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IN THIS ISSUE

1. Nobel Prize in Physics 2026: IceCube Neutrino Observatory
Prelims · IceCube Neutrino Observatory
2. India's Position on Equity and CBDR-RC at Pre-COP31
GS-II · India's UNFCCC negotiating stance
3. Legislative Privilege vs Free Speech: SC Disposes Reference
GS-II · Legislative privilege vs press freedom
4. Five-Pronged GST Reform Plan Proposed by Centre
GS-III · GST administrative reforms
5. Siang Upper Multipurpose Project: Tribal Protest and Security Deployment
GS-II · Large dam protests, tribal rights
6. Surya (FSS-1): India's First Indigenous Fleet Support Ship
GS-III · Indigenous Fleet Support Ship programme
PP. Prelims Pointers
2 entity cards · Economy, Defence & Security

1. Nobel Prize in Physics 2026: IceCube Neutrino Observatory

Prelims · Prelims + Mains · IceCube Neutrino Observatory · Indian Express

Prelims — Science and Technology – developments and their applications and effects in everyday life



• NOBEL PRIZE IN PHYSICS

Through 'ghost particles' in ice, window to universe

Francis Halzen found a new way to study neutrinos, the elusive particles that can reveal the mysteries of the cosmos, under Antarctic ice sheets

Amitabh Sinha

'For decisive contributions to the IceCube Neutrino Observatory and the discovery of high-energy neutrinos of astrophysical origin'

"His idea was to use glacial ice at the South Pole to detect the incredibly elusive particles called neutrinos. The result: was the IceCube Neutrino Observatory, which can track neutrinos that originate in the distant cosmos."

FRANCIS HALZEN, 82
University of Wisconsin-Madison, Madison, US

ON WEDNESDAY
NOBEL PRIZE IN CHEMISTRY

The IceCube Neutrino Observatory at the Amundsen-Scott South Pole Station, in Antarctica. AP/ANI/NSF

'Shy' particles

Pioneer of IceCube neutrino detector wins physics Nobel

Jacob Koshy
NEW DELHI

Francis Halzen

EDITORIAL
» PAGE 6

The Indian EXPRESS

WHY IN NEWS

The 2026 Nobel Prize in Physics, announced on 6 October 2026, went to Francis Halzen, a Belgian-American physicist at the University of Wisconsin-Madison, for decisive contributions to the IceCube Neutrino Observatory and the discovery of high-energy neutrinos of astrophysical origin. The award draws attention to a two-decade-long effort to build a cubic-kilometre detector under Antarctic ice to trace cosmic neutrinos to their sources.

Why Neutrinos Are So Hard to Catch

- **Neutrinos** are sub-atomic particles produced in stellar nuclear reactions, radioactive decay, cosmic-ray interactions and energetic astrophysical events. The universe also contains a vast relic neutrino background.
- Neutrinos interact extremely weakly with matter and carry no electric charge, making them exceptionally difficult to detect.
- Being electrically neutral, they pass through dense regions of matter — including 65 billion neutrinos through a human fingernail every second — without disturbance.
- This very elusiveness makes them **scientifically valuable**: they can traverse regions of cosmic space that absorb or scatter all electromagnetic radiation, revealing otherwise inaccessible phenomena.
- Detection relies on rare interactions with matter, including nuclei and electrons, so observatories must be large and carefully shielded from background signals.

Halzen's Conceptual Breakthrough

- Halzen first presented his vision of using **South Pole glacial ice** to capture neutrinos in **1988**, recognising that the deep Antarctic ice was isolated, dark, and free from interfering radiation and signals.
- His key insight was that **light sensors (optical sensors) embedded in glacial ice** could detect flashes of **Cherenkov light** — pale blue light produced when a charged particle created in a neutrino–nucleus collision travels faster than light can travel through ice.
- The South Pole's geologically stable, undisturbed ice offered an ideal transparent medium; preliminary sensor tests were carried out before IceCube's full construction.

- Different neutrino instruments use different detection methods; IceCube records optical Cherenkov light from particles produced in neutrino interactions.

How the IceCube Instrument Works

- IceCube instruments approximately **one cubic kilometre** of Antarctic ice at the Amundsen-Scott South Pole Station. Construction of the original array was completed in **2010**.
- The original in-ice array contains **5,160 optical modules** on cables beneath the surface. Additional instruments were installed during the 2025–26 IceCube Upgrade.
- When a neutrino collides with an atomic nucleus in the ice, it produces a charged particle travelling faster than light in ice, emitting a faint **Cherenkov glow**; scientists reconstruct the neutrino's energy and direction from this glow.
- The facility became **operational in 2011** and has since continuously collected neutrino interaction data focused on high-energy astrophysical neutrinos.
- IceCube enables **multi-messenger astronomy** — studying the same cosmic event simultaneously through neutrinos, electromagnetic radiation and gravitational waves, providing a fuller picture of the universe.

Key Scientific Discoveries

- In **2013**, IceCube reported strong evidence for a flux of **high-energy neutrinos** originating beyond the Solar System.
- In **2018**, researchers traced a specific high-energy cosmic neutrino to a **blazar** — a galaxy with a supermassive black hole at its centre that fires a particle-and-radiation jet almost directly toward Earth.
- The 2018 result provided evidence linking high-energy neutrinos to the blazar TXS 0506+056; other proposed source classes remain subjects of investigation.
- Neutrino observations complement electromagnetic telescopes and help investigate violent astrophysical environments and the origins of cosmic rays.

India's Neutrino Detector Effort

- The **India-based Neutrino Observatory (INO)** is a proposed underground experiment focused on atmospheric neutrinos, including measurements relevant to neutrino properties.
- INO's initially selected site was Singara in **Tamil Nadu's Nilgiris. After forest clearance was not obtained**, Pottipuram in Theni district, **Tamil Nadu**, was selected.
- The proposed INO project has faced **environmental and implementation hurdles. It should be dis**tinguished from other Indian neutrino and antineutrino research experiments.
- D. Indumathi is a physicist at the **Institute of Mathematical Sciences**, Chennai, associated with neutrino research and the INO effort.

HIGH-YIELD FACTS

- **Nobel Prize in Physics 2026 — winner** — Francis Halzen, Belgian-American physicist, age 82, University of Wisconsin-Madison
- **Nobel citation** — 'For decisive contributions to the IceCube Neutrino Observatory and the discovery of high-energy neutrinos of astrophysical origin'
- **IceCube location** — Amundsen-Scott South Pole Station, Antarctica
- **IceCube volume** — Approximately one cubic kilometre of Antarctic ice
- **IceCube sensors** — Original array: 5,160 optical modules; completed in 2010; additional instruments installed in the 2025–26 upgrade
- **Halzen's South Pole vision first presented** — 1988
- **High-energy astrophysical neutrino evidence** — Reported by IceCube in 2013
- **India-based Neutrino Observatory (INO)** — Proposed atmospheric-neutrino experiment; jointly supported by DAE and DST, with TIFR as host institution

VALUE ADDITION

DATA YOU CAN QUOTE

Neutrinos passing through a fingernail per second — ~65 billion, per second

Original **IceCube array — 5,160 optical modules; later expan**ded through the 2025–26 upgrade

REPORTS, BODIES AND INSTRUMENTS

Nobel Committee for Physics citation, Royal Swedish Academy of Sciences, 2026

EXAMPLES FOR THE ANSWER

The detection of gravitational waves in 2015 by LIGO similarly opened a new observational window on the universe, complementing IceCube's neutrino window — illustrating how multi-messenger astronomy uses independent signal types to cross-verify cosmic events.

The 2018 IceCube tracing of a neutrino to a blazar is a precedent for using neutral particles to pinpoint astrophysical sources that charged cosmic rays cannot identify because magnetic fields deflect them — a concept applicable in questions on cosmic-ray physics and source identification.

2. India's Position on Equity and CBDR-RC at Pre-COP31

GS-II · Prelims + Mains · India's UNFCCC negotiating stance · The Hindu

Syllabus — Important International institutions, agencies and fora- their structure, mandate

Prelims — Environment: International conventions and agreements, UNFCCC process



There is no one-size-fits-all approach to climate action, India says at pre-COP31 talks

Jacob Koshy
NEW DELHI

Union Environment Minister Bhupender Yadav has called for equal attention to adaptation, mitigation, and means of implementation as the world heads towards the United Nations Climate Change Conference, or COP31 Summit, in Antalya in Türkiye in November.

The principles of equity and Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) must be upheld "in letter and spirit," Mr. Yadav said.

Addressing the Leaders' Plenary in Fiji, where he is leading India's delegation to the United Nations Framework Convention on Climate Change's (UNFCCC) pre-COP31 meetings, Mr. Yadav said there could be no "one-size-fits-all" pathway to climate action.

Bhupendra Yadav

Local studies and assessments, he said, were key to identifying emerging challenges, mitigation and adaptation measures, and the resources needed, a press statement from the Environment Ministry said. The talks in Nadi, Fiji, and on the atoll nation of Tuvalu, co-hosted by Australia, Fiji and Tuvalu, are a precursor to the COP31 in Türkiye. Referring to India's long coastline and islands, Mr. Yadav said the country understood the challenges of Pacific Island countries. Institutions such as the Indian Space Research Organisation, the National Centre for Sustainable Coastal Management, and the National Centre for Coastal Research had built expertise in coastal vulnerability assessment, shoreline change mapping, marine spatial planning, and integrated coastal management.

Shared knowledge

India also uses space-based Earth observation for shoreline monitoring, inundation assessment, cyclones, extreme weather early warning, and climate risk assessment, Mr. Yadav said, and offered to share this knowledge with Pacific partner countries.

WHY IN NEWS

India's Union Environment Minister addressed the Leaders' Plenary in Fiji at the UNFCCC pre-COP31 meetings co-hosted by Australia, Fiji and Tuvalu in Nadi, Fiji, and the atoll nation of Tuvalu. These talks serve as a preparatory forum ahead of COP31, scheduled for Antalya, Türkiye on 9–20 November 2026. India used the platform to articulate its core negotiating positions on climate equity and coastal vulnerability.

India's Core Equity Argument

- India insisted there can be **no one-size-fits-all pathway** to climate action, emphasising that national circumstances must shape each country's approach.
- The principles of **equity and Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)** must be upheld 'in letter and spirit,' according to the Environment Ministry's statement.
- India called for **equal attention to adaptation, mitigation, and means of implementation** — a formulation that pushes back against developed-country pressure to focus solely on emissions reduction.

- **Local studies and assessments** were highlighted as essential for identifying emerging challenges, appropriate measures, and resource needs — rejecting top-down uniform prescriptions.

Why India Engaged Pacific Island Nations

- India positioned its **long coastline and island territories** as grounds for shared understanding of the existential risks faced by Pacific atoll nations such as Tuvalu.
- Pacific Island Countries are among the most **climate-vulnerable states**, threatened by sea-level rise, extreme weather, and saltwater intrusion — making their concerns central to adaptation negotiations.
- The pre-COP31 meetings in Fiji and Tuvalu were **co-hosted by Australia, Fiji and Tuvalu**, signalling the Pacific's effort to shape the COP31 agenda before the conference moves to Türkiye.

Indian Institutional Expertise Offered

- **ISRO**, the **National Centre for Sustainable Coastal Management**, and the **National Centre for Coastal Research** were cited as institutions with relevant technical capacity.
- Areas of expertise include **coastal vulnerability assessment, shoreline change mapping, marine spatial planning**, and integrated coastal management.
- India also deploys **space-based Earth observation** for shoreline monitoring, inundation assessment, cyclone tracking, extreme weather early warning, and climate risk assessment.
- The Union Environment Minister offered to **share this knowledge with Pacific partner countries**, framing India's engagement as South-South technical cooperation.

What Remains Open Heading into COP31

- The tension between developed-country emphasis on **mitigation ambition** and developing-country demands for **finance and adaptation support** remains the central unresolved fault line.
- Whether **means of implementation** — technology transfer, capacity building, climate finance — will receive equal treatment alongside emissions targets is a key negotiating test for Antalya.
- India's offer of coastal technology sharing could evolve into a formal **South-South cooperation mechanism**, but no institutional framework was announced at the pre-COP meetings.

HIGH-YIELD FACTS

- **COP31 venue** — Antalya, Türkiye, 9–20 November 2026
- **Pre-COP31 co-hosts** — Australia, Fiji and Tuvalu
- **Pre-COP31 locations** — Nadi (Fiji) and Tuvalu
- **CBDR-RC full form** — Common but Differentiated Responsibilities and Respective Capabilities — a founding principle of the UNFCCC (1992)
- **UNFCCC full form** — United Nations Framework Convention on Climate Change
- **Indian space body cited** — Indian Space Research Organisation (ISRO) — for Earth observation and coastal monitoring
- **Coastal institutions cited** — National Centre for Sustainable Coastal Management and National Centre for Coastal Research

VALUE ADDITION

REPORTS, BODIES AND INSTRUMENTS

United Nations Framework Convention on Climate Change (UNFCCC), 1992 — foundational treaty establishing CBDR-RC

Paris Agreement, 2015 — Article 4 on nationally determined contributions and Article 7 on adaptation

EXAMPLES FOR THE ANSWER

The CBDR-RC principle was central to the 2009 Copenhagen deadlock, where developed and developing nations clashed over legally binding emission cuts — illustrating how equity framing can shape or stall multilateral outcomes.

The Australia–Tuvalu Falepili Union treaty, signed in November 2023 and effective from August 2024, established a special pathway enabling Tuvaluans to live, work and study in Australia. It is separate from the PACER Plus trade agreement.

3. Legislative Privilege vs Free Speech: SC Disposes Reference

GS-II · Prelims + Mains · Legislative privilege vs press freedom · The Hindu

Syllabus — Parliament and State Legislatures — structure, functioning, conduct of business, powers, privileges and issues arising out of these

Prelims — Polity — Legislative Privileges, Article 194, Constitutional Benches



Privilege vs free speech case in SC disposed of after two decades

Krishnadas Rajagopal
NEW DELHI

The seven-judge Bench disposed of the long-pending reference in less than half-an-hour

After a pendency of well over 20 years in the Supreme Court, a seven-judge Bench headed by Chief Justice of India (CJI) Surya Kant took less than half-an-hour on Tuesday to dispose of as infructuous a reference related to questions linked to legislative privilege being used to choke free speech, arising out of a 2003 Tamil Nadu Assembly resolution to arrest editors of *The Hindu* for an editorial criticising then Chief Minister Jayalalithaa.

The Bench headed by Chief Justice of India Surya Kant found no point in going for lengthy hearings after learning from the Tamil Nadu Legislative Assembly counsel, senior advocate Raju Ramachandran, that the resolution against the newspaper had been withdrawn in 2004.

The Constitution Bench said the withdrawal of the resolution escaped the notice of the Supreme Court.

On the petitioners' suggestion, the Court left the larger and substantial questions of law open for a future occasion in an appropriate case.

On October 5, the very eve of the Constitution Bench hearing, Mr. Ramachandran, backed by Attorney General of India R. Venkataramani and Solicitor General Tushar Mehta, had brought the fact of the withdrawal to the attention of Chief Justice of India.

Mr. Ramachandran had submitted that the fact of the withdrawal was not noticed by the court nor recorded in its order referring the case to the seven-judge Bench a couple of months ago in August. He had said the reference would only be an academic exercise now.

Chief Justice Kant had said the court did not want to get into a prolonged academic exercise, particularly when several other part-heard matters were pending.

The case goes back to 2003 when *The Hindu* had published the editorial, prompting the Assembly Speaker at the time to pass a resolution in the House accusing the daily of having "distorted the proceedings of the Assembly, commented contrary to the events in the Assembly".

The resolution had said the comments made in the editorial "amounts to breach of privilege of the entire House" under Article 194 of the Constitution, which guarantees freedom of speech and immunities to Members of State legislatures.

WHY IN NEWS

A seven-judge Constitution Bench of the Supreme Court, headed by the Chief Justice of India, disposed of a 20-year-old reference on 6 October 2026, as infructuous after learning that the Tamil Nadu Legislative Assembly's 2003 resolution against The Hindu newspaper had been withdrawn in 2004. The reference had arisen from the Tamil Nadu Assembly invoking legislative privilege to threaten the arrest of newspaper editors over an editorial criticising the then Chief Minister.

The Dispute That Reached the Supreme Court

- In **2003**, the Tamil Nadu Legislative Assembly passed a resolution accusing The Hindu of 'distorting the proceedings of the House' and 'commenting contrary to events in the Assembly' in an editorial critical of the then Chief Minister.
- The Assembly Speaker invoked **Article 194** of the Constitution — which guarantees freedom of speech and immunities to Members of State Legislatures — framing the editorial as a 'breach of privilege of the entire House'.
- A resolution to **arrest the newspaper's editors** was passed, raising a direct clash between legislative privilege and freedom of the press.
- The matter was referred to a **seven-judge Constitution Bench** given the substantial questions of law involved, where it remained pending for over two decades.

Why the Court Disposed of It Without Deciding

- The Bench learned from the Tamil Nadu Legislative Assembly's counsel that the resolution against the newspaper had been **withdrawn in 2004**, a fact that had escaped the notice of the Supreme Court when it referred the case to the larger bench.
- The withdrawal had not been recorded in the court's order referring the matter to the seven-judge Bench; the Constitution Bench was itself informed of the withdrawal only **in August 2026**.
- The Chief Justice of India noted the court had no interest in a **'prolonged academic exercise'**, particularly with several other part-heard matters pending before it.

- The Bench disposed of the reference as **infructuous** in less than half an hour on the day of the Constitution Bench hearing.
- On the petitioners' suggestion, the Court **left the larger and substantial questions of law open** for decision in an appropriate future case.

The Constitutional Provision at Stake

- **Article 194** of the Constitution confers on State Legislature members freedom of speech within the House and immunity from court proceedings for anything said or any vote cast.
- The provision also extends **privileges of the House** to protect its proceedings — a power State Assemblies have used to initiate breach-of-privilege motions against the press and citizens.
- The unresolved question is how far **legislative privilege** can be stretched to restrict external commentary or criticism, particularly by the press, without violating fundamental rights.
- Article 105 is the **analogous provision for Parliament.** The Supreme Court has considered the scope of legislative privilege in cases including Sita Soren (2024); the present reference did not resolve its specific press-freedom questions.

What Remains Unresolved

- The Supreme Court expressly declined to answer whether a State Legislature can invoke privilege to **curtail press freedom**, leaving the constitutional question open for a future case with live facts.
- The Bench left the **substantial questions in this reference open for determination in** an appropriate future case.
- Future disputes will be considered against existing constitutional provisions and legislative-privilege jurisprudence; this disposal did not create a new ruling on the merits.

HIGH-YIELD FACTS

- **Bench strength** — Seven judges in this case; Article 145(3) prescribes a minimum of five for substantial constitutional-interpretation questions
- **Article invoked by Assembly** — Article 194 — freedom of speech and privileges of State Legislature members
- **Year of Tamil Nadu Assembly resolution** — 2003
- **Year resolution was withdrawn** — 2004
- **Pendency of reference** — Over 20 years in the Supreme Court
- **Hearing duration for disposal** — Less than half an hour
- **Analogous Parliament provision** — Article 105 — powers, privileges and immunities of Parliament and its members
- **Attorney General at hearing** — R. Venkataramani; Solicitor General — Tushar Mehta

VALUE ADDITION

REPORTS, BODIES AND INSTRUMENTS

Article 194, Constitution of India — privileges of State Legislature members and Houses

Article 105, Constitution of India — privileges of Parliament members and Houses

Article 19(1)(a), Constitution of India — right to freedom of speech and expression

EXAMPLES FOR THE ANSWER

The first Searchlight judgment, delivered in December 1958 and reported in 1959, examined Article 194(3) privilege and freedom of speech under Article 19(1)(a). Legislative privilege remains subject to constitutional interpretation by the courts.

In Sita Soren v. Union of India (2024), a seven-judge Bench held that Articles 105(2) and 194(2) do not grant immunity from bribery prosecution, overruling the contrary holding in P.V. Narasimha Rao (1998).

A useful distinction for answers is between protecting legislative speech and votes, and claiming immunity for independently criminal conduct. Sita Soren illustrates why these are not interchangeable.

4. Five-Pronged GST Reform Plan Proposed by Centre

GS-III · Prelims + Mains · GST administrative reforms · The Hindu

Syllabus — Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment

Prelims — Prelims – Indian Economy: Taxation, GST



Centre moots 5-pronged reform plan for GST

At the moment, 61% of taxpayers receive their GST registration within three working days without the need for a tax officer's involvement, an official in the Finance Ministry said. The Centre will now propose a streamlining of processes for the remaining taxpayers so as to avoid "unnecessary queries" and avoid rejections.

Further, the Centre will propose an upgrade of the existing invoice management system to match invoices in such a manner that corrections and changes made to an invoice by the seller are recorded at each step and automatically reflected in the buyer's invoice.

"This would avoid a large number of notices issued to taxpayers due to invoice mismatches," the official explained. "The aim is to reduce these mismatch notices to zero."

Businesses complain that their input tax credits are often held up from being credited to their accounts because their suppliers have not filed their returns.

The Centre is now trying to address this issue. "A buyer who holds the invoice, has received the goods and has paid his supplier in full, including the tax, should keep their credit," the official said. "It should not depend on whether someone further up the chain has paid or not," he added.

Further, the Centre is proposing that ordinary business costs, that currently do not get refunded as ITC, should be brought into the ITC system. In addition, taxes paid on input services , earlier not eligible for ITC, will be proposed to be made eligible.

Refunds are also proposed to be acknowledged within 10 days, with 90% of the refund amount to be released on the basis of a 'risk check' using data obtained automatically from the Customs department and the banking system.

The Centre will also propose classifying testing, repair, certification, and research done in India for a client abroad to be classified as an export of services even if the goods stay within the country.

"For example, companies might send cars to India to be tested, which are then destroyed after the testing and not sent back," the official explained. "That will now count towards services exports as far as tax treatment is concerned."

Another proposal that could significantly reduce paperwork for small businesses is the one regarding where they are registered. At the moment, a seller needs a registered place of business in every State they sell in, which is not practical for most small sellers and thus limits them to their home State.

The Centre will propose that sellers be allowed to register once in their home State and, once verification is done, be granted access to sell in the rest of the country.

Centre plans 5-pronged reform as GST panel meets tomorrow

T.C.A. Sharad Raghavan
NEW DELHI

The Centre will propose a five-pronged plan for the next set of reforms to the Goods and Services Tax (GST) system at the upcoming GST Council meeting on Thursday, according to sources in the Union Finance Ministry.

These reforms are aimed at automating and easing a lot of the current administrative bottlenecks in the GST system, and reducing the compliance burden, especially for small businesses. Rates, including the GST on the Merchant Discount Rate (MDR) on UPI transactions, will not be on the agenda.

The five-pronged proposal covers process reforms, structural reforms, ease of living and doing business, exports of services, and e-commerce.

Some of the key changes proposed involve automatic invoice matching between buyers and sellers, reducing paperwork around claiming input tax credits (ITC), reducing the number of times small taxpayers have to file returns, and removing multi-state registrations for small businesses looking to sell across the country.

Relief measures

The Centre will be sharing a concept note with the States on allowing small taxpayers who supply only to consumers to file their returns once a year instead of once a month as is currently the case.

Another major demand of service providers is to widen the net of what constitutes an export.

At the moment, providing a service to a foreign client through a branch abroad is not counted as an export of service. The Centre is proposing to amend this to categorise such business as an export. The proposals are to be discussed at the GST Council meeting and, if approved, will be implemented in a staggered manner to give businesses time to adapt to the new systems.

CONTINUED ON » PAGE 10

Reform proposal

The five-pronged plan aims at automating and easing administrative bottlenecks in the GST system

FOCUS ON:
- Process reforms
- Structural reforms
- Ease of living and doing business
- Export of services
- E-commerce

- Key beneficiaries will be small businesses, inter-State businesses, and service exporters
- The proposals will be discussed at the GST Council meeting and, if approved, will be implemented in a staggered manner

WHY IN NEWS

According to The Hindu report, the Union Finance Ministry is set to place a five-pronged GST reform plan before the GST Council at its upcoming meeting. The proposals aim to automate invoice matching, ease ITC claims, reduce compliance burden for small businesses, and expand the definition of service exports. If approved, the reforms will be implemented in a staggered manner.

The Five Reform Pillars

- **Process reforms**: Streamlining GST registration so that the 61% of taxpayers who currently get registered within three working days without officer involvement rises further, and reducing unnecessary rejections for the rest.
- **Structural reforms**: Upgrading the invoice management system so that any correction made by a seller is automatically reflected in the buyer's invoice, with the stated aim of reducing **mismatch notices to zero**.
- **Ease of living and doing business**: A reported annual-return option for small consumer-facing taxpayers, alongside measures to address ITC blockages. Eligible small taxpayers already have quarterly filing options under QRMP.
- **Exports of services**: Classifying testing, repair, certification, and research done in India for a foreign client as **exports of services** even when goods stay within the country; also counting service delivered through a foreign branch as an export.
- **E-commerce**: The report describes a proposal to simplify home-State registration and inter-State access for small sellers. Existing registration obligations generally rel**ate** to States from which taxable supplies are made, not every destination State.

Input Tax Credit Overhaul

- **Blocked ITC on business costs**: Ordinary business expenditures currently excluded from the ITC system are proposed to be brought within it, expanding the credit base for businesses.
- **ITC on input services**: The report proposes relief for currently excluded costs. Input services can already qualify for ITC under existing law, subject to eligibility conditions and blocked-credit provisions.
- **Buyer-protection principle**: A buyer who holds the invoice, has received goods, and has paid the supplier in full (including tax) should retain ITC regardless of whether the supplier has filed returns — a significant shift from current practice.
- **Faster refunds**: Refunds to be acknowledged within **10 days**, with 90% of the refund amount released on the basis of a risk check drawing on data from the Customs department and the banking system automatically.

Who Benefits and What Is Not on the Table

- **Key beneficiaries** identified are small businesses, inter-State businesses, and service exporters — groups that face the heaviest administrative friction under the current system.
- The report says **GST on Merchant Discount Rate (MDR) on UPI transactions** will not be on the agenda. This does not by itself establish that every rate-related issue is excluded.
- The Union Finance Ministry will share a **concept note** with States on the annual-return option for small consumer-facing taxpayers before formal adoption.
- If approved by the GST Council, the changes will be implemented **in a staggered manner** to give businesses time to adapt.

HIGH-YIELD FACTS

- **Taxpayers auto-registered in 3 days** — 61% of GST taxpayers currently receive registration within three working days without tax officer involvement
- **Reported** refund proposal — Acknowledgment within 10 days; 90% provisional release based on a risk check
- **Current return options** — Eligible taxpayers up to Rs 5 crore may file quarterly under QRMP with monthly tax payment; the report proposes further simplification for small consumer-facing suppliers
- **GST Council** — Constitutional body under Article 279A; chaired by the Union Finance Minister with State finance ministers as members
- **Five pillars** — Process reforms, structural reforms, ease of living and doing business, exports of services, e-commerce
- **Multi-State registration — Gen**erally linked to States from which taxable supplies are made; the report proposes simpler arrangements for small sellers

VALUE ADDITION

REPORTS, BODIES AND INSTRUMENTS

Article 279A of the Constitution of India — legal basis for the GST Council

EXAMPLES FOR THE ANSWER

The proposed buyer-protection approach raises a policy question: how should GST balance an eligible recipient's credit claim with enforcement against a defaulting supplier? The proposal should not be confused with an automatic change in current ITC law.

Administrative simplification must distinguish registration requirements, return filing, place-of-supply rules and tax collection. A change in one does not automatically eliminate the others.

5. Siang Upper Multipurpose Project: Tribal Protest and Security Deployment

GS-II · Prelims + Mains · Large dam protests, tribal rights · The Hindu

Syllabus — Development processes and the development industry — the role of NGOs, SHGs, various groups and associations, donors, charities, institutional and other stakeholders

Prelims — Geography — rivers of India; Environment and ecology — wildlife habitats



Anti-dam protests: withdraw forces from Siang belt, demands Arunachal youth body

The Hindu Bureau
GUWAHATI

A tribal youth body in Arunachal Pradesh has asked the government to withdraw the Central Armed Police Forces and State Police personnel deployed to allegedly quell protests against the pre-feasibility report and related surveys for a proposed mega hydropower project.

The All Adi Youth Association condemned the situation arising out of clashes between the protesters and security personnel at various places in Siang and Upper Siang districts over the past few days.

The association's secretary, Okut Taki, told journalists in the State's capital, Itanagar, on Tuesday that the "militarisation" of the Siang river belt has brought law-and-order concerns for locals.

Pointing to the protests and frequent clashes, he rejected the Bharatiya Janata Party government's claim that most families who would be affected by the Siang Upper Multipurpose Project favoured the pre-feasibility report.

The National Hydroelectric Power Corporation Limited is pursuing the Siang Upper Multipurpose Project, estimated to generate at least 11,000 megawatt (MW) of hydropower.

The Centre and the State government insist that the project would counter the 60,000 MW Medog hydropower station that China is building on the Yarlung Tsangpo, which flows into Arunachal Pradesh as the Siang.

The Siang meets the Dibang and Lohit further downstream in Assam to form the Brahmaputra.

"The Adis have traditionally resolved disputes through customary institutions such as the Kebang. The deployment of heavy security forces is not the appropriate way to address differences over the project," Mr. Taki said.

Anti-dam protesters say the Siang Upper Multipurpose Project would destroy swathes of wildlife habitats. SPECIAL ARRANGEMENT

'Not all in favour'

The association alleged that the memoranda of understanding the government signed with the villagers "in favour" of the pre-feasibility report did not reflect the views of all 27 villages that will be affected by the project.

Anti-dam protesters say the Siang Upper Multipurpose Project would spell disaster for the Adi community and destroy swathes of forestlands and wildlife habitats.

WHY IN NEWS

According to The Hindu report, the All Adi Youth Association has demanded withdrawal of Central Armed Police Forces and State Police deployed in Siang and Upper Siang districts of Arunachal Pradesh, where clashes have broken out between protesters and security personnel over the past few days. The protests concern the pre-feasibility report and survey work for the Siang Upper Multipurpose Project, a proposed mega hydropower project being pursued by NHPC. The dispute has sharpened following the government's claim that most affected families support the project, which the association contests.

What the Protest Is About

- The **All Adi Youth Association** demanded that Central Armed Police Forces and State Police be withdrawn from the **Siang and Upper Siang districts**, calling their presence a 'militarisation' of the Siang river belt.
- Protests target the **pre-feasibility report and related surveys** for the Siang Upper Multipurpose Project, not yet a sanctioned project but at the survey stage.
- The association alleged that memoranda of understanding signed with villagers 'in favour' of the report do **not represent all 27 villages** that will be affected, raising a question of genuine consent.
- Protesters warn the project would **destroy Adi community livelihoods**, forestlands, and wildlife habitats across the Siang belt.

The Project and Its Strategic Justification

- **NHPC (National Hydroelectric Power Corporation Limited)** is pursuing the Siang Upper Multipurpose Project, estimated to generate at least 11,000 MW of hydropower.
- The Union government and the State government present the project as a counter to China's **Medog hydropower station** of 60,000 MW being built on the Yarlung Tsangpo upstream.
- The **Yarlung Tsangpo** enters Arunachal Pradesh as the Siang, then meets the Dibang and Lohit rivers downstream in Assam to form the **Brahmaputra**, making upstream damming a major transboundary concern.
- The strategic argument frames the dam as protecting downstream flow control for India against potential Chinese hydrological leverage.

Contested Consent and the 27 Villages

- The State government claimed **most affected families favour** the pre-feasibility report; the association's secretary publicly rejected this, citing ongoing protests and clashes as evidence to the contrary.

- The association alleged that MoUs were signed without reflecting the **collective will of all 27 villages** that fall within the project's impact zone.
- The dispute raises questions about meaningful community participation, recognition of **f**orest rights and the safeguards applicable to land acquisition, rehabilitation and environmental clearance.
- The association's secretary specifically said the **Kebang** — the traditional customary institution of the Adi people — is the appropriate forum for dispute resolution, not security deployment.

Cultural and Ecological Framing by the Adi Community

- The **Adi community** historically resolves disputes through the **Kebang**, a customary institution; the association argues security force deployment bypasses this legitimate governance mechanism.
- Protesters stress that the project would 'spell disaster' for the Adi community's way of life, destroying **swathes of forestland and wildlife habitats**.
- The Siang river belt is ecologically sensitive; the Siang is a **braided, sediment-heavy river system** whose natural flow regime sustains downstream agriculture and biodiversity in Assam as well.
- The dispute illustrates tensions between **customary tribal governance** and State-led infrastructure. Arunachal Pradesh is not covered by the Fifth or Sixth Schedule arrangements discussed elsewhere in India.

HIGH-YIELD FACTS

- **Protesting body** — All Adi Youth Association, a tribal youth body in Arunachal Pradesh
- **Districts affected** — Siang and Upper Siang districts, Arunachal Pradesh
- **Project developer** — National Hydroelectric Power Corporation Limited (NHPC)
- **Proposed capacity** — At least 11,000 MW (Siang Upper Multipurpose Project)
- **Chinese project reference** — Medog hydropower station on Yarlung Tsangpo — 60,000 MW
- **River system** — Yarlung Tsangpo (Tibet) → Siang (Arunachal Pradesh) → joins Dibang and Lohit → Brahmaputra (Assam)
- **Adi customary institution** — Kebang — traditional dispute-resolution body of the Adi people
- **Villages in impact zone** — 27 villages identified as affected by the project

VALUE ADDITION

REPORTS, BODIES AND INSTRUMENTS

Forest Rights Act, 2006 — Recognition of forest rights and safeguards against displacement; applicable project-clearance requirements must be considered separately

PESA, 1996 — A comparative framework for Fifth Schedule areas, requiring consultation before land acquisition and rehabilitation; it does not apply to this Arunachal project

EXAMPLES FOR THE ANSWER

The Narmada Bachao Andolan against the Sardar Sarovar Dam illustrates how large hydropower projects in tribal areas generate prolonged consent disputes that reach the Supreme Court (Narmada Bachao Andolan v. Union of India, 2000), a precedent for judicial scrutiny of rehabilitation and consent processes.

Bhutan's Chukha and Tala hydropower projects on the Wang Chhu demonstrate that Himalayan river damming can reshape downstream hydrology across international borders — usable in answers on transboundary river management and India's neighbourhood water diplomacy.

6. Surya (FSS-1): India's First Indigenous Fleet Support Ship

GS-III · Prelims + Mains · Indigenous Fleet Support Ship programme · The Hindu

Syllabus — indigenisation of technology and developing new technology

Prelims — General Science and Technology — defence technology and indigenisation



'Beyond self-reliance': Rajnath flags off *Surya*, India' first indigenous fleet support ship

V. Kamalakara Rao
VISAKHAPATNAM

Defence Minister Rajnath Singh launched the Navy's first indigenous fleet support ship (FSS-1), named *Surya*, and laid the keel for the fifth vessel of the series, FSS-5, at Hindustan Shipyard Limited (HSL) in Visakhapatnam on Tuesday.

The ceremony was attended by Chief of the Naval Staff Admiral Krishna Swaminathan, Defence Secretary Rajesh Kumar Singh, Secretary (Defence Production) Sanjeev Kumar, Flag Officer Commanding-in-Chief of the Eastern Naval Command Vice Admiral Sanjay Bhalla, HSL CMD Rear Admiral C. Raghuram, and other dignitaries.

The Minister urged Indian shipyards to look beyond self-reliance towards global competitiveness, aiming to serve international markets, build a presence in marine technology, and provide advanced ship repair services.

The massive Fleet Support Ship (FSS) initiative is backed by a landmark ₹19,000-crore contract between the Ministry of Defence and HSL to construct five indigenous auxiliary vessels.

The FSS platform, with 82% indigenous content, serves as a floating supply powerhouse, engineered to sustain protracted, high-intensity naval engagements and battle groups far from home ports.

Its internal storage holds up to 20,000 tonnes of high-speed diesel, 2,500 tonnes of aviation turbine fuel, fresh water, alongside dry cargo containers for ammunition and spares. It can simultaneously transfer fuel, stores, and personnel to multiple warships to maintain continuous high-seas deployment.

Rajnath Singh addressing the gathering at the launch of the fleet support ship, Surya, in Visakhapatnam on Tuesday. V. RAJU

Massive overhaul

To execute this mega-project, HSL underwent a massive infrastructural overhaul, highlighted by the inauguration of its newly modernised Slipway No. 4 and a 300-tonne Goliath crane. These upgrades expand covered building dock capacity to 80,000 DWT, enabling construction up to 45,000 DWT. Incorporating 82% indigenous content, the FSS programme secures strategic autonomy and reinforces Aatmanirbhar Bharat Abhiyan, the mission to make India self-reliant.

WHY IN NEWS

Defence Minister Rajnath Singh launched Surya (FSS-1), India's first indigenous Fleet Support Ship, at Hindustan Shipyard Limited in Visakhapatnam on 6 October 2026. He also laid the keel of FSS-5. The five-ship programme is covered by the approximately ₹19,000-crore contract signed in August 2023.

What the Fleet Support Ship Does

- The **FSS platform** is a floating supply powerhouse designed to sustain protracted, high-intensity naval engagements and battle groups far from home ports.
- According to The Hindu report, planned storage includes up to 20,000 tonnes of high-speed diesel and 2,500 tonnes of aviation turbine fuel, along with fresh water and dry cargo for ammunition and spares.
- The **ships are designed to replenish warships** with fuel, water, stores and other supplies at sea, reducing the need for repeated returns to port.
- The Hindu reports **82% indigenous content** for the platform, linking the programme to domestic shipbuilding and the Aatmanirbhar Bharat framework.

The Industrial Contract and Shipyard Upgrade

- The programme rests on a **₹19,000-crore contract** between the Ministry of Defence and Hindustan Shipyard Limited (HSL) to construct five indigenous auxiliary vessels.
- To execute the order, HSL underwent a **massive infrastructural overhaul**, including inauguration of a newly modernised Slipway No. 4 and a 300-tonne Goliath crane.
- The upgraded Slipway-4 can build and launch ships up to 45,000 DWT. HSL separately has an existing **covered building dock rated for vessels up to 80,000 DWT**.
- The investment expands HSL's existing shipbuilding and repair capabilities and supports its ambitions in domestic and **international markets**.

Strategic Significance for Naval Reach

- Before FSS-1, India lacked an **indigenously built replenishment-at-sea vessel** of this scale, limiting blue-water endurance of carrier battle groups.
- The Union Defence Minister framed the programme as moving **'beyond self-reliance towards global competitiveness'**, signalling export ambitions in marine technology.
- Once inducted, the five ships will strengthen indigenous fleet logistics and support sustained naval deployments. Launch is a construction milestone and is distinct from commissioning into service.

- The programme is intended to improve operational reach in the **Indo-Pacific** and reduce dependence on frequent port replenishment.

HIGH-YIELD FACTS

- **Ship name** — FSS-1 named Surya, launched at Hindustan Shipyard Limited, Visakhapatnam
- **Series size** — Five Fleet Support Ships (FSS-1 to FSS-5) under one contract; keel of FSS-5 laid at the same ceremony
- **Contract value** — ₹19,000 crore between Ministry of Defence and HSL
- **Indigenous content** — 82%, as reported by The Hindu
- **Reported fuel storage** — Up to 20,000 tonnes diesel and 2,500 tonnes aviation fuel, according to The Hindu
- **HSL capacity** — Upgraded Slipway-4: up to 45,000 DWT; separate existing covered building dock: up to 80,000 DWT
- **New infrastructure at HSL** — Modernised Slipway No. 4 and a 300-tonne Goliath crane inaugurated
- **Naval Staff present** — Chief of the Naval Staff Admiral Krishna Swaminathan attended the launch ceremony

VALUE ADDITION

REPORTS, BODIES AND INSTRUMENTS

Aatmanirbhar Bharat Abhiyan — Government of India policy framework for defence self-reliance

EXAMPLES FOR THE ANSWER

The US Navy's Lewis and Clark-class dry cargo and ammunition ships supply fuel, ammunition, food, repair parts and other stores to ships at sea, illustrating how replenishment supports fleet endurance.

China's commissioning of the Type 901 fast combat support ship in 2017 demonstrated how replenishment-at-sea capability is a prerequisite for blue-water naval power projection, a benchmark India is now addressing indigenously.

Prelims Pointers

ECONOMY

SME Growth Fund [Prelims - Economy]

Union Cabinet approved ₹10,000-crore central government funding to set up the SME Growth Fund.

- Announced in **Union Budget 2026–27; Cabinet approved a ₹10,000-crore government commitment on 6 October 2026**.
- **Government Commitment ₹10,000 crore** towards the SME Growth Fund.
- **Objective** Catalyse growth-oriented equity capital for India's SMEs across manufacturing, services, technology and strategic value chains.
- **Primary Focus** Most allocations will target manufacturing-focused SMEs; the fund will also consider SMEs in Tier-II and Tier-III industrial clusters.
- **Gap Addressed** Existing equity funds focus on early-stage micro enterprises; SME Growth Fund targets structural equity gap for scale-up.

The Hindu

DEFENCE & SECURITY

Chief of the Air Staff – Appointment of Air Marshal Ashutosh Dixit [Prelims - Defence]

Air Marshal Ashutosh Dixit appointed as the next Chief of the Air Staff, effective the afternoon of 31 October 2026, in the rank of Air Chief Marshal.

- **Designation** To become the **29th Chief of the Air Staff** of the Indian Air Force.
- **Taking Charge** Takes over on 31 October 2026, succeeding Air Chief Marshal Amar Preet Singh on his retirement.
- **Previous Role**s Vice-Chief of the Air Staff; Chief of Integrated Defence Staff to the Chairman, Chiefs of Staff Committee (CISC).
- **Flying Experience** Fighter pilot with 3,500+ hours on Mirage-2000, MiG variants, Jaguar, IL-78, Hawk, and **Tejas**.
- **Key Operations** Participated in Operation Safed Sagar, Operation Rakshak, and Operation Sindoor.
- **Awards** Recipient of Vayu Sena Medal (2006), Vishisht Seva Medal (2011), Ati Vishisht Seva Medal (2023), Param Vishisht Seva Medal (2026).

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