

The Hindu Important News Articles For UPSC CSE

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Recently, Indian Prime Minister Narendra Modi concluded a three-day official visit to Seychelles, which took place on the historic occasion of the Golden Jubilee (50 years) of diplomatic relations between the two countries. During this visit, the Prime Minister participated as the '**Guest of Honour**' in the celebrations of Seychelles' National Day (50th anniversary of independence). Indian military contingents (Assam Regiment and Navy) also participated in the National Parade there, reflecting the deep defense and strategic trust between the two nations.

This visit is a major milestone towards strengthening India's commitment to the Global South, along with India's '**Vision SAGAR**' (Security and Growth for All in the Region) and the recent '**Vision MAHASAGAR**' (Mutual and Holistic Advancement for Security and Growth Across Regions) policy.

Indian Ocean a shared responsibility: Modi

PM meets Seychelles President, stresses 'security, sustainability and prosperity' of the region

Two sides unveil 19 outcomes in areas, including defence, maritime, space, and digital payments

Modi attends the golden jubilee celebrations of National Day of Seychelles as Guest of Honour

Press Trust of India
VICTORIA

India envisioned an Indian Ocean where maritime security was ensured alongside economic prosperity and where partnership was defined not by size, but by mutual respect and trust, Prime Minister Narendra Modi said on Sunday during his visit to the Seychelles.

Mr. Modi, who held wide-ranging talks with President Patrick Herminie of the archipelago, said they agreed that the Indian Ocean was "our shared home" and therefore "its security, sustainability and prosperity are our shared responsibility".

"Our vision is to make the Indian Ocean an ocean of opportunity," Mr. Modi said after delegation-level talks with Mr. Herminie, during which they took stock of the economic part-

nership between the two countries and discussed new opportunities in industries, connectivity, technology, digital infrastructure, and other areas.

After the talks, the two sides unveiled 19 outcomes, expanding cooperation in areas ranging from defence and maritime security to digital payments, space, healthcare, agriculture, and education.

The two sides also announced the gifting of a fast patrol vessel to the Seychelles, the handover of 10 utility vehicles and five Laser Radial class boats to the Seychelles Defence Force, the completion of the refit of *PS Zoroaster* for the Seychelles Coast Guard and the upgrading of a Dornier aircraft with a glass cockpit.

Climate impact

Mr. Modi also addressed the National Assembly of the country, where he em-



Sea of opportunities: Prime Minister Narendra Modi addresses the National Assembly of the Seychelles in Victoria on Sunday. ANI

phasised that the Global South, especially island nations, was the most impacted by climate change.

He reiterated that those who had contributed the least to climate change should not bear the greatest burden of its consequences and said climate action must be guided by "fairness, responsibility, and equity".

"The Global South, and especially the island nations, are the most impacted by climate change. Its effects are already visible on our coastlines, in the marine ecosystems, in weather patterns, and in our communities," he said.

"We will continue to explore new opportunities for the industries of both our countries. We will also

work towards enhancing connectivity between India and the Seychelles. This will not only boost our bilateral trade but also strengthen our ties with East Africa and the Indian Ocean region," he said.

The Prime Minister, who is on a three-day visit to the archipelago, attended the golden jubilee celebrations of the National Day of Seychelles as the Guest of Honour.

Earlier in the day, at a special ceremony, Mr. Modi was also conferred with 'Guardian of the Blue Horizon' by Mr. Herminie for his "green leadership and efforts towards advancing the interests of developing countries and his long-standing commitment towards promoting the blue economy".

The outcomes after the talks on Sunday included an extradition treaty, an agreement on cooperation in the peaceful uses of out-

er space, an agreement to advance UPI-based digital payments in the Seychelles, an umbrella line of credit agreement with the Export-Import Bank of India and an agreement for preliminary preparations for a new the Seychelles National Hospital, according to the Ministry of External Affairs.

Win-win partnership

"Our cooperation in the fields of energy and climate action continues to advance steadily. We will further strengthen our win-win partnership in emerging areas of clean energy, including green hydrogen. The Blue Economy is a natural and strategic pillar of our relationship," he said.

"The true strength of India-Seychelles relations lies in our people-to-people ties," Modi said.

He said the popularity of Yoga and the Indian film

industry in the Seychelles reflected the deep cultural connection between the peoples of the two countries. "In the same spirit, we will continue our efforts to enhance people-to-people exchanges, particularly among the youth of our two countries."

Addressing the National Assembly later, the Prime Minister said the Seychelles "occupies a special place in India's vision for the Indian Ocean."

"Our vision recognises that our futures are interconnected and interdependent. And, we will continue to work together for a safer and more secure Indian Ocean region," he said.

The Prime Minister last visited the Seychelles in 2015, while President Herminie visited India earlier this year.

ARMY EVENT
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Key Points and Agreements (19 Bilateral Outcomes)

Delegation-level talks between Prime Minister Narendra Modi and Seychelles President Patrick Herminie culminated in 19 major agreements/outcomes. Its key points are divided into the following sectors:

Strategic and Maritime Security

- India gifted a '**Fast Patrol Vessel**' (FPV), 10 utility vehicles, and 5 Laser Radial Class boats to enhance Seychelles' security capabilities in the Indian Ocean.
- The refit work of the Seychelles Coast Guard ship '**PS Zoroaster**' was completed in India, and Seychelles' **Dornier** aircraft was upgraded with a modern glass cockpit.

Daily News Analysis

- A crucial '**Extradition Treaty**' was signed between the two countries.

Digital and Technological Cooperation

- An agreement was signed between India's NPCI International and the Central Bank of Seychelles to launch India's '**UPI**' (Unified Payments Interface) based digital payment system in Seychelles.
- In the space sector, consent was reached to advance cooperation for the '**Peaceful uses of outer space**'.

Health and Social Development

- An agreement was signed with HLL Lifecare Limited to provide affordable and high-quality medicines to Seychelles under India's '**Jan Aushadhi Yojana**'.
- Consent was reached on the preliminary preparation and blueprint for the construction of a new '**National Hospital**' in Seychelles.
- A comprehensive '**Umbrella Line of Credit**' agreement was signed with India's **EXIM Bank**.

Food Security and Humanitarian Assistance

- As a reliable friend, India handed over **500 metric tons of rice, 8,500 metric tons of cement, and 6 ambulances** to Seychelles.

Strategic & Geo-political Importance

- **India as a 'Net Security Provider'**: India is playing a leading role in maintaining security and stability in the Western Indian Ocean. Providing military equipment to Seychelles proves that India is a trustworthy partner in tackling security challenges in the region.
- **Shared Responsibility**: India believes that the Indian Ocean is not the property of any single country, but "our shared home", and its security and prosperity are the collective responsibility of all nations.
- **Countering China's Influence**: China is constantly trying to increase its presence in this strategic island nation of the Indian Ocean. In such a scenario, it is extremely necessary for India to strengthen its position through digital infrastructure (UPI), space, and defense agreements.
- **Blue Economy**: Seychelles' vast Exclusive Economic Zone (EEZ) is rich in marine resources. Cooperation in sustainable fisheries, marine tourism, and clean energy (such as green hydrogen) is vital for the economic future of both countries.

Climate Justice & Global South

- '**Guardian of the Blue Horizon**' Honour: For raising the issues of climate protection and Small Island Developing States (SIDS) on global platforms, President Herminie honored PM Modi with the honorary title of '**Guardian of the Blue Horizon**'.

Daily News Analysis

- **Demand for Climate Justice:** Addressing the National Assembly (Parliament) of Seychelles, the Indian Prime Minister made it clear that the countries that have contributed the least to global carbon emissions should not bear the maximum brunt of climate change. Climate action must always be based on the principles of '**fairness, responsibility, and equality**'.

Challenges

- **Delay in Project Implementation:** India has always faced the challenge of making big announcements, but the projects take a long time to materialize on the ground. The controversy in the domestic politics of Seychelles regarding the agreement to develop military facilities on '**Assumption Island**' in the past is a major example of this.
- **China's Economic Trap:** Keeping small countries like Seychelles away from the temptation of large loans and infrastructure investments by China (**Debt-trap diplomacy**) is a diplomatic test for India.

Conclusion

The relations between India and Seychelles are not just agreements between two governments, but are built on the shared foundation of a common history, people-centric development, and a secure future for the Indian Ocean. The Prime Minister's visit demonstrates that India prioritizes '**mutual respect and trust**' over the 'size of a country' in international relations. As a leader of 'Vision MAHASAGAR' and the 'Global South', India has made it clear that it is fully committed to the development and security of its maritime neighbors. In the future, the time-bound implementation of these 19 agreements will determine the true success of this strategic partnership.



Daily News Analysis

UPSC Prelims Exam Study Questions

Question: Consider the following statements regarding 'Vision SAGAR (Security and Growth for All in the Region)'—

1. It aims to promote security and shared development in the Indian Ocean region.
2. It is a key pillar of India's maritime diplomacy.
3. Its primary focus is limited only to defense cooperation.

Select the correct answer using the code given below—

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

Ans: (a)

UPSC Mains Practice Questions

Question: How do 'Vision SAGAR' and 'MAHASAGAR' signal a shift in India's Indian Ocean policy? Explain. (10Marks, 150Words)



Page 06 :GS II :Social Justice / Preliminary Examination

Recently, the Union Ministry of Health has issued revised Operational Guidelines under the 'Anemia Mukht Bharat' (AMB) program. Under this change, the program has been formally renamed as '**Anemia Mukht Bharat Abhiyan**'. In India, data from the National Family Health Survey (NFHS-5) shows that 67.1% of children aged 6-59 months, 57% of women aged 15-49 years, and 59.1% of adolescent girls suffer from anemia. In view of this severe situation, the government has adopted a more aggressive, digital, and comprehensive strategy to rapidly reduce the burden of anemia.

This step is a milestone toward achieving India's health goals under national nutrition missions and ensuring a healthier future generation.

Key Highlights of New Norms

The new framework introduced by the Union Ministry of Health primarily emphasizes expanding the strategy, which can be understood as the '**7x7x7 Framework**' and the '**T4 Strategy**':

- **New Beneficiary Group (7th Group):** Until now, this program included 6 beneficiary groups. Now, '**Low Birth Weight Babies**' (0-6 months) have been added as the seventh beneficiary group to enable early intervention in preventing anemia.
- **'Eating Right' Component:** Anemia cannot be cured by pills alone; therefore, dietary improvement has been added as the **7th Intervention**. Under this, the regular consumption of iron-rich and diversified diets will be promoted.
- **T4 Strategy (Test, Treat, Talk, and Track):** The previous T3 (Test, Treat, Talk) strategy has now been upgraded to the T4 strategy:
 - **Test:** Regular hemoglobin testing.
 - **Treat:** Prompt treatment as per the National Anemia Management Protocol.
 - **Talk:** Counseling on healthy eating habits and nutrition.
 - **Track (New):** Systematic tracking of beneficiaries for referrals and follow-ups.
- **Digital Ecosystem and Tracking:** To strengthen Monitoring & Evaluation, an integrated digital ecosystem has been proposed as the **7th Institutional Mechanism**. Through this, real-time tracking of beneficiaries and monitoring of anemia service delivery will be conducted.

New Anaemia Mukht Bharat norms seek early action

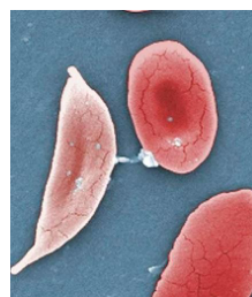
Bindu Shajan Perappadan
NEW DELHI

The Union Health Ministry is set to launch revised operational guidelines for the Anaemia Mukht Bharat Abhiyan (AMB) on Monday, expanding the national programme's strategy to include a new beneficiary group, greater emphasis on dietary interventions, and digital tracking of beneficiaries.

The guidelines, to be released by Union Health Minister J.P. Nadda during the 16th meeting of the Central Council of Health and Family Welfare at Vigyan Bhawan in Delhi, mark the transition of the programme from Anaemia Mukht Bharat to Anaemia Mukht Bharat Abhiyan.

New framework

The revised framework seeks to strengthen anaemia control through im-



Treat and track: The Ministry proposed a digital ecosystem to monitor anaemia services.

proved testing, treatment, monitoring and community participation.

The revised programme adds low birth weight babies (0-6 months) as a seventh beneficiary group, recognising the need for early intervention.

A new "eating right" component has been introduced as the seventh intervention to promote the regular consumption of iron-rich and diversified

diets. The seventh institutional mechanism focuses on strengthening monitoring and evaluation through digital tracking. The guidelines also replace the existing T3 with a T4 strategy of Test, Treat, Talk, and Track, which emphasises routine haemoglobin testing, treatment according to national anaemia management protocols, systematic tracking of beneficiaries for referral and follow-up, and counselling on healthy dietary practices.

The Ministry has also proposed an integrated digital ecosystem for monitoring anaemia services.

The National Family Health Survey (NFHS-5) shows that 67.1% of children aged six to 59 months, 57% of women aged 15 to 49 years, 52.2% of pregnant women, and 59.1% of adolescent girls aged 15 to 19 years are anaemic.

Rationale and Strategic Importance

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- **Alarming NFHS-5 Data:** The status of malnutrition and anemia in India is highly critical. Anemia in 52.2% of pregnant women and nearly 59% of adolescent girls indicates that it has become an **inter-generational cycle** (an anemic mother gives birth to an anemic child).
- **Lack of Early Intervention:** Previously, low birth weight infants aged 0 to 6 months were not directly targeted under this strategy, leading to iron deficiency right at the initial stage of their development.
- **Data Gap and Lack of Follow-up:** Earlier, testing and treatment were carried out, but there was no digital track record of whether the patient completed the medicine course or what their status was after being referred to higher health centers in severe cases.

Role of Digital Technology in Anemia Control

- **Ensuring Last-Mile Delivery:** With the help of the digital ecosystem, it can be verified at the ASHAs, ANMs, and Anganwadi levels whether the Iron-Folic Acid (IFA) syrups or tablets have reached the final beneficiary.
- **Timely Referrals:** If a child or pregnant woman has a severely low hemoglobin level, the digital system will immediately generate an alert so that they can be referred to a larger hospital without delay.
- **Fixing Accountability:** The availability of real-time data at the national, state, and district levels will ensure the accountability of health officials and allow policy gaps to be rectified immediately.

Challenges

- **Digital Literacy and Infrastructure:** In rural and remote areas, the lack of smartphones, internet connectivity, and the capacity to operate digital tools among health workers (such as ANMs/ASHAs) poses a major obstacle.
- **Behavioral Change in Diet:** Changing traditional dietary habits merely through 'Talk' or 'Eating Right' counseling is a long-term and difficult process, especially for the population living below the poverty line who cannot afford diverse and nutritious food.
- **Supply Chain Disruptions:** Despite digital tracking, maintaining a continuous supply of IFA tablets and digital hemoglobinometers at the grassroots level has always been a challenge.

Conclusion

Transforming 'Anemia Mukta Bharat' into 'Anemia Mukta Bharat Abhiyan' is not just a change of name, but reflects a practical and outcome-oriented approach in India's health strategy. Including low birth weight infants and linking 'dietary improvement' with 'digital tracking' (T4) is an acknowledgment that a multi-dimensional problem like anemia cannot be fought with medical treatments alone, but requires holistic and technology-driven efforts. This step will accelerate India's progress toward achieving a 'Malnutrition-Free India' and the health goals of a developed nation.

Daily News Analysis

UPSC Prelims Exam Study Questions

Question: Consider the following statements regarding the revised guidelines of the 'Anemia Mukh Bharat Abhiyan':

1. 'Low birth weight infants (0–6 months)' have been included as the seventh beneficiary group in the program.
2. 'Eating Right' has been added as the seventh intervention.
3. The program's T3 strategy has been revised to adopt a T4 strategy.

Select the correct answer using the code given below—

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

Ans: d)

UPSC Mains Exam Study Questions

Question: Anemia is a multifaceted public health challenge in India. Briefly analyze its major causes and recent policy measures. **(10 Marks, 150 Words)**



07 :GS III :Disaster Management/ Preliminary Examination

In recent years, India has faced severe natural disasters such as landslides in Kerala (Mundakkai and Chooralmala), the washing away of Dharali village in Uttarakhand, floods in the Northeast, and extreme rainfall in Uttar Pradesh. During these disasters, the biggest challenge is the collapse of telecom infrastructure—such as the falling of mobile towers, power outages, and road blockages. In the absence of communication, rescue operations are delayed, leading to an increase in the loss of life and property.

To solve this global problem, researchers at Trinity College Dublin, Ireland (led by Sangeetha Dhara), have developed a revolutionary technology based on 'Cooperative Caching' and Artificial Intelligence (AI), which can maintain the flow of critical data in real-time even after infrastructure is destroyed.

Concept of Cooperative Caching & SAGIN

During a disaster, the local administration primarily relies on three communication mediums: satellite (space), drones (air), and terrestrial networks (ground). This arrangement is called **SAGIN** (Space-Air-Ground Integrated Network).

- **The Challenge:** Satellite data suffers from latency (delay); drones have limited range and battery life; and ground networks are often destroyed during a disaster.
- **The Solution (Cooperative Caching):** In this technology, all parts of the network (satellites, drones, base stations, and emergency vehicles) work together as a team. When one node (such as a drone) captures an important video or satellite image, other nearby nodes (such as rescue team vehicles) also store (**cache**) a copy of that data based on demand.
- **Benefit:** Rescue teams get data from their nearest available device instead of downloading it from a distant central server. This eliminates data transfer latency.

AI Models for Automatic Decision-Making

In a disaster zone, drones are flying, vehicles are moving, and the position of satellites keeps changing. In such a scenario, to decide which data to keep and which to discard in devices with limited storage (memory), two advanced AI models have been proposed:

Smart AI caching can keep the data flowing when disaster strikes

In cooperative caching, different parts of a disaster-response network, including satellites, drones, base stations, and emergency vehicles, work together to store and share useful data; when one node receives or generates important content, such as satellite images or video, nearby nodes may also cache copies based on demand

Shamin Haque Mondal

Two years ago, Mundakkai and Chooralmala in Kerala experienced powerful landslides that killed hundreds of people. Last year, a large village in Dharali, Uttarakhand, was washed away following heavy rain. In the monsoon season of 2025, the states in Northeast India were devastated by frequent floods. More than a hundred people lost their lives after heavy rain in Uttar Pradesh on May 14 this year.

During such disasters, it is common for telecom towers to topple over, power lines to be cut, and roads to be closed. In these situations, real-time information as to what is happening on the ground, where people are stuck, which routes are still open, etc. becomes crucial for rescue workers and medical workers. In the absence of such communication, rescue operations are delayed, more property is damaged, and more lives are lost.

Cooperative caching
Solving communications in disaster-affected areas is a long-standing problem. Recently, in a paper published in the IEEE Transactions on Services Computing, researchers from Ireland, led by Sangeetha Dhara of Trinity College Dublin, presented a novel approach – a way to transmit important real-time information using a technology called collaborative caching even if the local network is in a subpar condition.

At a time of disaster, the local administration typically has three main communication channels: satellite or satellite-based communications, drones or unmanned aerial vehicles, and some ad hoc network based on the ground. A satellite can beam data down over a wide area, so accessing that signal is relatively easy, but the big problem here is data latency, i.e. the delay in getting information. Time is of the essence. It is also possible to take pictures from the sky or transmit live video using drones. However, they are limited by their short range, limited battery capacity, and, above all, obstacles in the form of inclement weather. Finally, ground-based wireless networks can help with local communication – but they are often damaged or non-functional during disasters.

In this context, the researchers have presented cooperative caching. Here, different parts of a disaster-response network, including satellites, drones, base stations, and emergency vehicles, work together to store and share useful data. When one node receives or generates important content, such as satellite images or video, nearby nodes may also cache copies based on demand. This cooperation allows rescue teams to

retrieval information from the nearest available source rather than a distant origin, reducing delay, improving reliability when infrastructure is damaged, and increasing the chance that critical information is available in real time.

Automatic decision making
Creating this caching system is technologically not simple, however. The drones are airborne, rescue vehicles are on the road, and the position of satellites is constantly changing. It is also difficult to know when and where information will be required, plus the storage of each device will be limited.

To address this problem, the researchers developed a statistical model called contextual multi-armed bandit (CMAB), an AI model that optimises caching decisions quickly.

The model learns from each of the previous decisions, then reviews three factors: what data are recently available, what data demand is currently high, and how much memory is needed in the cache.

For example, it would be helpful to understand that a photo taken 10 minutes before a flood is more effective than a photo taken one hour before the flood. Similarly, video footage or a map of a place that most rescuers are asking for is more important than those that fewer ones are looking for. Sometimes, instead of caching high-resolution video – such as 4K video – short text alerts or warning messages could help rescuers react.

The researchers developed a statistical model called contextual multi-armed bandit, an AI model that optimised caching decisions quickly

productive without taking up large amounts of storage. The model is taught to make such decisions automatically.

Federated learning
While in CMAB each node learns from what information it alone has, a more advanced version called FMAB – short for federated multi-armed bandit – learns from its information as well as what the nodes nearby have learnt.

Caching decisions are executed periodically rather than per request, amortising the computational cost, the researchers wrote in their paper. Given the highest observed decision latency of Contextual MAB (around 87 microseconds) remains negligible compared to network delays, ensuring system complexity does not hinder the practical applicability for dynamic and real-time, post-disaster deployments.

The work also highlights the importance of a three-tier network, where space, air, and ground are working together, called Space Air Ground Integrated Network (SAGIN). Here, each layer plays a unique role, but the limitations that exist between them are greatly reduced due to caching, and the system becomes more efficient. In the

post-disaster scenario, it is important not to look at all the information that is available but only at which information is more useful. An updated road map can tell us which bridges are still usable while a live video can let us know that boats are urgently needed in a specific part of the floodplain.

All together
As a result, content should be seen not only as data but as time-dependent actionable data. And the goal of advanced caching should be to learn how to store the most valuable information in the most appropriate place with limited resources.

To meet this goal, SAGIN works to build external infrastructure. CMAB helps to make acceptable decisions, and FMAB can make the network stronger in the post-disaster period by spreading those decisions across multiple nodes.

However, the results of this simulation-based study depend on many parameters, such as the weather at the time, the flight of the drone, energy management, hardware malfunctions, cyber security, and the behaviour of rescuers in reality.

Moreover, it is not always technically possible to determine which content is valuable or preferable. In many cases, the needs of the local administration or humanitarian considerations can also speed up the rescue.

(Shamin Haque Mondal is with the Physics Division, State Forensic Science Laboratory, Kolkata. shaminmondal700@gmail.com)

THE GIST
It is common for communication to get disrupted when a disaster occurs. The absence of real-time information delays rescue operations.

Researchers from Ireland found a way to transmit important real-time information using a technology called collaborative caching even if the local network is in a subpar condition.

The work also highlights the importance of a three-tier network, where space, air, and ground are working together, called Space Air Ground Integrated Network (SAGIN).



Daily News Analysis

- **CMAB (Contextual Multi-Armed Bandit):** This is a statistics-based AI model that takes instantaneous and automated decisions by reviewing three factors:
 1. How recently the data became available (e.g., a photo taken 10 minutes before a flood is more effective than a photo taken 1 hour before).
 2. Which data currently has the highest demand.
 3. How much memory is left in the device (e.g., storing small text warnings or maps instead of heavy 4K videos to conserve memory).
- **FMAB (Federated Multi-Armed Bandit):** This is a more advanced version of CMAB. In this, each node does not learn solely from its own data, but also shares experiences learned by all other nearby nodes through '**Federated Learning**', making the entire network highly efficient.

Strategic Significance for UPSC

- **Time-Dependent Actionable Data:** This technology does not view data merely as files; instead, it identifies which information is immediately required to take "action" during a disaster (such as a live video revealing which area urgently requires boats).
- **Negligible Latency:** According to the research, the time taken by this AI model to make a decision is just **87 microseconds**, which is negligible compared to normal network delays. This makes it highly practical for real-time deployment.
- **Last-Mile Connectivity:** The National Disaster Response Force (NDRF) and medical teams will be able to get precise route maps and locations of affected individuals without any disruption.

Limitations & Challenges

- **Simulation-Based Research:** This study is currently based on simulations (computer-generated models). In the real world, weather unpredictability, drone flight limits, power management (battery), and hardware failures will pose major challenges.
- **Cyber Security:** The injection of false or misleading data (Malicious Injection) into the communication network during a disaster can misdirect rescue operations, making it mandatory to secure this network.
- **Human and Administrative Priorities:** A technical model cannot always determine which data is more valuable from a humanitarian perspective. The immediate needs of the local administration may differ from AI predictions.

Conclusion

Given the changing and more destructive nature of disasters, dependence on traditional communication systems must be reduced. The AI-driven 'Cooperative Caching' and SAGIN framework prove that future disaster management will rely not just on physical resources, but on '**smart data management**'. However, before its implementation at the grassroots level,

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challenges like hardware resilience and cyber security must be addressed. India should increase investment in testing and developing such indigenous or collaborative technologies to modernize its 'National Disaster Management Plan' (NDMP).

UPSC Prelims Exam Study Questions

Question: What is the primary objective of 'Cooperative Caching'?

- (a) Storing all data solely on a central server
- (b) Enhancing data availability and reducing latency by storing copies of required data in nearby network nodes
- (c) Using only satellite-based communication
- (d) Eliminating data encryption

Ans: b)

UPSC Mains Practice Questions

Question: What is SAGIN (Space-Air-Ground Integrated Network)? Explain its utility in disaster management. (10 Marks, 150 Words)



Page 08 :GS III :Science and Tech / Preliminary Examination

In his recent article, renowned author and Member of Parliament Shashi Tharoor has termed the rising, unregulated influence of Artificial Intelligence (AI) and 'Big Tech' companies as **"Digital Slavery."** Citing Pope Leo XIV's recent encyclical (*Magnifica Humanitas*), he warns that if personal data ownership and AI utilization are not regulated, it will become the greatest existential crisis for human dignity and democratic sovereignty. The article highlights that traditional laws lag far behind the speed of AI's mathematical innovation; hence, India must view this not merely as a technological problem, but as a **"Constitutional Imperative."**

The new digital slavery needs constitutional guardrails

In his profound encyclical, *Magnifica Humanitas*, Pope Leo XIV grounds the contemporary crisis of technology in elemental theology, reminding humanity that the individual stands at the absolute centre of divine creation. Yet, this sacred human dignity faces an unprecedented challenge. The Holy Father warns that artificial intelligence (AI), left unchecked, threatens to turn the ownership of our personal data into a new form of digital slavery – a subjugation as cruel as human bondage. Because the stakes are so inherently tied to human dignity, the Pontiff insists that the governance of AI cannot rely on vague good intentions, nor can it be left to the private consciences of the engineers who build these systems. Instead, he issues an urgent call for robust, binding law over abstract ethics. Independent public oversight over the empty promises of Silicon Valley's modern pharaohs – and a clear requirement that a human being remains accountable whenever an automated system decides who gets a loan, a job, a medical bed, or an education. Pope Leo XIV's core demand is that this new electronic *Curia* be strictly regulated rather than quietly surrendered to a handful of private tech monopolies whose reach and resources already outstrip most sovereign governments. He even goes so far as to commend the courage to deliberately slow down the development of AI.

When regulation lags

However, a fundamental problem remains: AI and morality do not observe the same time. AI is developed at the breakneck speed of the start-up culture, driven by an ethos to move fast and run perpetual beta tests on society in the guise of progress. This velocity is fuelled not just by commercial rivalries, but by relentless mathematical innovation spawning from Silicon Valley to Shenzhen. It presents a deeper hurdle for lawmakers worldwide: parliament can govern what a person does, but it can never forbid a mathematical theorem, a discovery, or an equation from being made. How do lawmakers fulfil the Pope's wishes?

Law in most democracies moves slowly. By the time landmark legislation such as the European Union's Artificial Intelligence Act or the United Kingdom's Online Safety Act were painstakingly debated and passed, the specific technical harms they were built to combat had already mutated, leaving an entire generation to grow up inside unaddressed digital vulnerabilities. Policymakers have historically been behind the innovation curve, and under current paradigms, we will be again.

If legislation is fated to lag behind innovation, the consequences for democratic societies are not merely regulatory; they are existential. Democracy cannot function if citizens cannot distinguish reality from fabrication. At its core, democratic governance relies on a shared epistemic foundation: a collective agreement on



Shashi Tharoor
Fourth-term Member of Parliament (Lok Sabha) for Thiruvananthapuram (Congress party), the Chairman of the Parliamentary Standing Committee on External Affairs and the Sahitya Akademi Award-winning author of 20 books, including, most recently, *The Sage Who Remained: The Life, Lessons and Legacy of Sree Narayana Guru*

basic facts from which public debate, policy, and electoral choices can flow. When that foundation is systematically undermined, the entire democratic project is threatened. Today, AI-generated disinformation and advanced synthetic media ("deepfakes") have advanced to a level of fidelity where the human eye and ear can no longer reliably detect forgery. This is already our reality. Highly convincing audio and video duplications of political leaders are deployed strategically during sensitive electoral cycles to depress voter turnout, fabricate scandals out of thin air, and instantly shatter public trust in legitimate state institutions.

This vulnerability is hyper-charged by algorithmic manipulation. Big Tech platforms operate on business models engineered exclusively to maximise user engagement. Because outrage, fear, and sensationalism generate the highest click-through rates, platform algorithms systematically prioritise and amplify hyper-partisan content, driving radicalisation. By trapping citizens within hyper-customised echo chambers, these systems normalise online hate and accelerate social fragmentation. In doing so, private platforms exert an unprecedented form of unaccountable power, effectively rewriting the rules of the public square to optimise quarterly corporate profits at the expense of social cohesion.

Democracy's digital vulnerability

When a society is deeply polarised and stripped of a shared reality, it becomes a soft target for foreign interference. Adversarial nation-states and non-state actors have weaponised these platform vulnerabilities, transforming them into a theatre for sophisticated information warfare. Foreign information manipulation operations are no longer clumsy, bot-driven spam campaigns; they are highly targeted, AI-driven psychological operations designed to covertly exploit pre-existing religious, ethnic, or socioeconomic fault lines within a target nation. By covertly funding, generating, and amplifying divisive narratives, hostile foreign actors can destabilise a democracy from within, turning its own citizens against one another. These coordinated campaigns represent nothing less than a direct, strategic threat to democratic sovereignty itself. As the world's largest democracy and a global technology hub, India stands at the absolute epicentre of this crisis. In an environment where digital adoption outpaces structural digital literacy, the weaponisation of synthetic media and algorithmic polarisation poses a unique threat to India's pluralistic society.

If traditional, reactive legislation is doomed to always trail behind mathematical innovation, India cannot rely on standard, backward-looking regulatory frameworks. Instead, an enduring law and policy framework for India must be anchored in five foundational pillars that operate concurrently.

First, AI governance must adopt a strictly

rights-based framework that prioritises individual human dignity and digital autonomy, ensuring citizens possess unalienable rights over their personal data, strict consent protocols, and clear protections against algorithmic discrimination in critical sectors such as employment, credit, and health care. Second, platforms must be subjected to genuine democratic accountability; large technology firms can no longer hide behind absolute safe-harbour immunities while their algorithms profit from the viral spread of destabilising disinformation. They must be legally compelled to introduce structural transparency, allowing independent audits of their recommendation engines and forcing them to accept systemic liability for algorithmic amplification that results in real-world violence.

Third, even as these frameworks are constructed, free speech protections must remain fully intact. The power to define and combat disinformation must never devolve into a tool for state-sponsored censorship or the silencing of political dissent. The focus of regulation must remain strictly on structural platform mechanics, such as automated bot networks and deepfake originators, rather than the heavy-handed policing of individual ideological speech.

Fourth, because technical fixes are entirely insufficient without building cognitive resilience within the populace, India must launch a massive, state-backed educational initiative focused on media literacy and digital citizenship. This curriculum must be integrated across schools, universities, and rural community centres to train citizens to critically evaluate digital sources and identify emotional manipulation tactics. Finally, to defend national sovereignty, India must establish sophisticated, cross-sector early-warning systems capable of detecting coordinated misinformation operations in real-time. By leveraging advanced detection tools and fostering deep collaboration between state security apparatuses, independent fact-checking networks, and ethical hackers, the nation can identify and neutralise foreign information warfare campaigns before they achieve viral velocity.

A constitutional imperative

Ultimately, the lesson of our era is clear: AI governance cannot remain merely regulatory or technical. It is a profound mistake to treat the manipulation of the information ecosystem as a series of isolated technical glitches to be patched with minor corporate updates or narrow statutory tweaks. Because these technologies possess the unique capability to distort truth, polarise societies, and erode the sovereign choice of voters, AI governance must rise to the level of a constitutional imperative. The right to an unmanipulated information ecosystem, where reality can be clearly distinguished from corporate or state fabrication, must be viewed as an indispensable extension of the fundamental right to life, liberty, and free expression.

Key Threats of 'Digital Slavery' to Democracy and Society

The author outlines three major threats within the current digital ecosystem:

- Erosion of Shared Reality:** Democracy thrives on citizens sharing a basic consensus on fundamental facts. However, deepfakes and AI-generated disinformation have reached a level where the human eye and ear cannot distinguish between the real and the fake. Fake audio and video clips of political leaders are being released during sensitive election cycles to mislead voters.

Daily News Analysis

- **Algorithmic Polarisation:** The business model of social media companies relies heavily on 'user engagement' (keeping the user on the app). Since hatred, fear, and sensational news garner more clicks, the algorithms of these platforms deliberately promote such content. This is turning society into '**Echo Chambers**,' thereby tearing the social fabric apart.
- **Foreign Information Warfare:** Adversarial nations and non-state actors are weaponizing these platforms to exploit India's religious, ethnic, and social fault lines. This is not just a standard 'bot campaign' but an AI-driven psychological operation (Psychological Operations) that can destabilize the nation from within. In a country like India, where digital literacy is at a rudimentary stage, this threat is even more pronounced.

Traditional Law vs. Mathematical Innovation (The Law-Innovation Lag)

The author draws attention to a critical practical policy challenge:

- **Slow Legislative Process:** By the time frameworks like the European Union's 'AI Act' or the UK's 'Online Safety Act' were passed after prolonged debates, the very nature of the technological harm had already evolved.
- **Impossibility of Controlling Mathematics:** Parliament can regulate human actions, but it cannot prevent a new mathematical theorem or discovery from emerging. Consequently, outdated, reactive policies are now proving ineffective.

The Five Guiding Pillars Proposed for India's Policy

To tackle this crisis, the author suggests five concurrent strategies:

1. **Rights-based Framework:** Citizens must have an inalienable right over their personal data and a strict right to consent. Robust protection must be provided against algorithmic discrimination in vital sectors such as employment, credit (loans), and healthcare.
2. **Democratic Accountability:** The '**Safe-Harbour**' immunity granted to Big Tech companies (under which they are not held liable for third-party content on their platforms) must be dismantled. If their algorithms trigger real-world violence, the systemic liability of these companies must be fixed.
3. **Protection of Freedom of Expression:** Under the guise of fighting disinformation, the State must not acquire the power to enforce censorship or suppress political dissent. Regulation should focus not on individual speech, but on technological mechanisms like 'bot networks' and 'deepfake generators.'
4. **Cognitive Resilience (Media Literacy):** Technological solutions alone are not sufficient. India must introduce comprehensive 'media literacy' and 'digital citizenship' curricula from the village level to universities, enabling citizens to recognize emotional manipulation themselves.
5. **Early-Warning Systems:** To neutralize foreign information warfare, the government must establish real-time detection tools by fostering coordination among security agencies, independent fact-checkers, and ethical hackers.

Why a Constitutional Imperative?

Daily News Analysis

The author's most crucial conclusion is that this distortion of the information ecosystem cannot be treated as a mere technical glitch to be fixed via corporate updates or minor statutory amendments.

- **The Core Argument:** An unmanipulated information ecosystem, where citizens can clearly distinguish between truth and falsehood, must be considered an essential extension of **Article 21** (Right to Life and Liberty) and **Article 19(1)(a)** (Freedom of Speech and Expression) of the Constitution. This serves as a constitutional safeguard to protect the sovereign electoral choice of the citizens.

Conclusion

This article serves as a wake-up call for India's policymakers. In the digital era, 'data' is the new empire and tech companies are emerging as the new sovereign powers. While remaining technologically capable and economically dynamic, India must safeguard the mental and digital autonomy of its citizens. Elevating AI governance beyond commercial and technical domains to establish it as a robust constitutional and legal right is the only way to preserve India's pluralistic society and democratic values intact.

UPSC Prelims Practice Questions

Question: Consider the following statements—

1. In algorithmic polarisation, social media algorithms give greater prominence to content that aligns with a user's interests.
2. This can lead to the creation of 'echo chambers'.
3. It can have an adverse effect on democratic discourse.

Select the correct answer—

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

Ans: d)

UPSC Mains Practice Questions

Question: Why is there a perceived need to view the protection of personal data as a constitutional right in the digital age? Explain. **(10 Marks, 150 Words)**

Can Oil Tankers and Blockade Runners be Legitimate Military Targets?

- **Status of Oil Tankers:** The US claims that the Setbello was illegally transporting Iranian oil. According to traditional international law, the mere generation of revenue through commercial exports does not turn a vessel into a military target. However, under the US '**War-Sustaining**' theory, if a cargo directly finances or sustains the enemy's war effort or economic strength, targeting it is considered lawful—a position that remains internationally contested.
- **Naval Blockade:** Legally, a blockade is valid only when it is publicly declared, applied uniformly to all nations, and maintained effectively.
- **Violation of the UN Charter:** If the war waged by a country (such as the US) is itself a violation of Article 2(4) of the UN Charter (Prohibition of the use of force) and lacks authorization from the Security Council (UNSC) or under Article 51 (Self-defense), any 'blockade' enforced or attacks carried out against neutral shipping under that war automatically become **unlawful**.

Legal and Diplomatic Remedies Available for India

Following the deaths of its innocent seafarers and attacks on vessels, the Government of India has the following legal remedies available under international law:

- **Doctrine of Diplomatic Protection:** Under this international doctrine, if citizens of India suffer injury due to an Internationally Wrongful Act of another state, the Government of India can espouse and present a formal claim on behalf of its citizens.
- **Official Accountability and Clarification:** The Government of India can demand the intelligence inputs behind this attack from the US administration and inquire whether less aggressive measures (such as boarding, diversion, or adequate warnings) were pursued before launching the missiles.
- **Independent Investigation and Compensation:** India can demand an independent international investigation into the incident and raise the demand for financial compensation and accountability for the families of the three deceased Indian seafarers on global platforms.

Conclusion

The safety of neutral vessels and civilian seafarers at sea is a foundational pillar of international law. Targeting commercial vessels in geopolitical rivalries and taking civilian lives under the pretext of disputed doctrines like 'war-sustaining' is dangerous for both global trade and maritime security. India, as a major maritime power and the voice of the '**Global South**', must not only ensure justice for its citizens but also press for strict compliance with UNCLOS and the UN Charter at international forums to prevent international waters from turning into war zones.

UPSC Prelims Exam Study Questions

Question: The 'Doctrine of Diplomatic Protection' refers to—

- (a) A country protecting its own embassy.
- (b) A state presenting a claim at the international level on behalf of its citizens for harm caused by an internationally wrongful act of another state.
- (c) Granting legal immunity only to diplomats.
- (d) Protecting the rights of prisoners of war.

Ans: b)

UPSC Mains Practice Questions

Question: Describe the protection afforded to neutral merchant vessels under international maritime law (UNCLOS). **(10 Marks, 150 Words)**



July opens the biggest chapter in India-U.K. trade ties

Trade deals are important for accelerating prosperity but not every deal is a game changer. One that drives shared growth across key sectors, unlocks opportunity for businesses of all sizes, and pushes the envelope for bilateral trade qualifies to achieve that tag. And so, it is no surprise to see businesses and trade associations using the term in relation to the United Kingdom-India Free Trade Agreement (FTA) which is formally known as Comprehensive Economic and Trade Agreement (CETA). India remains the fastest-growing economy in the G-20 and it is on track to become the world's third-largest economy within the next five years. Complementing this the U.K. remains one of the top global destinations for investment and was the third fastest-growing economy in the G-7 in 2025. Securing preferential access to each other's market is not an abstract diplomatic win; it is an economic advantage that will deliver significant returns in both countries over time. This FTA is forecast to boost Indian GDP by £5.1 billion, the U.K.'s GDP by £4.8 billion and increase bilateral trade by £25.5 billion every year in the long run.

Bilateral trade was already worth £48 billion a year in 2025. From July 15, it will be cheaper, quicker, and easier for businesses to trade across both countries. Even before this deal came into force, we have seen the creation of thousands of new jobs on both sides and that is showing no signs of slowing down, as the countdown to entry into force closes and a new era of growth between the two nations begins. We should all be excited to see what the two countries and businesses on both sides can achieve in the years ahead. These are the hallmarks of a historic deal; but it is not just about the numbers.

A story of scale and depth

From day one, both sides agreed that this deal must be broad, deep, and a driving force that brings long-term growth for both countries. Nearly three years of intensive negotiations



Harjinder Kang

His Majesty's Trade Commissioner for South Asia and the British Deputy High Commissioner for western India

The U.K.-India Free Trade Agreement, the 'gold standard of modern trade deals', comes into force on July 15

preceded this deal and there is no doubt that the agreement reached is the most economically significant trade deal that the U.K. has done since leaving the European Union; it is also one of the most comprehensive trade deals that India has ever done. In short it is a win-win for businesses and consumers and for both economies. To give readers just a flavour of the far-reaching benefits – 99% of U.K. tariff lines will be duty-free for Indian products and India will remove or reduce tariffs on 90% of its tariff lines for U.K. products.

For India, this could support jobs in labour-intensive sectors such as textiles, leather, jewellery and, equally, it will boost exports in services such as IT and finance by a large margin.

Similarly, tariff duties on U.K. exports to India are estimated to fall by around £400 million when the deal comes into effect, and further to £900 million in later phases. Critical industries such as aerospace, automobiles, medical devices, and whiskies will all benefit significantly, adding billions to the U.K. economy. This is transformational and it is also just the beginning.

Benefits beyond Mumbai and London

One of the most persistent criticisms of trade policy is that the gains created are only concentrated in a few places. We have ensured that this deal benefits all aspects of the local economy beyond the major cities in both countries. Several unprecedented and dedicated provisions across high-growth and high-value sectors from each side are agreed in a deal spanning 30 chapters. In practical terms, that means manufacturers, innovators, supply chain businesses, and service exporters – often based far away from the major cities – can compete more effectively with cheaper imports and fewer barriers. For instance, a textile manufacturer from Indore, Madhya Pradesh, will now be able to trade more efficiently into the U.K. just like an auto-parts manufacturer from Birmingham will be able to trade more cost effectively into India.

Modern trade goes beyond just tariffs and that is why this agreement's provisions on customs, digital trade, and services are central to its exceptional standard. Improved customs provisions will help goods reach markets faster – particularly valuable for small and medium-sized enterprises (SMEs) that cannot afford excessive red tape. On services, where the U.K. is globally renowned, the agreement locks in market access across key sectors, providing the predictability that U.K. businesses need to expand in India and vice versa. The deal also includes India's first-ever standalone chapters on anti-corruption, gender, and development – and one of the most comprehensive labour and environmental commitments that India has ever made in a trade deal. But it is not just about access; it is also about securing appropriate protections for domestic producers, which is what this deal does so well.

For instance, India maintains protections for dairy products and edible oils, while the U.K. shields sugar, milled rice, pork, chicken, and eggs. In an era where trade agreements are judged not only on growth but also on sustainability and fairness, this deal shows how it is done.

Making the deal count

It is clear that this landmark deal combines measurable economic gains, deep market access in the sectors of the future, practical trade facilitation, strong domestic protections, and the first-of-their-kind values chapters. It sets a template for what modern trade agreements should look like: pro-growth, pro-worker, pro-innovation – a gold standard for trade deals.

As we close in on entry into force, the task is clear: let us maximise it. Businesses from both countries should champion exports, explore procurement opportunities, map supply chains against new rules of origin, and move quickly because in trade, first-mover advantage is real, and it rarely comes twice.

GS Paper II: International Relations

UPSC Mains Exam Practice Questions: Outline the key features of the India-UK Comprehensive Economic and Trade Agreement (CETA) and analyze its potential impact on India's economy. **(15 Marks, 250 Words)**

Context : A historic chapter in the economic relations between India and the United Kingdom (U.K.) is set to begin on July 15, 2026. Following nearly three years of intensive negotiations, the Free Trade Agreement (FTA) concluded between the two nations—officially named the 'Comprehensive Economic and Trade Agreement' (CETA)—will come into effect.

Daily News Analysis

This agreement marks the UK's largest post-Brexit trade deal and stands as one of the most comprehensive trade pacts ever signed by India. In 2025, bilateral trade between the two countries had already reached £48 billion (approximately ₹4.8 lakh crore). The implementation of this historic deal is projected to boost bilateral trade by an additional £25.5 billion per year.

CETA Key Highlights & Tariff Concessions

The agreement creates a "win-win" situation for both nations by dismantling trade barriers on a massive scale:

- **Substantial Cuts in Tariff Lines:**
 - **Benefit for India:** The UK will make 99% of its tariff lines entirely duty-free for Indian products. This will provide a major boost to India's labor-intensive sectors such as textiles, leather, and the jewelry industry.
 - **Benefit for the UK:** India will either eliminate or significantly reduce customs duties on 90% of its tariff lines for UK products. This will grant enhanced market access to key UK industries, including aerospace, automotive (cars), medical devices, and whiskies in the Indian market.
- **Economic Growth Projections:** In the long term, this agreement is estimated to add £5.1 billion to India's Gross Domestic Product (GDP) and £4.8 billion to the UK's GDP.

Exceptional Dimensions of CETA

Unlike traditional free trade agreements, CETA is a modern and progressive pact spanning 30 chapters:

- **Decentralized Benefits (Beyond Major Cities):** The benefits of this agreement will not be confined merely to mega-metropolises like Mumbai or London. Its provisions are designed in such a way that a textile manufacturer in Indore, Madhya Pradesh, can compete directly in UK markets, just as an auto-parts manufacturer in Birmingham will gain access to India's interior markets.
- **Streamlined Customs & Digital Trade:** To curb red tape, customs procedures have been simplified, which will prove to be a game-changer especially for Small and Medium Enterprises (SMEs). In the services sector (IT and Finance), market access has been made more predictable.
- **Values and Social Standards-Based Chapters:** For the first time in the history of any trade agreement signed by India, standalone chapters on anti-corruption, gender equality, and sustainable development have been included. Alongside this, India has made its most comprehensive commitments to date on the labor and environmental fronts.

Protections for Domestic Producers

While driving economic growth, both nations have put robust measures in place to shield their sensitive domestic sectors:

- **India's Stance:** Protecting the interests of its agricultural and dairy sectors, India has kept dairy products and edible oils out of this concessional framework or under secure protection.

Daily News Analysis

- **The UK's Stance:** To guard its domestic market, the UK has retained protective shields on sugar, milled rice, pork, chicken, and eggs.

Strategic Significance for UPSC

- **India as an Economic Powerhouse:** India is currently the fastest-growing major economy in the G-20 and is on track to become the third-largest global economy within the next five years. Securing preferential access to the UK market at this juncture will impart global strength to India's manufacturing capabilities under the 'Make in India' initiative.
- **Geopolitical Alignment:** Post-Brexit, Britain is seeking strong strategic partners in Asia under its 'Indo-Pacific Tilt' policy. This agreement with India aligns the geopolitical and economic interests of both nations in the Indo-Pacific region.

Conclusion

The India-UK trade agreement (CETA) is not merely a tool for cutting tariffs; rather, it sets a 'gold standard' (template) for modern global trade that is both progressive and sensitive to the environment and labor. Following its implementation on July 15, it is the opportune time for Indian businesses to leverage the 'first-mover advantage'. India's domestic exporters and policymakers must rapidly realign supply chains to comply with these new rules so that the maximum benefit of this historic pact can reach the remotest parts of the country.

