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Syria's new leader vows not to negatively interfere in Lebanon

Agence France-Presse
DAMASCUS

Two weeks after seizing power in a sweeping offensive, Syria's new leader Muhammad al-Jolani (Ahmed al-Sharaa) has stepped up regional contacts, vowing in a meeting on Sunday not to "negatively" interfere in neighbouring Lebanon.

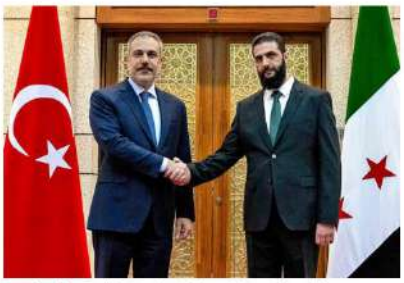
Jolani also met with Turkish Foreign Minister Hakan Fidan, video released by the Anadolu state news agency showed, after Ankara-backed militants played a key role in supporting his Islamist group Hayat Tahrir al-Sham (HTS), which seized Damascus on December 8 and ousted longtime ruler Bashar al-Assad.

Turkiye's Foreign Ministry released no details of where the meeting took place in the Syrian capital.

Turkiye has maintained strong ties with Syria's new leaders, and Ankara's intelligence chief Ibrahim Kalin was in Damascus just four days after Mr. Assad fell.

Regional powerhouse Saudi Arabia is also in direct contact with Syria's new authorities, having supported the opposition to Mr. Assad for years during Syria's civil war, and will send a delegation to the country soon, Syria's Ambassador in Riyadh said.

During his meeting with visiting Lebanese Druze chiefs Walid and Taymur Jumblatt, Jolani said Syria will no longer exert "negative interference in Lebanon at all".



Forging ties: Turkish Foreign Minister Hakan Fidan, left, meets Muhammad al-Jolani in Damascus on Sunday. AP

'Equal distance'

He added that Damascus "respects Lebanon's sovereignty, the unity of its territories, the independence of its decisions and its security stability".

Syria "will stay at equal distance from all" in Lebanon, Jolani added, acknowledging that Syria has been a "source of fear and anxiety" for the country.

Walid Jumblatt, long a fierce critic of Mr. Assad and his father Hafez who ruled Syria before him, arrived in Damascus Sunday at the head of a delegation of lawmakers from his parliamentary bloc and Druze religious figures.

The Druze religious minority is spread across Lebanon, Syria and Israel.

He met with Jolani at the presidential palace, where the new Syrian leader wore a suit and tie instead of the olive-green military shirt he sported just days ago.

Walid Jumblatt's grudge

Walid Jumblatt accuses the former Syrian authorities of having assassinated his father in 1977 during Lebanon's civil war.

The Syrian Army entered Lebanon in 1976, only leaving in 2005 after enormous pressure following the assassination of former prime minister Rafic Hariri, a killing attributed to Damascus and its ally, Lebanon's Iran-backed Hezbollah group.

'Insecurity'

Mr. Assad was an adherent of the Alawite offshoot of Shia Islam and projected himself as a protector of the country's religious and ethnic minorities.

The seizure of power by the Sunni Islamists of HTS – proscribed as a terrorist organisation by many governments including the U.S. – has sparked concern, though the group has recently sought to moderate its rhetoric.

Why green deposits failed to take-off in India

Piyush Shukla

Considering the threat that climate change poses globally, the Reserve Bank of India (RBI) in April last year issued a comprehensive framework for lenders to accept green deposits. The regulator's intent was noble: to enable lenders and customers to further the green cause. However, more than 20 months after the framework has been issued, lenders have made little to no progress in garnering green deposits.

What is green deposit?

Green deposits are essentially interest-bearing deposits, received by the lenders for a fixed period and the proceeds of which are earmarked for being allocated towards green finance. Lenders shall issue cumulative/non-cumulative deposits. On maturity, the deposits would be renewed or withdrawn at the option of the depositor. The deposits shall be denominated only in Indian rupees as per RBI norms.

Capital raised via green deposits can be used in funding projects related to solar, wind, biomass, and hydropower energy projects that integrate energy generation and storage. Further, the funds can be used in sectors which enable energy efficiency, clean transportation, climate change adaptation and sustainable water and waste management. Green deposits also can be used for funding green buildings, projects relating to coastal and marine environments, certified organic farming, among others.

No so green: Despite noble intentions, green deposits have failed to take off due to many reasons. GETTY IMAGES/ISTOCK

To ensure compliance, the regulator said that allocation of funds raised through green deposits during a financial year shall be subject to an independent third-party audit done on an annual basis.

In an interaction with *businessline*, C.S. Setty, Chairman, SBI said while there is obviously some interest in green deposit, it is not very significant. He said currently there is not much traction in the deposits and the price differential will take time to grow.

"Philosophically somebody should align. As we go forward, people are trying to create awareness but currently the attraction is not there.

Green deposits at our bank currently is less than ₹100 crore. I think we need to see various ways of engaging with the GenZ on this product," he said.

HDFC Bank, meanwhile, has not even raised green deposits on or after June 1, 2023 based on the RBI's framework for the acceptance of green deposits, according to its FY24 annual report.

While most public sector banks have started accepting green deposits, private banks are slow adopters to such deposits.

During the SBI Banking & Economics Conclave last month, Department of Financial Services (DFS) Secretary M. Nagaraju was asked about steps the government is taking to promote green deposits.

Challenges ahead

He responded by saying demand is not lower just for green deposits, but for a country the size of India, bond issuances too have minimal volumes. Accordingly, mobilising higher green deposits is "some time away", he said.

"We need a framework about measuring which industry and activity is green, and how to account for that. These are the questions which we need to finalise. Before that, we also have our own priorities, every year we have about millions of people coming for jobs, small and medium businesses also need funds. I think we need to prioritise our lending," he said.

Another core challenge bankers face in mobilising green deposits is lower rate of interest. For instance, SBI offers 7% for general pubic on 2-3 year tenor retail domestic term deposit, whereas if a customer opts for green deposit at a similar tenor, they get 6.65%.

"Customers usually do not consider the nature of deposit, they need higher returns," says a senior official at a mid-sized bank. The bank is yet to launch a comprehensive green deposit product.

Bankers say a reduction in cash reserve ratio (CRR) requirement for green deposit will help them garner more customers. "We have asked (the regulator) for a reduction in CRR for green deposits and second, if at all as a policy it can be incorporated," former SBI Chairman Dinesh Khara had said earlier this year.

Besides, more customer awareness is required to boost volumes.

"All large corporate have medium to long term environmental, social and governance (ESG) commitments to fulfil.

"By parking ESG funds in green deposits with banks, lenders can on-lend to green field projects which will further the green cause, and help corporates meet ESG requirements," according to a senior public sector banker.

(The writer is with The Hindu businessline)

Will satellite broadband services truly be a game-changer?

As the race to provide satellite Internet heats up, questions on cost, pricing, spectrum allocation, viability and potential pop up; back in India, Forrester Research said satcom may be dead by the time it arrives in 2025, stating companies may be hard pressed to compete in terms of pricing

NEWS ANALYSIS

Vallari Sanzgiri

India is 48% lacking in terms of broadband penetration today, even after 25 years of terrestrial mobile services. If we continue to behave the way we are (blocking the entry of new players), we will remain in this state for another 25 years and Viksit Bharat can go out of the window – Debashish Bhattacharya, Senior Deputy Director General, Broadband India Forum (BIF)

"What they want is that existing operators pay for this spectrum through the nose, invest a lot of capex but the new operator should be given a red carpet, free spectrum to start competing. This kind of demand should not have come." – Ravi Gandhi, regulatory executive, Reliance Jio Infocomm Ltd.

The race to provide satellite broadband connectivity in India is leading to some fiery exchanges. Mr. Gandhi and Mr. Bhattacharya were but two of the voices heard during the Telecom Regulator of India's (TRAI) open house discussion in November. The heated discussions centred over spectrum allocation for satellite-based communication (satcom) services.

There are a whole set of other discussions too on satcom starting from cost, pricing, spectrum allocation to even voices asking about if was really viable.

Costly space: Satcom services' price economics can throw spanner in the works. GETTY IMAGES/ISTOCK

Answer to digital divide

Lt. Gen. A.K. Bhatt (retd.), Director General, Indian Space Association (ISpA) takes on the question on the need for satcom. "It can overcome the digital divide in difficult geographies where the cost of putting fibre is too high. Satellites are like fibre in space. In urban areas, it is useful for backhaul services, for additional capacities." Satcom technology connects various points on the Earth using the satellites orbiting in space, able to reach remote hinterlands of the world.

On the issue of spectrum allocation, the feelings run high because of the enormous investments gone in. A KPMG report of 2023 stated satcom had reached a valuation of $2.23 billion and was predicted to reach $20 billion by 2028. Even legacy telcos like Bharti Airtel Ltd. referred to the "lakhs of crores of rupees" of investment made by them over the past three decades. It is this investment that made the legacy players push for auction of spectrum, citing concerns of an uneven playing field and undue advantage to new players like Elon Musk's Starlink or Amazon's Kuiper.

> A KPMG report in the year 2023 stated that satcom had reached a valuation of $2.23 billion and was predicted to reach $20 billion by the year 2028

Administrative method

Meanwhile, those against the idea of auction point out that world over spectrum is authorised by the administrative method. For now, it appears the government is leaning in favour of allocating spectrum. Yet, it is worth asking whether the technology deserves all the fanfare considering satcom is to be complementary to existing fibre or wireless connections rather than compete with existing services. Even Sateliot, one of the first satellite operators based in Spain to offer IoT connectivity, has been working since 2018 and is only hoping to go commercial in 2025.

In the U.S., companies like AT&T state that satellites can complement the existing terrestrial services but not work in isolation. As it explained in an investor call, ""For a customer to only use satellite-based service, one needs enough satellites in space that are engineered with that amount of radio frequency. Also, the antenna array of those satellites needs to be large and strong enough to ensure the level of service a customer expects. The cost per bit is also very high currently for satellite-based services to make it operationally viable."

Hence, AT&T plans to offer satellite as a complementary to fiber/wireless service to its customers. This is a company that has so far launched five commercial satellites, called BlueBirds.

Use cases, potential

Back in India, Forrester Research has stuck its neck out and said that satcom may be dead by the time it arrives in 2025, stating while many companies are warming up to the idea of satcom, they will be hard pressed to compete in terms of pricing. The research firm predicted that its use cases in India will be limited to aviation, shipping, connecting remote locations, NDMA.

"Considering the 5G coverage in India is widespread, the space that we have for satellite coverage to grow is very limited. The second thing, if you look at the space, it is price economics. If you come to retail, things start to fall apart. In Kenya, when Starlink launched, it struggled to get any customers. In one or two years, they got around 4,500 customers. In India, customers are equally pricey. It's very, very difficult for something like this to grow," said Ashutosh Sharma, VP and research director, Forrester.

However, Pranav Roach, president of Hughes Network Systems India Ltd. disagreed stating that even in the U.S., satellites still accounts for 20-25% of the network utilisation.

"From a consumer point of view, availability increases tremendously. So, there will be a significant uptake for satcom. But it will coexist with other technologies. Technical feasibility and cost is a function of the options available and what you need to do in case of an emergency.

"Right now, we're still waiting for rules from TRAI for spectrum allocation. Once that comes out, we can determine the cost and prices," said Mr. Roach.

Similarly, Sateliot, said satcom as an affordable solution could prove to be a game-changer for India.

(The writer is with The Hindu businessline)

Quick action: Traffic police have started using speed guns to crack down on speeding vehicles in Puducherry in September, 2023. S.S. KUMAR

The principle behind the working of a speed gun, used for motion tracking

A speed gun is a device to measure the speed of a moving object without having to be in contact with the object. Speed guns are widely used by law enforcement officials to monitor traffic speed, by coaches to gauge the performance of their athletes, and in various other industries

Amartya Srinivasan
Vasudevan Mukunth

The world of today is a world in motion. People constantly want to get somewhere. The heavens are filling up with satellites, our skies with airplanes and rockets, our seas with ships and submarines, and our land with cars, bikes, and trains. Humans have developed laws, rules, technologies, and subsequently entire industries to make sure all these vehicles move smoothly, without harming humans or each other. A small but significant piece of this picture is the speed gun.

What is a speed gun?

A speed gun is a device to measure the speed of a moving object without having to be in contact with the object. To achieve this, the device bounces electromagnetic radiation of a specific frequency off the object, capturing the reflection and using the Doppler effect to infer the object's speed. Speed guns are electronic, and use complex circuitry to emit the radiation used to make the measurement.

These devices are widely used by law enforcement officials to monitor traffic speed, by coaches to gauge the performance of their athletes, and in various other industries in need of accurate motion tracking.

What is the Doppler effect?

The Doppler effect is named for the Austrian physicist Christian Doppler and relies on the simple concept of relative velocity. Say there's a man sitting at the centre of a field blowing a whistle. The sound waves move out in a circular, concentric pattern with the whistle at the centre, and evenly spread out. A woman standing at the edge of the field will receive these waves at frequent intervals – as and when the waves' crests reach her. (Since sound waves move at 343 m/s in air, human ears can't hear the gaps.)

Each wave has a frequency and a wavelength. A higher frequency produces a higher pitch and vice versa.

Now, say the whistling man is moving around the field on a buggy. If the buggy is moving towards the woman, the waves in front of the vehicle become bunched up. In other words, from the woman's perspective, the waves would have acquired both the speed of the buggy in addition to the speed of the sound wave. Thus the waves will reach the woman more frequently, and she will perceive a higher pitch. (For the same reason, the sound will have a lower pitch in a direction behind the buggy.)

This is why, when a train moves into a station, people on the platform will hear the horn blowing at a higher pitch than when the train is leaving the station. This effect is the Doppler effect.

The speed gun was originally developed during World War II for military use and applies the effect using radio waves rather than sound waves. A speed gun has a radio transmitter and a receiver. The transmitter emits radio waves, which the person holding the speed gun can direct at an object. The receiver collects the waves reflected by the object back in the direction of the speed gun.

If the object is approaching the speed gun, the frequency of the returning waves will be slightly higher than that of the transmitted waves. A simple computer in the gun can deduce the object's speed based on this difference.

How are the speed and the effect linked?

All electromagnetic waves have a fixed speed – equal to the speed of light in that medium. In vacuum, this value is denoted c: 299,792,458 m/s. Any change in the frequency the speed gun detects directly corresponds to the Doppler shift caused by the object's motion. This principle is powerful because it allows the speed gun to work accurately over a wide range of distances and velocities without being affected by air resistance.

A speed gun can calculate the speed of a moving object by multiplying the difference (between received and emitted frequencies) with c and dividing by the emitted frequency times 2.

This relationship shows how the difference is directly proportional to the speed of the object: the faster it moves, the more pronounced the difference will be. In other words, the only condition is that the object should be moving much slower than the speed of light – which is the case in most, if not all, practical applications of the speed gun.

Do speed guns have shortcomings?

The technology to emit radio waves is ubiquitous today. The principle is simple: when an antenna is excited by an alternating current with a radio-wave frequency, it emits radio waves. Radio-wave frequency is in the range of 30 Hz to 300 billion Hz.

For a long time, the equipment to produce the waves was bulky. This changed when scientists invented transistors in the 1940s. Electronic circuits built using transistors considerably simplified the process of producing radio waves and also made the transmitters much smaller.

However, radio waves have intrinsic shortcomings that transmitters can't fully adjust for. For example, radio waves diverge as they move through the air. If an antenna is 5 cm long, the waves it emits will diverge by 22° to either side, producing a beam that is 44° wide overall.

Such a beam could strike more than one moving vehicle and produce inaccurate speed readings.

A continuous-wave radar – which emits radio waves and tracks their reflections continuously – may also produce readings due to multiple vehicles.

Engineers have developed systems to compensate for these errors but the resulting setups have been more sophisticated and more expensive.

For such reasons, LIDAR speed guns have been replacing radar counterparts. The name is short for 'light detection and ranging'. LIDAR uses laser light instead of radio waves; the gun's operation is otherwise similar. Laser light has very low divergence and thus offers better targeting.

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What are the new interception rules and safeguards?

What do the new Telecommunications (Procedures and Safeguards for Lawful Interception of Messages) Rules, 2024 state? Will it override Rule 419A of the Indian Telegraph Rules, 1951?

R.K. Vij

The story so far:

The Union Government, on December 6, notified the Telecommunications (Procedures and Safeguards for Lawful Interception of Messages) Rules, 2024 which empower some enforcement and security agencies to intercept phone messages under certain conditions. These rules supersede Rule 419A of the Indian Telegraph Rules, 1951.

What do the new rules state?

The new rules authorise the Union Home Secretary and the Secretary to the State government in-charge of the Home Department as the competent authority to order the interception of any message or class of messages. An officer not below the rank of a Joint Secretary to the Union Government, may also issue such order of interception in 'unavoidable circumstances' (without defining such circumstances). The Central Government may also authorise any law enforcement or security agency to intercept messages for reasons specified under Section 20(2) of the Telecommunications Act, 2023.

'In remote areas or for operational reasons', the head or the second senior most officer of the authorised agency at the central level, and head or the second senior most officer of the authorised agency (not below the rank of IG Police) at the State level may also issue an order of interception, but the officer will have to submit such an order to the competent authority within three working days of the date of its issuance. If such order is not confirmed by the competent authority within seven working days from the date of issue, such interception shall henceforth cease. The rules also mandate the destruction of records relating to interception every six months by the authorised agency and review committee (unless required for functional requirements or court directions).

How are the new rules different?

First, the condition of interception by authorised agencies only in 'emergent cases', has been relaxed. Interception by authorised agencies is now possible if it is not feasible for the competent authority to issue orders in 'remote areas or for operational reasons'. Second, under Rule 419A, there was no limit for the number of IGP rank officers at the State level who could be authorised for interception. But now, in addition to the head of the authorised agency, only (one) the second senior most officer can be authorised for interception. Third, in case the interception order by an authorised agency is not confirmed within seven days, any messages intercepted shall not be used for any purpose, including as evidence in court.

The Indian Telegraph Act of 1885 had provided the Union Government to make rules for 'the precautions to be taken for preventing the improper interception or disclosure of messages', but no such safeguards were framed for a long time. The safeguards and procedure of interception under Rule 419A were notified only in March, 2007, consequent to the directions issued by the Supreme Court in *People's Union for Civil Liberties (PUCL) versus. Union of India and Another* in 1996. The Supreme Court, in this case, not only elaborated the terms 'public emergency or in the interest of the public safety', but also held that the right to privacy cannot be curtailed arbitrarily without laying down safeguards which are just, fair and reasonable.

What are concerns about new rules?

While the pre-requisite of 'emergent cases' for interception by authorised agencies has been relaxed without additional checks, the rules are criticised for not fixing any accountability for the wilful misuse of powers of interception by authorised agencies. The rules are silent about punitive actions if any authorised agency abuses the powers of interception for a period up to seven days, before its confirmation by the competent authority.

R.K. Vij is a former Indian Police Service officer.

THE GIST

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- The Indian Telegraph Act of 1885 had provided the Union Government to make rules for 'the precautions to be taken for preventing the improper interception or disclosure of messages', but no such safeguards were framed for a long time.
- The rules are silent about punitive actions if any authorised agency abuses the powers of interception.

Are Manipur militants using Starlink devices?

Why has the recovery of a Starlink satellite antenna and router in Manipur in mid-December sparked concerns? Does Starlink have regulatory approval in India? How exactly does Starlink prevent users in regions which do not have authorisation, from accessing their satellites?

EXPLAINER

Sahana Venugopal

The story so far:

Billionaire Elon Musk has denied claims that his space company SpaceX's satellite internet technology, Starlink is being used by militants in Manipur. This came after the Indian Army and police seized weapons and what looked like a Starlink-branded satellite router and antenna. Starlink is still pending approval in India, though it will be starting in Bangladesh and Bhutan in 2025.

What is Starlink?

Starlink uses an extensive low Earth orbit satellite constellation to deliver broadband internet that has high speeds and low latency. This means that rather than restricting users to essential or emergency functions, they can also stream content, play games online, make video calls, or carry out other high data rate activities, per the company. It is a popular choice for users worldwide in remote areas, sea vessels, disaster-struck regions, or places where oppressive regimes have throttled access to more mainstream internet services. There are thousands of satellites in the Starlink system, and they orbit Earth at around 550 km. Though they cover the entire globe, per SpaceX, the company is not authorised to provide its services to users in some regions.

What is the controversy?

The Spear Corps of the Indian Army on December 16 shared photos on Elon Musk-owned X of guns, ammunition, and country-made mortars that the army and police units had seized in Manipur. X users spotted a small satellite device and router, with the latter bearing the SpaceX logo. In response to an X user who claimed that Mr. Musk's technology was being used by terrorists, the billionaire replied, "This is false. Starlink satellite

Remote connection: A Starlink satellite internet system set up on a boat in Brazil in July. REUTERS

beams are turned off over India." The Starlink device also had "RPF/PLA" written on it, which refers to a Myanmar-based Meitei extremist group that is banned in India. Per Starlink's website and coverage map, the service date for Myanmar is unknown.

However, this is not the first time SpaceX has become embroiled in controversy in India. Last month, smugglers were caught by the Andaman and Nicobar islands police with over 6,000 kg of meth and a Starlink device that was allegedly used for navigation and communication, despite service being prohibited in Indian waters. Furthermore, in August, Starlink equipment was seen being sold on B2B platform IndiaMART.

Can Starlink internet be controlled?

International borders are not solid and it is not easy to refine satellite internet coverage to such a precise degree that service is activated or halted exactly in line with a nation's border. An additional complication is that many international borders are contested or unclear, while satellites moving above them are continuously transmitting encrypted signals. This encryption stops satellites from being hacked by militants or other malicious actors trying to intercept the service. The key question then is whether militants in Manipur can effectively use Starlink satellite internet within India.

"If these [Starlink] boxes have been purchased from outside of India, by whatever means, they can be used because then, that box is authorised. The only thing is, do they have a position location feature? In that case, yes, if you buy a [Starlink] terminal in the U.S. and bring it to India, because of the geographical location change, it might not work. But that is provided the terminal has a built-in geographic location identifier," theorised former Indian Space Research Organisation (ISRO) engineer, Arup Dasgupta. To help visualise how Starlink stops users in prohibited regions from accessing its satellite internet, Mr. Dasgupta used the analogy of a set-top box that does not let TV watchers access some channels while others who have access can watch these channels.

With regards to seized Starlink devices, Mr. Dasgupta pointed out that by tracking the unique identification code of the Starlink terminal, it might be possible to find the buyer. However, this too could prove difficult due to shadow companies obfuscating the trail of illegal buyers. In essence, more information is needed from SpaceX and Mr. Musk to understand how the company ensures that Starlink satellite internet does not reach the countries yet to allow Starlink.

The Hindu was also able to download the Starlink app from the Google Play Store in India and go through the set-up process up to the point a plugged-in Starlink device was needed. This is in stark contrast to banned apps like TikTok, which are unavailable on the app store.

Mr. Musk in February this year also trashed news reports claiming that Starlink devices were being sold to Russia, and later explained that Starlink satellites would not close the link in Russia.

What does Indian law state?

India strictly regulates and restricts the use of satellite-based communication devices, even by Indian civilians and citizens in conflict-free zones. Everyday gadget users within the country would have noticed that even key satellite-based emergency features on premium phones that are easily available for users overseas are not enabled for use in India. Under Section 6 of the Indian Wireless Act and Section 20 of the Indian Telegraph Act, the use of thuraya/iridium satellite phones is illegal in the country. These restrictions are in place to combat militancy and terrorism.

THE GIST

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- India strictly regulates and restricts the use of satellite-based communication devices, even by Indian civilians and citizens in conflict-free zones.
- International borders are not solid and it is not easy to refine satellite internet coverage to such a precise degree that service is activated or halted exactly in line with a nation's border.

The challenges of posthumous reproduction

On October 4, 2024, the Delhi High Court allowed the parents of a dead man to use his frozen semen for posthumous reproduction. The young, unmarried man had preserved his semen sample at a hospital in Delhi while undergoing chemotherapy. He passed away in September 2020. When his parents, his legal heirs, approached the hospital in December 2020 requesting the semen sample to be released, the hospital declined, citing the need for appropriate orders from the High Court. The parents filed a petition with the High Court. The hospital countered that "no laws, including the Assisted Reproductive Technology (ART) (Regulation) Act, 2021, govern the release of frozen semen samples of an unmarried deceased male to his parents or legal heirs." The Court also noted that neither the ART Act nor its Rules, 2022, deal with a situation of this kind. In its order, the Court cited a similar case in 2018, where the parents of an unmarried man who died in Germany used his cryopreserved semen to have grandchildren. After his death, the semen was shipped to India and used to conceive two children through a surrogate and egg donor.

Existing laws and provisions

With advances in reproductive technology, cryopreservation of gametes (sperm and oocyte) is possible outside the body for long periods. But using cryopreserved gametes for posthumous conception raises complex ethical, social, and regulatory issues.

The ART Act and the Surrogacy (Regulation) Act, 2022, address issues related to fertility, infertility, gamete donation, and surrogacy. But neither addresses the current case. Besides, the ART Act's clauses contain ambiguities and gaps. For example, Clause 24(f) of the Act states that "the collection of gametes posthumously shall be done only if prior consent of the commissioning couple is available in such manner as may be prescribed." However, Section 2(e) defines a commissioning couple as "an infertile married couple". So, the Act applies only to infertile married couples and does not specify unmarried individuals or grandparents. The High Court order emphasises that the consent was not implied but explicitly expressed by the deceased. In the absence of clarity in the law, the Court's acceptance of this consent raises questions.

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It is imperative to revisit existing laws and address gaps instead of relying on interpretations of the status of posthumous conception

While acknowledging the emotional component, it is crucial to critically examine the petitioners' wish to "preserve the legacy of their son" for genetic perpetuity through posthumous conception, thereby resurrecting the social significance of genetic connectedness and the birth of a child as fundamental aspects of family. Regarding this, the Ministry of Health and Family Welfare responded that "the ART Act is intended to support infertile couples or women and does not encompass situations such as the petitioners, who aspire to have a grandchild through surrogacy." In the absence of legal provisions regarding the case, it is important to question the ethics of grandparenthood as well as the procedure followed to obtain the sperm of a son who has since died. A primary legal concern is parentage: as the sperm donor died, who will get parental rights? Can he and the surrogate be considered parents of the child? What will the birth certificate say?

No clear guidelines

The Court considered international legal precedents, such as *Doodeward v. Spence and Yearworth v. North Bristol NHS Trust*, while addressing genetic material. These lawsuits have explored the ownership of human biological material and the rights of individuals or families to control it after death. These cases demonstrate the evolving legal views on posthumous gamete retrieval and use. While certain regulations like the EU Directive ensure the safe handling of human genetic 'material', including reproductive 'material', they fail to provide clear guidance on the ethical and legal complications of posthumous conception.

Building on these precedents, the High Court ruled that semen, being genetic material, qualifies as property or an estate and in the case of a deceased person, it is part of the individual's biological material, like the human corpse or its organs. This categorisation of human tissues, including reproductive, as property have been part of feminist debates. Feminists have critiqued the 'property' approach towards human tissues, suggesting that it leads to the commodification of human tissue and reduces people to mere 'objects,' which serve as the raw material for added value extraction. They have argued that this approach stems from the intersections of patriarchy, capitalism, and reproductive biotechnologies. They have further argued that the female body shares a common concern about women's bodily subjection, whether through "medical science, population-control agencies, or the patriarchal organisation of sexuality and kinship." The High Court order commodifies genetic reproductive "material" by defining semen as "property", although it explicitly prohibits the use of the semen sample for any commercial or monetary purposes.

Conversely, it is important to assess whose rights are at stake here. The Court order emphasised that since science has made it possible for infertile couples to conceive, the parents' desire to carry on their deceased son's legacy through his cryopreserved semen cannot be defeated. This raises more questions than answers regarding its ethical and legal ramifications. In the absence of specific guidelines, it becomes imperative to revisit existing laws and address gaps instead of relying on interpretations of the status of posthumous conception.

Pointing the beacon at India's undersea warfare power

The year 2024 started on a high note for the Indian Navy, with Operation Sankalp expanding from the Strait of Hormuz to the Red Sea to ensure the safety and the security of shipping from piracy and providing assistance to ships targeted by the Houthis. The Navy's continued response in addressing piracy, hijacking, and drone attacks on international merchant shipping has reinforced its status as a preferred security partner and first responder. In 2024, while several salient episodes marked the Navy's operational preparedness, an area that witnessed several critical developments was undersea warfare.

Pivotal developments

One key development was the commissioning of India's second indigenous nuclear-powered ballistic missile capable submarine (SSBN), INS *Arighaat*, in August 2024. Adding value to the third leg of India's nuclear triad – and hence nuclear deterrent value – the SSBN mirrors its predecessor, INS *Arihant*, in size and propulsion. The boat, as submarines are known colloquially, has a higher indigenous content than INS *Arihant*. The advanced sonar and propulsion systems and upgraded acoustic dampening are a distinctive addition to India's underwater warfare capabilities. These capabilities were emblematically enhanced by the recent testing of the K-4 submarine-launched ballistic missile (SLBM) from INS *Arighaat*, with a range of 3,500 kilometres. While the firing was successful, the results of the test parameters are awaited. Successful tests and the induction of the missile as a composite weapon package of SSBNs would place most of China under striking range.

About a month after the commissioning of INS *Arighaat*, the Cabinet Committee on Security cleared the long-pending Project-77 (P-77), giving its final approval to construct two nuclear-powered attack submarines (SSNs) at a cost of ₹40,000 crore. Delivery of the first SSN is scheduled for 2036-37 and the platform is expected to include over 90% indigenous content. The addition of the SSNs would enhance the Navy's underwater warfare capabilities, which essentially includes providing protection to deployed SSBNs. With the induction of the SSNs, India would become the only non-P5 nation operating SSBNs and SSNs.

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The approach to enhance the Indian Navy's undersea capabilities highlights the government's move to ensure maritime stability and security

On conventional submarines

While nuclear boats open up new vistas of capabilities, conventional boats will always be relevant. In the past, there has been discussion in the U.S. about the re-induction of non-nuclear boats, as not all undersea missions require nuclear power. In India's case, Project-75, in collaboration with France, will see the commissioning of the sixth Scorpene boat, INS *Vaghsheer* soon. The Navy is looking to order three more such boats, which will add the required punch and help fill the void with the decommissioning of older boats. The efficacy of non-nuclear boats has increased with the advent of air independent propulsion (AIP). Therefore, Project 75(I), which seeks to induct AIP-enabled boats, involves Spain and Germany as contenders to build such boats, and is expected to reach its logical conclusion when the technical and financial evaluations are completed. In all cases, indigenous content is expected to increase. For example, the follow-on three Scorpene boats are expected to feature 60% indigenous content. In the case of Project 75(I), with the bidders, Germany's Thyssenkrupp Marine Systems (TKMS) and Spain's Navantia, accepting India's transfer of technology and indigenous content requirements, the first boat is likely to include a minimum of 45% indigenous content, rising to 60% in the sixth boat.

Another domestic development in niche undersea naval technologies is the approval of building 100-tonne Unmanned Underwater Vehicles (UUVs) at a cost of ₹2,500 crore. UUVs would add to India's undersea capabilities as a low-cost option with a high return on investment. This project is symbolic of India's positioning of niche technologies as strategic enablers to address increasingly complex and evolving threats in the maritime space.

Some of the hurdles

The approach to enhance the Navy's undersea capabilities in tandem with surface and aviation elements underscores the importance placed at various levels of the Indian government on ensuring maritime stability and security. This approach would create a balanced blue water force. However, this calls for addressing long-drawn budgetary issues to manage the mismatch between planned acquisitions and modernisation allocations and excessive time delays. Sustained funding for projects with long gestation periods, streamlined processes on specifying requirements, shortlisting original equipment manufacturers, and issuance and evaluation of tenders would require focus. A balanced force would ensure fulfilling the Navy's strategic and operational requirements, which are indispensable for addressing the threats, challenges, and risks emanating from the maritime domain while also taking advantage of the opportunities that arise.

These opportunities, especially cooperation and collaboration with strategic partners and other friendly maritime nations, would augur well not only for India's growth as a maritime nation but also support India's maritime visions of Security and Growth for All in the Region (SAGAR) and a free, open, and inclusive Indo-Pacific.

Pie in the sky

The simultaneous elections idea is a non-starter

With the Union government introducing two Bills in the Lok Sabha to implement its idea of simultaneous elections to the Lok Sabha and the State Assemblies, the stage is set for Parliament to debate the feasibility, or otherwise, of the idea of what the government calls "One Nation, One Election". With the Opposition pressing on a division of votes on the introduction of the Bill – 263 for and 198 against – the writing on the wall was clear. The government does not have the two-thirds majority in Parliament to pass the constitutional amendments to facilitate simultaneous elections. A 39-member House panel will examine the two Bills. The content in the Bills themselves are in line with the recommendations of a committee headed by former President of India Ram Nath Kovind that envisaged simultaneous Lok Sabha and Assembly elections as a first step, followed by municipal and panchayat polls within 100 days of the general election. For the amendments to conduct municipal elections, they would have to be ratified by at least half of the State Assemblies.

The Constitution Amendment Bill seeks to add a new provision that will provide for the timeline for simultaneous elections and as per the wording in the Bill, this could happen only in 2034 unless the Lok Sabha terms prior to that are curtailed for some reason. Other provisions echo the Kovind committee recommendations – for example, if a State Assembly gets dissolved before five years of its term, after the "appointed date" – the date for synchronising Lok Sabha and Assembly elections – fresh "midterm" elections will be held but the new Assembly will not have a full five-year tenure. Its tenure will end five years from the "appointed date". The Bill also provides the Election Commission the option to defer or not hold Assembly elections to a particular State, but the full term of that Assembly will still coincide with that of the Lok Sabha elections. These provisions are anti-federal. The idea of conducting multiple elections to an Assembly before the stipulated five-year period also militates against the ostensible rationale provided for the idea of introducing simultaneous elections – cost-cutting. The idea of federalism, sharing power at different levels of governance, is tied to the exclusive importance and roles demarcated to them and elections are a way for voters to exercise their specific concerns related to these different levels of government. By subsuming the electoral cycles into one time frame, the idea of simultaneous elections has the potential to diminish the importance of each tier, which is also in line with the centralising tendencies of the BJP/NDA regime. This makes it imperative for those committed to federalism to steadfastly oppose this idea.

The global warming fight has a challenge for India

D.P. Srivastava

a former Ambassador and Coordinator of the Vivekananda International Foundation (VIF) Task Force on India's Energy Transition in a Carbon-Constrained World

The outcome of the climate conference (COP29) in Azerbaijan has been disappointing. The meeting took place at a time of transition in American politics. While international climate negotiations remain stalemated, nature is moving inexorably towards becoming a hotter planet. The fight against global warming requires reducing emissions. Developed countries have accepted 2050, China 2060, and India 2070 as the deadline for energy transition to net zero emissions by 2070.

There are two developments that will cut short the transition time. The European Union's (EU) Carbon Border Adjustment Mechanism (CBAM), which will be effective from 2026, will result in penal customs duties on imports unless the carbon tax in exporting countries is hiked to the EU level. The second is increasing pressure to accept the 'peaking' of emissions. The G-7 Summit in Hiroshima last year, and Apulia in June 2024, called on the 'major economies' to accept the peaking of emissions by 2025. This was a reference to China and India as the EU and the United States have already accepted 'peaking'.

The incoming Donald Trump administration may take the U.S. out of the climate agreements again. Regardless of this, we must take action to achieve a clean environment, for our own sake. But we cannot ignore India's development imperative. We need more electricity to replace fossil fuels. India's electricity consumption is a third of the global average. While developed countries and China have to diversify to clean energy sources, India has to grow and diversify.

These twin challenges entail much higher costs and require a longer transition time. However, we do not have the luxury of waiting till 2070 as pressure mounts for the 'peaking' of emissions. The 'peaking' year is an intermediate stage where emissions plateau before declining to the net zero stage. China has accepted the goal of peaking by 2030. India cannot remain an outlier indefinitely. At the most, we may have a decade when our emissions will be capped. A more compressed transition schedule means that we have to depend upon existing technologies. Small modular reactors and hydrogen will take more than a decade to become commercially viable.

Ramp up generation

Can we escape pressure for early peaking? While targets in climate negotiations may be voluntary, they will be enforced through bilateral tariff measures and international financing conditions. The peaking level will determine the quantum of energy available for future growth. We need to rapidly ramp up electricity generation to establish our claim to an energy level that is sufficient to sustain future growth before we are constrained to accept the peaking of emissions. China has 200 GW of new coal-based power plants sanctioned or under construction.

> India's development needs cannot be ignored; as it has to grow and diversify to clean energy sources, this would mean higher costs and a longer transition time

Reaching net zero emissions (NZE) will entail growth in demand for electricity based on clean sources, as new sectors such as transport and industry are brought under electrification. This increase will be of a much higher order of magnitude than existing trends which are derived from the power sector alone. What is the minimum quantum of electricity needed to reach NZE? Which is the cheapest generation mix needed to achieve the minimum level? A Vivekananda International Foundation (VIF) Task Force on India's Energy Transition in a Carbon-Constrained World mandated IIT Bombay to answer these two questions based on mathematical modelling.

It estimated the minimum quantum of demand for electricity as 21,000 Terawatt hours (TWh) by 2070. An International Energy Agency report has pegged India's energy demand at 3,400 TWh by 2040. Different timelines make a comparison difficult. But it is worth keeping in mind that India's energy consumption in 2020 according to NITI Aayog data was 6,200 TWh. Is it realistic to peg its energy demand two decades later at half the level of 2020, the pandemic year, when the economic activities were slow? This is a prescription for energy deficit and slow growth.

The Economist has suggested decoupling growth with energy. The West has not followed this paradigm. Will India's service economy minimise the need for energy? Server banks needed to power the digital economy require a huge amount of energy. Generative AI will increase energy demand exponentially. This is why Microsoft and other tech giants are turning to nuclear power, which is the only source of clean, firm power at scale.

Cost and land

For energy transition, the choice lies between renewables and nuclear, the two forms of energy that are emission-free. But which of the two entails lower cost and land? The current renewables tariff does not fully take into account storage and transmission costs. A paper by the Central Electricity Authority last year acknowledged that the cost of renewables round the clock ranges from ₹4.95 per unit to ₹7.5 a unit (on the assumption of only six hours of storage). This is higher than the tariff for nuclear power at ₹3.80 a unit. The VIF-IIT Bombay study has also brought out that the renewable high option will cost the most ($15.5 trillion), while the nuclear high option will cost the least ($11.2 trillion) by 2070.

The VIF report has shown that the renewable high approach will require 4,12,033 square kilometres – double the total surplus land of 2,00,000 sq.km available in India. The nuclear high approach will require 1,83,565 sq.km. The renewable route for the production of green hydrogen will increase the demand for electricity for electrolysis and make land constraints worse.

On the margins of COP28 in the United Arab Emirates, a group of over 20 countries, including the U.S., France, and Japan have pledged to triple nuclear power by 2050. Nuclear power already provides 20% of electricity generation in the U.S. and 70% in France. Japan joined this group despite the legacy of the Hiroshima and Nagasaki bombings, and the Fukushima accident. In India's case, there is a need for a sharper increase, as the share of nuclear power in generation is as low as 3%.

Ramping up nuclear power requires government support, as resources on this scale cannot be internally generated by the Nuclear Power Corporation of India Limited (NPCIL). Nuclear power also needs to be given the status of green energy as it is emission-free. Besides operationalising existing joint ventures between the NPCIL and public sector units, public-private partnerships with industries in hard-to-abate sectors should be encouraged given the looming EU deadline for enforcing the CBAM. The bulk of the additional demand for generation will have to be met by larger 700 MW-1,000 MW reactors.

The issue of finance

At COP29, developed countries committed a paltry $300 billion per year from diverse sources by 2035 against the demand by developing countries for $1.3 trillion. Will this distant goal survive the Trump presidency? Most of this will be non-concessional finance. Many developing countries cannot absorb loans. Multilateral development banks have their statutes, which will require amendment.

Green finance from private sources will come only if the tariff is raised, and the health of DISCOMs is restored. The government cannot bear the fiscal burden of energy transition. The public has to be sensitised to steep hikes in tariffs given the investment in creating new-generation assets. This requires political consensus.

COP29 has finalised the rules for carbon trading. This amounts to rich countries buying the carbon entitlement of the poorer countries to cushion their lifestyle changes. If we cannot diversify to clean sources by the peaking year, we will need carbon for our growth rather than a trade-off.

The energy transition is a fight for limited carbon space. No major economy is likely to diversify to clean energy before the global carbon budget runs out in the next 10 years. An equitable share in the remaining carbon space is crucial for future growth. We must establish our claim by establishing high-generation capacity. The EU and the U.S. have already claimed entitlement to remaining carbon space by unilaterally establishing their peaking levels. China will keep expanding its claim till 2030.

In big update, minimum possible mass of dark matter particles revised

In 1922, Jacobus Kapteyn estimated the density of dark matter. Since then, a century of sophisticated measurements has held up the figure. It's equal to the heft of two protons per teaspoon, which means your house could contain dark matter with a mass equivalent of a trillion protons – but herein lies the rub

Nirmal Raj

Dark matter is an enigmatic, invisible substance supplying five-sixths of the matter of the universe. Unlike photons, the particles of light and the particles of dark matter need to have non-zero mass, or else the dense and intricate structure of matter on cosmic scales will not form.

How light can a dark particle then be? For decades, scientists thought this minimum mass was about 10^{-24} times the mass of a proton. But in May this year, theoretical physicists revised the limit and pushed it up by an order of magnitude to 2.3×10^{-23} proton masses. This is a significant update in the world of dark matter.

A Hubble Space Telescope view of the galaxy NGC2985. The evidence for dark matter emerged in the 1970s when astronomers found an unusual pattern in the rate at which stars in a galaxy rotated the farther they were from the centre. JUDY SCHMIDT/NASA

Uniformly or in lumps?

To understand these numbers and their importance, let us first build a mental picture of dark matter. Dark matter is said to be everywhere in the universe. Does that mean it is in your house? In 1922, Dutch astronomer Jacobus Kapteyn studied the motion of stars neighbouring the Sun and concluded the density of "dark matter" (using that term for one of the first times) must be 0.0003 solar masses per cubic light year.

Since then, through a century of increasingly sophisticated measurements, the accuracy of Kapteyn's conclusion has held up remarkably well. This density of dark matter can be re-expressed as the heft of two protons per teaspoon, which means your house could contain dark matter with a mass equivalent of a trillion protons.

But this would also be naïve: Kapteyn's and subsequent measurements are only valid when regarding the million-cubic-lightyear volume and don't apply when we zoom in for a closer look. This is because stars, whose motion is used for the measurement, are themselves separated by a few light years. Whether or not dark matter is present on smaller length scales would depend on how it is distributed: either uniformly or in lumps.

An occasional visitor?

Let's assume it is spread around like fine flour, which the standard theories of cosmology also predict. If it comes in lumps, the spacing between them may be as large as many light years, and there will perhaps be no dark matter under your roof.

Now, since we know the local density of dark matter, the value of the unknown mass of the dark particle will determine the separation between two neighbouring particles. If it is 100 proton masses, the inter-particle separation will be 7 cm. Then dark particles at any given moment will not only be in your house but also in your head.

If dark matter is made of an elementary particle, the heaviest it can be is about 10^{19} times a proton's mass. In that case the interparticle separation would be 30 km. So dark matter won't be a resident of your house but will visit occasionally (since the particles travel randomly at around 300 km/s).

Then again, a 10^{20} gram agglomerate of dark particles would be apart by more than the size of the solar system, reducing our chance of discovering them.

Fluid rather than a flock

What about small masses? At 10^{13} proton masses, every red blood cell in your body will contain a dark matter particle. But now quantum physics becomes important. Every object is also a wave, with its wavelength given by the inverse of its momentum. Thus the lighter a dark matter particle is, the larger its wavelength will be. For 10^{13} proton masses, the wavelength will be about 2 cm, much larger than its micrometre interparticle separation.

So for small masses, we must picture a collection of dark particles as a fluid rather than as a flock of grains.

It's not every day that particle physics gets to redraw a fundamental goal post by an order of magnitude. And it is a sign of our times that this could only have been done with computers as opposed to a blackboard

If we now dial the mass of a dark particle all the way down to 10^{-24} proton masses, the wavelength is 200 light years, about the size of a dwarf galaxy. The substance of a dwarf galaxy is chiefly in the form of dark matter, with only about 1% contribution from stars. This simple fact translates to a restriction on the dark matter particle's mass: it must be greater than 10^{-23} proton masses. If it were lower, its spatial extent would exceed the dwarf galaxy, and we can't form a macroscopic object smaller than its microscopic constituents.

The time of computers

This is where the paper from May matters. Its authors have shown that this lore is too simplistic and that researchers can do something sharper. First, using data on how stars move in Leo II, a dwarf galaxy orbiting the Milky Way, they inferred the dark matter density in it as a function of the distance from its centre. This density profile isn't unique due to measurement uncertainties, so they generate a set consistent with the stellar data. Next, they numerically solved the Schrödinger equation after modifying it to account for gravity and obtained an ensemble of density profiles. Finally, they carried out a statistical procedure to match the two sets of density profiles – the empirical one from observing Leo II and the theoretical one from solving the equation.

Their key finding here was that the inner regions of Leo II contained more invisible mass which dark particles of 10^{-21} proton mass couldn't account for. Thus they surmised heavier particles are needed to accommodate the inner crowding.

It's not every day that particle physics gets to redraw a fundamental goal post by an order of magnitude. And it is a sign of our times that this could only have been done with computers as opposed to a blackboard.

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THE GIST

Scientists thought the minimum mass of dark matter was about 10^{-24} times the mass of a proton. But in May, theoretical physicists revised the limit and pushed it up by an order of magnitude to 2.3×10^{-23} proton masses

If the mass of a dark particle is 10^{-21}, the wavelength is 200 light years, about the size of a dwarf galaxy, which is chiefly dark matter. This restricts the dark matter particle's mass. It must be greater than 10^{-23}. If it were lower, its spatial extent would exceed the galaxy

Researchers inferred the dark matter density in Leo II.They matched the two sets of density profiles – empirical and theoretical. They found that Leo II contained more invisible mass, which dark particles of 10^{-21} proton mass couldn't account for

Memorial to historic session: Dignitaries will pay a visit to the Veera Soudha, the venue of the historic session. FILE PHOTO

150 MPs invited for centenary of Cong. Belgaum session

The Hindu Bureau
BELAGAVI

Congres president Mallikarjun Kharge, Leader of the Opposition in the Lok Sabha Rahul Gandhi, and Wayanad MP Priyanka Gandhi are among the 150 dignitaries invited for the celebrations marking the centenary of the Congress session in Belgaum (now Belagavi) in 1924, which was presided over by Mahatma Gandhi.

The programme is scheduled in Belagavi for December 26 and 27. A Congress Working Committee meeting will be held in the city on the first day and a public rally in the CPED grounds on the second day.

Dignitaries will pay a visit to the Veera Soudha, the venue of the historic session, and will visit villages such as Hudali and Kanabaragi where Gandhiji spent a few days.

A statue of Gandhiji will be unveiled on the Suvarna Vidhana Soudha premises, followed by cultural programmes.

The State government has planned a separate set of year-long celebrations. A committee headed by Minister H.K. Patil has chalked out plans to hold competitions for students, exhibitions of pictures and paintings, drama and cinema shows, and *charkha* marathons. Some tableaux will go round the State.

Memorial stones will be put up in all villages and towns that Gandhiji visited.

The Belgaum session holds an important place among the Congress annual sessions, now referred to as plenary sessions, for various reasons. It was the only Congress session that Gandhiji chaired in his long public life. He reached Belgaumn on December 21, 1924, and left on December 29. He met leaders of political and social organisations and addressed meetings before and after the session.

It is believed that his focus on social service and volunteering led to the formation of the Seva Dal in Ghataprabha later.

India, Kuwait lift ties to 'strategic partnership'

The two sides sign a memorandum of understanding for exchange of defence personnel, exercises, supply of military equipment; they ink an MoU on cultural exchange and agreement on sports cooperation; Prime Minister holds discussions with Kuwaiti Amir, invites the Gulf country's investment body to 'look at new opportunities' in India

Kallol Bhattacherjee
NEW DELHI

India and Kuwait on Sunday signed a memorandum of understanding (MoU) on defence cooperation that will allow for exchange of defence personnel, joint exercises, and supply of military equipment.

The MoU was part of the outcomes firmed up during Prime Minister Narendra Modi's two-day visit to the energy-rich Gulf kingdom, which bestowed its highest honour on him.

Mr. Modi announced that the two sides had lifted the relationship to the level of "strategic partnership". The conversation between Mr. Modi and the Amir of Kuwait, Sheikh Meshal Al-Ahmad Al-Jaber Al Sabah, covered areas such as pharmaceuticals, IT, fintech, infrastructure, and security.

Earlier, India hosted the Foreign Minister of Kuwait, Abdullah Ali Al-Yahya, in New Delhi on December 3 and 4.

Economic ties

Mr. Modi met with the Prime Minister of Kuwait, Sheikh Ahmad Al-Abdullah Al-Ahmad Al-Sabah, and discussed ways to deepen economic ties.

He invited a delegation from the Kuwaiti Investment Authority and other notables in the Kuwaiti economy to visit India and "look at new opportunities in the fields of energy, defence, medical devices, pharma, foodparks," the External Affairs Ministry said in a press note.

Prime Minister Narendra Modi receiving Kuwait's highest honour from the Amir, Sheikh Meshal Al-Ahmad Al-Jaber Al Sabah. PTI

The two Prime Ministers witnessed the signing of the MoU on bilateral defence cooperation. The press note said the MoU will "institutionalize bilateral cooperation in the area of defence."

Apart from the MoU on defence, the two sides signed an MoU on cultural exchange and agreement on sports cooperation. They welcomed the recent sealing of the Joint Commission for Cooperation under which new Joint Working Groups in trade, investment, education, technology, agriculture, security and culture have been set up.

The two sides already have Joint Working Groups (JWGs) on health, manpower, and hydrocarbons.

Mr. Modi reached Kuwait on Saturday and visited the Gulf Spic Labour Camp where more than 90% of the inhabitants are from India.

Cultural connection

He also met translators Abdulla Al Baroun and Abdul Lateef Al Nesef who have translated the Ramayana and Mahabharata into Arabic. Over the decades, several Gulf and Arab countries have translated the Indian epics and the work of the two translators have added to that tradition.

"I am honoured to be conferred the Mubarak Al-Kabeer Order by His Highness the Amir of Kuwait, Sheikh Meshal Al-Ahmad Al-Jaber Al Sabah. I dedicate this honour to the people of India and to the strong friendship between India and Kuwait," Mr. Modi said after receiving the honour during the visit.

The honour is bestowed generally on Heads of state and foreign sovereigns and to members of foreign royal families as a sign of friendship. Former U.S. President Bill Clinton and King Charles were among the previous recipients of the honour.

Mr. Modi also met the Crown Prince of Kuwait Sheikh Sabah Al-Khaled Al-Hamad Al-Mubarak Al-Sabah.

Professor Zikrur Rahman, former diplomat who has served in multiple Arab countries, pointed out that Kuwait was the only Gulf Cooperation Council country that Mr. Modi had not visited earlier and the visit therefore was significant as Kuwait has maintained a friendly policy towards India over the past several decades.

"PM Modi has visited all other Gulf countries barring Kuwait and it was time that he also covered Kuwait. Starting with the end of the Cold War and the first Gulf war, Kuwait has maintained a positive attitude towards India and therefore the visit at this time will be helpful for India," said Prof. Rahman.