science reports its findings. Thus, India has the political legitimacy to push back against publishers' pricing in ways that would have seemed radical five years ago.

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The European Commission has concluded that the long-term solution is to create publicly owned publishing infrastructure and remove commercial publishers from the equation entirely. A view of the Maughan Library round reading room at King's College London. COLIN [CC BY-SA]

India's stated ambition to become more self-sufficient is inconsistent with indefinitely subsidising a small group of foreign commercial publishers to access knowledge produced by Indian researchers with Indian public funds

1. Shifts at the Global Level: Where is the World Heading?

In the realm of academic publishing, various global powers have adopted the following strategies to dismantle the monopoly of commercial publishers:

- **China (Building Sovereignty):** China is robustly strengthening its domestic scientific ecosystem. It is moving rapidly toward establishing 'Scholarly Sovereignty' by liberating its research output and scientific data from the control of foreign publishers.
- **United States (Strict Scrutiny of Costs):** The US is stringently auditing the exorbitant costs associated with research publications and the commercial exploitation of publicly funded research, ensuring the optimal utilization of taxpayers' money.
- **Australia (Prioritizing Immediate Access):** Australia has pivoted toward a national framework that guarantees immediate and free access (Immediate Open Access) to all publicly funded research without any paywalls or embargo periods.
- **Europe and Africa (Developing Public Infrastructure):** These regions are actively building 'Diamond Open Access' models and public digital infrastructure, ensuring that neither the author has to pay to publish research nor the reader has to pay to access it.

2. India's Position: Where Do We Stand?

While India consistently ranks among the leading nations globally in terms of scientific research paper output, the country faces several structural challenges on the publishing model front:

- **Sluggishness of 'One Nation, One Subscription' (ONOS):** The Government of India proposed the 'ONOS' policy to ensure unified, nation-wide access to the world's top scientific journals for all research institutions and universities. However, this initiative remains entangled in protracted negotiations and financial gridlocks with commercial publishers.

- **Heavy Financial Burden:** Indian higher education institutions (such as IITs, IISc, and Central Universities) deplete massive amounts of foreign exchange reserves every year to subscribe to the databases of international publishers (such as Elsevier and Springer).

- **The New Crisis of 'Pay-to-Publish':** Under the guise of 'Alternative Open Access,' publishers are transitioning away from the traditional subscription model and are instead levying massive Article Processing Charges (APCs) directly on researchers. Bearing these fees—which often run into lakhs of rupees—is extremely difficult for Indian researchers, thereby impeding the global dissemination of Indian research.

3. The Case Against Commercial Publishers: Why India Must Stop Paying

- **Double Jeopardy of Public Funding:** Most research in Indian universities is backed by government grants (such as DST, DBT, UGC)—essentially funded by taxpayers' money. Ironically, once the research is completed, the government and public institutions must pay hefty amounts to private publishers all over again to either publish or read that very same research.

- **Exclusionary Nature of Knowledge:** Due to steep access fees, students and faculty members at smaller and rural Indian universities are deprived of contemporary cutting-edge scientific literature, creating regional disparities in research quality.

- **Exploitation of Peer Review:** The critical task of reviewing these journal articles is performed voluntarily by scientists worldwide without any monetary compensation, whereas the entire profit margin is cornered by private corporate publishers.

Way Forward

Learning from these global structural transformations, India must incorporate the following corrective interventions under its National Science, Technology, and Innovation Policy (STIP):

- **National Public Publishing Infrastructure:** India must develop its own dedicated national digital repository or publishing platform where all government-funded research can be published and accessed free of cost, aligning with the Diamond Open Access model.

- **Hard Bargaining with Foreign Publishers:** Instead of capitulating to the arbitrary commercial terms of private publishers under 'ONOS,' India must leverage its diplomatic and economic strength as a massive consumer market to aggressively drive down costs.

- **Reforming the Evaluation Metrics:** The University Grants Commission (UGC) and institutional review boards must dismantle the mandatory requirement of publishing exclusively in high-end, foreign 'High Impact Factor' journals for academic evaluation, granting equal weightage to high-quality domestic or open-access repositories.

- **Leading the Global South:** India should collaborate with Africa and other developing economies to institutionalize a shared, affordable, and open scientific repository framework to challenge the global hegemony of the commercial publishing industry.

Conclusion

The contemporary model of academic publishing is economically and strategically unsustainable for a developing, knowledge-driven nation like India. As the international community breaks free from the clutches of commercial publishers to build open, publicly governed knowledge systems, India cannot afford to lag behind. India must reframe scientific research not as a commodity for private monetization, but as a fundamental 'Public Good.' Redirecting the hundreds of crores spent on foreign journal subscriptions toward domestic digital infrastructure and research grants for young scientists will truly empower India to transform into a self-reliant knowledge superpower.

UPSC Prelims Exam Study Questions

Question: What does "Article Processing Charge (APC)" refer to?

(a) Patent registration fee

(b) Fee charged for publishing a research paper in an open-access journal

(c) University admission fee

(d) Copyright renewal fee

Ans: b)

UPSC Mains Practice Questions

Question: Discuss the importance of Digital Public Infrastructure in the development of scientific research and higher education in India.**(10 Marks, 150 Words)**

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"No one should own the law" — this is a foundational principle of democratic governance. In India, this idea is not unprecedented; Emperor Ashoka comprehensively disseminated state decrees (Edicts) to the general public via stone inscriptions, such as the 7th Pillar Edict located in Delhi. Recently, under the implementation of the 'Jan Vishwas Act' passed by the Parliament, demands to liberate governance from the 'Steel Cage' and enhance transparency have intensified. Against this backdrop, making all policy mandates, including public safety standards, accessible to the general public centrally and free of cost has become a strategic necessity.

CACHE

Transparency push: Parliament recently passed the Jan Vishwas law, a move to 'liberate governance from the steel cage'. FILE PHOTO

No one should own the law: why government standards should be public

As part of the implementation of the Jan Vishwas framework, it has been proposed that all edicts of government be centrally published and that any such edict not publicly accessible be treated as null and void – a principle that should extend to public safety standards as well

Carl Malamud

The principle that rules governing public life must be widely accessible is not new to India. The first Indian road safety standard dates back to Emperor Ashoka, who commanded that his edicts of government be broadly disseminated throughout the land. The 7th Pillar Edict, now located in Delhi, had an extensive section on road safety.

Today, this work continues under the auspices of the Indian Roads Congress. While ostensibly a non-profit association, it is actually an arm of the government; it is subject to Right to Information Act; its website is maintained by the Network Information Centre, and its governing council is predominantly composed of government officials. It is a law-making enterprise with the force of the state.

The Indian Roads Congress publishes hundreds of standards, guidelines, and specifications relating to road safety and construction. These documents cover a wide range of technical matters, including route signage for national highways, vehicle design dimensions and weights, and the design of prestressed concrete road bridges.

These standards are widely incorporated into government practice, appearing in subordinate legislation as well as in regulations issued by bodies such as the National Rural Infrastructure Development Agency and the Ministry of Road Transport and Highways. The standards are also an integral part of the road construction efforts by the States and are frequently referred to in judicial opinions.

For over a decade, I've been systematically purchasing, scanning, and posting these road edicts on my website and on the Internet Archive, a non-profit public library based in the U.S. Many of these standards have been accessed tens of thousands of times, with even government agencies themselves reproducing and hosting copies. This work is entirely non-commercial: no fees are charged for access, no intellectual property rights are asserted, and the source of every document is clearly identified. The underlying principle is straightforward – edicts of government constitute the raw materials of democracy, and a truly informed citizenry is indispensable to ensuring a government not merely for the people, but by the people.

Recently, a "takedown" notice was issued by the Indian Roads Congress – a demand for the immediate removal of its purportedly proprietary works – accompanied by threats of legal consequences for non-compliance. That demand has not been complied with, and it is necessary to explain why.

My nonprofit makes edicts of government available; it is the essence of our mission. In India, this included posting of over 14,000 Indian Standards issued by the Bureau of Indian Standards (BIS). Like the standards of the Indian Roads Congress, BIS standards are an integral part of public safety. It is impossible to meaningfully advance initiatives such as "Make in India" without ensuring "safe in India." These standards cover critical areas including the National Building Code, safety requirements for motorcycle helmets and drinking water, procedures for entering sewer systems, the operation of agricultural and textile machinery, and construction practices in areas prone to typhoons. Like the Indian Roads Congress, an elaborate law-making process is used before an Indian Standard is issued.

When BIS objected to my actions, myself and two Indian co-petitioners raised a Public Interest Litigation in the Hon'ble High Court of Delhi. Our suit went on for seven years, and then something interesting happened. During those seven years, we continued to post all the BIS standards for open access, yet during that time more and more people became aware of the standards and the sales of standards by BIS went up! But, here's the thing. Government doesn't make money selling these publications, but they are hard to procure.

It turns out BIS was loosing more and more money as their sales went up. Recognising the inefficiency of this model, a senior official in the Ministry directed that the standards be made freely available on the BIS website. This outcome aligned with the very relief that had been sought; accordingly, the matter was brought before the Chief Justice of the Delhi High Court, and a request was made to withdraw the petition. The court acceded to this request and disposed of the matter.

Parliament has recently passed the Jan Vishwas law, a move to "liberate governance from the steel cage". A recent post by business leaders Manish Sabharwal (co-founder of TeamLease) and Rahul Matthan (co-founder of Trilegal) called for the removal of "shadow instruments" – edicts that are not readily available to read. In addition to judicial decisions and primary legislation, they identify a wide array of non-statutory instruments that nonetheless carry the force of law, including regulations, circulars, master circulars, departmental and ministerial directions, office memoranda, public notices, general orders, guidance notes, advisories, press releases, schemes, consultation papers, standard operating procedures, policies, notifications, guidelines, government orders, departmental orders, and gazettes.

These instruments constitute what may properly be described as "edicts of government." Courts in other jurisdictions have affirmed that such edicts belong to the people. In the United States, the Supreme Court has held that "no man shall own the law," underscoring the principle that legal materials must remain in the public domain. Similarly, in the European Union, a constitutional bench has ruled that mandatory safety standards form an integral part of the law and that ensuring public access to them is of "overriding public importance."

As part of the implementation of Jan Vishwas, Mr. Sabharwal and Mr. Matthan have suggested that all edicts of government in India be posted on a central website, such as India Code, and that any such edict not publicly accessible should be treated as null and void. This proposal is both sound and necessary, and it ought to extend expressly to public safety standards as well.

It is important, however, to distinguish such edicts from other categories of government publications. Not all documents issued by the state carry normative or binding force; many are informational or cultural in nature, including the numerous publications produced by bodies such as the Publications Division, the National Book Trust, and the Archaeological Survey of India.

Edicts of government have a special protected place in constitutional law, but works of government are any documents issued by the state, and these public works have a special importance. I have also purchased and posted thousands of such documents from the Union and State governments, and as with edicts, have over the years received a number of takedown notices. As with the Roads Congress, I have stated my position and respectfully declined to remove the documents.

In the U.S., the "works of government" clause in the copyright act states that documents issued by the federal government are not eligible for copyright. In England, the government maintains "crown copyright" but has an open government data licene permitting reuse. It would be a simple matter for India to adopt a works of government policy.

Edicts of government are the law, and must be available for democracy to function. Works of government are also vital, public knowledge paid for by the people. Making both edicts and works more readily available will enrich our society and make government ever more relevant to the citizenry. These are small steps we can all take as we walk together up that long twisted path towards a better democracy, towards that shining city on the hill.

Carl Malamud is the president and founder of Public Resource, a U.S.-based NGO and author of 9 books.

1. 'Shadow Instruments' and the Web of Government Mandates

- **Hidden Rules:** According to corporate and legal experts (such as Manish Sabharwal and Rahul Matthan), apart from primary legislations (Acts), a vast web of 'Shadow Instruments' operates in India.
- **Legal Obligation:** These include regulations, circulars, office memorandums (OMs), public notices, guidelines, and standard operating procedures (SOPs) issued by various ministries and departments.
- **The Crisis of Invisible Law:** Although these are not directly enacted by the Parliament, they possess binding statutory force equivalent to law. If these documents are not readily available for public perusal, it inadvertently places citizens in a position of non-compliance.

2. The Paradox of Indian Roads Congress (IRC) and Public Safety Standards

- **Government Affiliate:** The Indian Roads Congress (IRC) structurally mirrors a non-profit society, but it functions entirely under government oversight (it falls under the ambit of the RTI Act, its website is hosted by the NIC, and its council is dominated by government officials).
- **Regulatory Power:** The IRC publishes hundreds of critical safety standards governing road construction, national highway signage, and bridge designs, which are mandatorily enforced by the Ministry of Road Transport and Highways (MoRTH).

- **Restrictions on Access (The Copyright Dispute):** Ironically, by treating these public safety standards as 'proprietary work' (private property), legal actions like takedown notices are issued against their public dissemination, which directly contradicts public interest and democratic principles.

3. A Successful Case Study of the Bureau of Indian Standards (BIS)

- **A Seven-Year Litigation:** When the author (Carl Malamud) uploaded more than 14,000 safety standards of the Bureau of Indian Standards (BIS)—such as the National Building Code, helmet safety specifications, and drinking water standards—online for free public access, legal objections were raised against him. This triggered a Public Interest Litigation (PIL) that lasted for 7 years in the Delhi High Court.

- **Unique Market Behavior:** During the litigation, while these standards remained openly accessible for free, public awareness spiked, causing the sale of physical copies of the standards published by the BIS to actually increase!

- **Policy Reform:** Recognizing the inefficiencies of this regressive model, a senior ministry official directed that all standards be made available for free on the official BIS website, leading to the subsequent withdrawal of the petition.

4. Global Perspectives: Frameworks in Other Jurisdictions

- **United States of America (USA):** The US Supreme Court has explicitly ruled that "no person can own the law." Under the 'Works of Government' provision of the US Copyright Act, documents issued by the federal government cannot hold copyright protection.

- **European Union (EU):** The Constitutional Bench of the European Court has ruled that mandatory safety standards form an integral part of the law, and ensuring public access to them is a matter of "overriding public importance."

- **United Kingdom (UK):** The state retains 'Crown Copyright' over its documents but explicitly permits the public to freely reuse them through an 'Open Government Data License.'

5. Key Recommendations Under the Jan Vishwas Framework

- **Central Repository:** All policy mandates, circulars, and safety standards issued by the Government of India must be mandatorily indexed and published on a single centralized portal like 'India Code.'

- **The Principle of 'Null and Void':** Any government order, regulation, or safety standard that is not publicly accessible free of cost on this central digital platform should be legally deemed 'null and void.' This will effectively prevent the harassment of citizens or industries by officials through 'shadow circulars.'

- **Clarity in Classification:** The government must draw a sharp line of distinction between legally binding 'Shadow Instruments' and purely informational/cultural publications (such as books by the National Book Trust or the Archaeological Survey of India, where copyright protection can legitimately persist).

Conclusion

Government mandates and public safety standards serve as the essential "raw materials" for a democracy. It is impossible to conceptualize a government operating 'by the people' without an informed citizenry. To ensure the success of 'Make in India,' the Government of India must first guarantee 'Safe in India,' which requires engineers, students, and ordinary citizens to have unhindered, cost-free access to all manufacturing and safety baselines. Under the spirit of the 'Jan Vishwas Act,' India must formalize a distinct 'Works of Government' policy, effectively eliminating the barrier between the law and the public, thereby translating the ideals of Good Governance into a grassroots reality.

UPSC Prelims Practice Questions

Question: What is the primary objective of the "Public Trust Doctrine"?

(a) Protection of private property

(b) Treating the State as a trustee of public resources

(c) Increasing corporate taxation

(d) Privatization of local bodies

Ans: b)

UPSC Mains Practice Questions

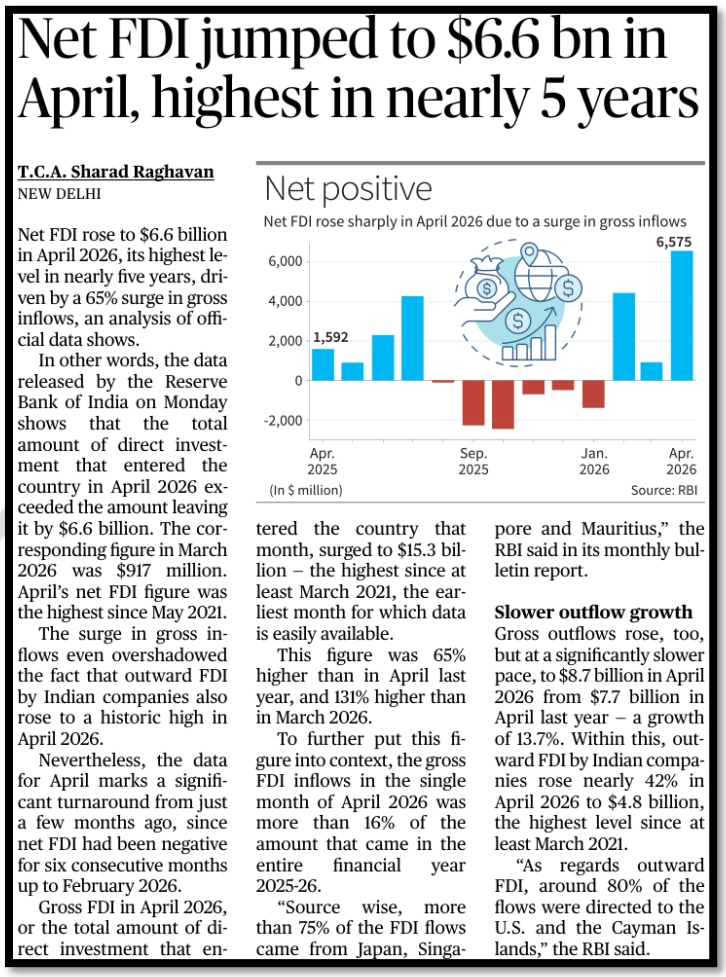
Question: Analyze the importance of transparency and access to information in good governance.**(10 Marks, 150 Words)**

Page :12 :GS III :Indian Economy/ Preliminary Examination

India's Net Foreign Direct Investment (Net FDI) witnessed a massive turnaround, skyrocketing to $6.6 billion in April 2026. This marks the highest monthly inflow recorded in nearly five years, following the previous peak in May 2021. This substantial surge was primarily driven by a phenomenal 65% year-on-year growth in Gross Inflows. Coming on the heels of the previous financial year (FY 2025-26), which saw consecutive net negative FDI outflows for six straight months leading up to February 2026, this rebound in the very first month of the current fiscal year signals a robust revival of global investor confidence in the Indian macroeconomic narrative.

1. Key Economic Data and Core Implications

- **Net FDI:** In April 2026, total direct foreign capital flowing into India exceeded the outbound capital by $6.6 billion. Compared directly to the previous month (March 2026, which stood at $917 million), this represents an unprecedented exponential jump.
- **Gross FDI Inflow:** The country registered a staggering $15.3 billion in gross inflows during April 2026, making it the largest single-month gross accumulation since at least March 2021.
    - This reflects a **65% increase** compared to April 2025.
    - This reflects a **131% increase** compared to March 2026.
- **Contextual Benchmark:** The gross capital injected in April 2026 alone is equivalent to over 16% of the total Gross FDI attracted during the entire preceding financial year (FY 2025-26).



Net FDI jumped to $6.6 bn in April, highest in nearly 5 years

T.C.A. Sharad Raghavan
NEW DELHI

Net FDI rose to $6.6 billion in April 2026, its highest level in nearly five years, driven by a 65% surge in gross inflows, an analysis of official data shows.

In other words, the data released by the Reserve Bank of India on Monday shows that the total amount of direct investment that entered the country in April 2026 exceeded the amount leaving it by $6.6 billion. The corresponding figure in March 2026 was $917 million. April's net FDI figure was the highest since May 2021.

The surge in gross inflows even overshadowed the fact that outward FDI by Indian companies also rose to a historic high in April 2026.

Nevertheless, the data for April marks a significant turnaround from just a few months ago, since net FDI had been negative for six consecutive months up to February 2026.

Gross FDI in April 2026, or the total amount of direct investment that entered the country that month, surged to $15.3 billion – the highest since at least March 2021, the earliest month for which data is easily available.

This figure was 65% higher than in April last year, and 131% higher than in March 2026.

To further put this figure into context, the gross FDI inflows in the single month of April 2026 was more than 16% of the amount that came in the entire financial year 2025-26.

"Source wise, more than 75% of the FDI flows came from Japan, Singapore and Mauritius," the RBI said in its monthly bulletin report.

Slower outflow growth

Gross outflows rose, too, but at a significantly slower pace, to $8.7 billion in April 2026 from $7.7 billion in April last year – a growth of 13.7%. Within this, outward FDI by Indian companies rose nearly 42% in April 2026 to $4.8 billion, the highest level since at least March 2021.

"As regards outward FDI, around 80% of the flows were directed to the U.S. and the Cayman Islands," the RBI said.

Net positive

Net FDI rose sharply in April 2026 due to a surge in gross inflows

2. Geographical Inbound Sources and Outbound Destinations

According to the Reserve Bank of India (RBI) Bulletin, the geopolitical and geographical mapping of this investment cycle revealed distinct structural patterns:

Top Inbound Sources for India

Cumulatively, more than 75% of the total Gross FDI inflows into India originated from three prominent partner nations:

1. **Japan**
2. **Singapore**
3. **Mauritius**

Outward FDI by Indian Corporates

- **Gross Outflows:** Reflecting India's domestic corporate strength, gross capital outflows from India also scaled to a historic high of $8.7 billion in April 2026 (a 13.7% growth compared to $7.7 billion in April 2025).
- **Direct Overseas Investment:** Out of this gross outbound capital, direct overseas financial deployment by Indian firms surged by 42% to touch $4.8 billion.
- **Target Jurisdictions:** Nearly 80% of this outward corporate capital was directed toward two key global financial centers:
    - **United States of America (USA)**
    - **Cayman Islands**

3. Structural Factors Driving the Investment Turnaround

- **Restoration of Global Capital Confidence:** Rebounding after a prolonged six-month phase of net negative flows, this sharp pivot indicates that multinational corporations are resuming long-term capital deployment in India, anchored by its macroeconomic stability and resilient GDP growth trajectory.
- **Robust Domestic Consumption and Manufacturing Ecosystem:** The continuous expansion of India's domestic consumer market, paired with competitive manufacturing incentives like the Production Linked Incentive (PLI) schemes, has successfully attracted foreign firms seeking to de-risk global supply chains under the 'China+1' strategy.
- **Global Footprint Expansion of Indian Multinationals:** The record $4.8 billion overseas investment underscores that Indian conglomerates are actively expanding their global footprint, prioritizing strategic transnational Mergers and Acquisitions (M&A) to capture foreign markets.

4. Core Conceptual Frameworks for UPSC CSE

- **Gross FDI vs. Net FDI:** *Gross FDI* represents the aggregate total foreign capital entering the borders of a country. Conversely, *Net FDI* is computed by deducting capital repatriation/disinvestment by foreign entities and outbound investments made by domestic firms (Outward FDI) from the Gross Inflow. In the Balance of Payments (BoP) architecture, it is the *Net FDI* that is recorded under the **Capital Account**.
- **FDI vs. FPI:** *Foreign Direct Investment (FDI)* is long-term and strategic in nature, bringing physical assets, advanced technology, and employment generation (typically via equity stakes or greenfield projects). On the contrary, *Foreign Portfolio Investment (FPI)* involves short-term, highly volatile investments in the equity and debt markets. Due to its speculative and liquid nature, FPI is frequently termed **"Hot Money"**.

Conclusion

The historic surge in direct foreign capital during April 2026 is an exceptionally positive indicator for the Indian economy. This substantial influx will directly fortify India's foreign exchange reserves and provide vital cushion to maintain the stability of the Indian Rupee (INR) exchange rate. However, the critical policy challenge ahead lies in sustaining this momentum throughout the remainder of the fiscal year. To maximize this turnaround, the government must continuously advance Ease of Doing Business (EoDB) reforms, ensure absolute consistency and predictability in fiscal/taxation policies, and accelerate cross-sectoral infrastructure development, establishing India as the world's most stable and preferred safe haven for global capital.

UPSC Prelims Exam Study Questions

Question: "Net FDI" means:

(a) Only the total foreign investment flowing into the country

(b) The amount obtained after deducting outflows and investment withdrawals from gross FDI

(c) Only government investment

(d) Only investment in the manufacturing sector

Ans: b)

UPSC Mains Practice Questions

Question:"FDI inflows into India in recent years reflect the growing confidence of global investors." Critically examine this statement.**(10 Marks, 150 Words)**

The challenge of India's digital sovereignty

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In the modern world, digital infrastructure is the track on which commerce, government, and national security run. Seen in this context, recent reports of Indian closed-circuit television (CCTV) networks being compromised by hostile entities to gain access to information on India's strategic defence assets (April 2026), along with an incident in July 2025, in which Nayara Energy was abruptly denied access to its corporate email, collaboration tools, and cloud-stored data, raise serious concerns about the future of India's digital and technological sovereignty. While the CCTV security breach was attributed to the use of the Chinese software platform EseeCloud in the CCTV equipment, the Nayara episode was a result of Microsoft Corporation's unilateral enforcement of European Union (EU) sanctions against Nayara Energy due to the stake held in it by the Russian energy giant Rosneft.

These incidents have exposed an uncomfortable reality: critical Indian digital infrastructures such as authentication systems, productivity suites, and cloud platforms operate on technology platforms owned and operated by foreign technology giants. Even when data is physically stored in India, under certain existing global data governance regimes, foreign cloud technology companies can be compelled to provide data within their possession to their home governments. As a result, effective control over digital infrastructure shifts away from Indian entities to overseas corporations and foreign governments.

Foreign control, national risk

The major implication is that the functioning of Indian businesses and critical government services built on foreign technology platforms becomes vulnerable to decisions made by external sovereigns. Directives issued by external sovereigns to deny access to critical digital technology to Indian entities could suspend government operations, collapse trade and commerce, halt manufacturing, and weaken defence capabilities.

For instance, since contemporary warfare is software-defined, the intelligence embedded in fighter aircraft, missile systems, and advanced radar installations resides not in hardware but in code that remains under the control of manufacturers answerable to foreign governments. In conflict scenarios, these manufacturers could possibly degrade targeting accuracy, reduce operational range, or worse, redirect battlefield intelligence to adversaries due to instructions from external sovereigns, all through software configuration changes. A case in point is the 1999 Kargil conflict, during which India faced limitations on access to precise GPS support at a moment when navigation and targeting in mountainous terrain were operationally decisive.

Digital sovereignty is essential for India's technological security and strategic autonomy

India's unique situation

The vulnerability and the risks of dependence on foreign digital infrastructure are being recognised globally. France plans to shift government departments from Microsoft Teams and Zoom to a sovereign video-conferencing platform by 2027. The Netherlands, Denmark, and several German states are exploring domestic alternatives to critical United States software and cloud services such as Microsoft Word, Excel, Outlook, and Teams. The EU is seeking to reduce its dependence on American technology through independent European cloud and IT infrastructure, while Türkiye is lessening its reliance on foreign technologies.

However, unlike other nations, India's situation is uniquely precarious when contextualised within the framework of Power Transition Theory, which posits that when a rising power, desirous of maintaining strategic autonomy, approaches parity with an established hegemon, the latter invariably acts to constrain the former. History demonstrates that rising competitors are contained or co-opted. We already see it being played out on a much larger scale between the U.S. and China. With an accelerating growth trajectory, India has been inching towards this critical zone while facing a daunting task: building its economic fortune on a technology infrastructure independent of foreign influence.

The strategy to address this challenge must be multipronged. The denial of GPS access during the Kargil conflict spurred India to develop its own satellite navigation system. More recently, efforts to strengthen the domestic semiconductor ecosystem and migrate the email systems of some central government ministries to the homegrown Zoho platform reflect a growing commitment to digital and technological sovereignty. India's success in building indigenous payments infrastructure through UPI and RuPay has shown that vulnerabilities arising from foreign-controlled systems can be overcome. This model can be extended to cloud infrastructure, e-commerce platforms, authentication systems, and defence technologies.

To de-risk dependence on foreign defence technologies, India could emulate aspects of the U.S.'s defence production and procurement model. While India has long recognised the importance of self-reliance in defence manufacturing, its heavy reliance on the public sector has not delivered the desired results. The absence of an indigenous modern fighter aircraft despite the programme having begun in the 1980s is a stark reminder of this shortcoming. In contrast, American defence platforms are largely developed by private corporations, with the government providing research funding and assured procurement. This creates a virtuous cycle in which companies develop cutting-edge capabilities while remaining aligned with national strategic interests. India has recently begun moving in this direction by inviting private-sector participation in the development of the Advanced Medium Combat Aircraft under a competitive framework.

Another way to safeguard digital sovereignty is to develop critical technologies and digital infrastructure in partnership with other countries. This ensures mutual dependence, reducing the risk of unilateral actions that could undermine India's strategic interests. The BrahMos missile programme, jointly developed by India and Russia, is a notable example. A key advantage of this approach is that it enables India to build technological capabilities without risking international isolation, unlike China which allowed only indigenous companies to develop critical technologies. Seen in this context, two recent developments are encouraging. The first is the commencement of commercial production at Micron Technology's semiconductor Assembly, Test, Marking and Packaging (ATMP) facility in Sanand, Gujarat, established through India-U.S. technology cooperation. The second is India's decision to join Pax Silica, the U.S.-led initiative on AI and supply-chain security aimed at reducing dependence on Chinese technology and strengthening trusted technology partnerships.

Close the R&D gap

Above all, India must urgently raise its research and development (R&D) spending to levels comparable with global leaders. India's gross expenditure on R&D averaged just 0.74% of GDP between 2000 and 2020 against a global average of 2.07%. This persistent R&D spending deficit raises serious concerns about India's future technological and digital sovereignty. For a country of India's demographic scale and economic ambitions, seeking to approach parity with established powers, the question is not whether it can afford comprehensive technological sovereignty, but whether it can afford to forgo it. The extent to which India succeeds in mitigating the risks to its technological sovereignty will determine its economic competitiveness and strategic autonomy in an increasingly fragmented international order.

The views expressed are personal

GS Paper II& III: Governance and Science and Tech

UPSC Mains Exam Practice Questions: "In the 21st century, data, code, and the cloud have become new strategic assets." Discuss this in the context of India's digital sovereignty.**15 Marks, 250 Words)**

Context : In the contemporary era, Digital Infrastructure constitutes the vital pivot upon which a nation's commerce, governance, and national security collapse or thrive. Recent geopolitical events have unequivocally demonstrated that rather than tangible hardware, 'Software Code' and 'Cloud Ecosystems' have emerged as the new frontiers of geopolitical sovereignty. For a rapidly expanding economy like India, achieving digital and technological sovereignty to safeguard its Strategic Autonomy is no longer an optional policy choice, but an existential imperative.

1. Recent Crises and Vulnerabilities Exposed

The author highlights two critical recent events to expose the vulnerabilities inherent in India's over-dependence on foreign digital architecture:

- **CCTV Network Breach (April 2026):** The deployment of 'EseeCloud'—a Chinese software platform—within Indian Closed-Circuit Television (CCTV) networks allowed hostile entities to gain unauthorized access to highly sensitive intelligence surrounding India's strategic defense assets.
- **The Nayara Energy Precedent (July 2025):** Microsoft Corporation unilaterally enforced European Union (EU) sanctions against Nayara Energy due to the equity stake held in it by the Russian energy major, Rosneft. Consequently, Nayara Energy was instantly decoupled from its own corporate emails, collaboration tools, and cloud data repositories overnight.
- **Core Takeaway:** Even if data is localized and stored physically within Indian borders, under global data governance regimes, foreign tech conglomerates can block access or surrender domestic data under pressure from their respective home governments.

2. Risks of Foreign Control to National Security

- **Software-Defined Warfare:** The operational intelligence of contemporary fighter jets, missile systems, and radar networks resides not in their physical hardware but within their embedded 'code.' In a conflict scenario, foreign manufacturers can manipulate software configurations to degrade targeting precision or restrict operational ranges.
- **Historical Lesson (1999 Kargil War):** During the Kargil conflict, when India desperately required precision navigation data over mountainous terrain, the United States denied India access to its Global Positioning System (GPS) assistance, highlighting the perils of technological dependence.

3. The 'Power Transition Theory' and India's Unique Positioning

- **Global Trend toward Decoupling:** France is actively transitioning its government departments away from platforms like 'Microsoft Teams' and 'Zoom' toward indigenous alternatives by 2027. Similarly, the Netherlands, Denmark, and Germany are aggressively exploring alternatives to US-centric cloud services.
- **The Challenge for India:** According to the **Power Transition Theory**, when an emerging power (like India) rises to challenge or match an established hegemon, the hegemon deploys regulatory or technological maneuvers to contain or control it (as currently witnessed in US-China dynamics). India must build its economic and technological framework insulated from such foreign structural leverage.

4. A Multi-Prone Strategy for Reclaiming Digital Sovereignty

To break free from this digital encirclement, India must intervene strategically across four distinct verticals:

A. Scaling the Indigenous Digital Public Infrastructure (DPI Model)

- Just as India dismantled foreign dominance in payment architectures via UPI and RuPay, a similar approach must be replicated across cloud storage, e-commerce, authentication protocols, and defense technologies.
- The migration of certain central ministries' communication frameworks to the indigenous 'Zoho' platform, along with the operationalization of India's independent satellite navigation system (**NavIC**), are steps in the correct direction.

B. Reforming the Defense Procurement Model via Private Participation

- Over-reliance on Defense Public Sector Undertakings (DPSUs) has failed to deliver absolute self-reliance (for instance, the modern fighter aircraft program initiated in the 1980s still grapples with indigenization challenges).
- India must emulate the US model, where the sovereign state provides robust R&D funding and procurement guarantees, while agile private enterprises engineer cutting-edge technological breakthroughs. The inclusion of the private sector in the Advanced Medium Combat Aircraft (**AMCA**) program is an excellent beginning.

C. Institutionalizing Trusted Technological Partnerships

- Instead of pursuing absolute isolationism like China, India must cultivate asymmetric 'mutual interdependence' with global partners, mirroring the success of the India-Russia BrahMos missile program.
- **Recent Successes:** The commencement of commercial production at Micron Technology's semiconductor packaging facility in Sanand, Gujarat, and India's strategic participation in the US-led **'Pax Silica'** initiative (focused on AI and supply chain security) reflect viable models of trusted partnerships.

D. Bridging the Research & Development (R&D) Deficit

- Between 2000 and 2020, India's Gross Expenditure on R&D (GERD) stagnated at a meager average of 0.74% of GDP, contrasted against a global average of 2.07%. India must scale up its R&D allocation on a war footing.

Conclusion

For a country of India's demographic scale and macroeconomic aspirations, the fundamental question is not whether it can afford the financial costs of comprehensive technological sovereignty, but whether it can afford the strategic risks of abandoning it. In a fragmented international order, India's economic competitiveness and strategic autonomy will ultimately hinge upon how rapidly and efficiently it emancipates its digital and technological ecosystem from foreign vectors of control.