

# NEWS TODAY

## Study finds Indian Astronomical Observatory (IAO) in Hanle, Ladakh potentially an ideal site for Satellite-based Quantum Communications

Satellite-based Quantum Communications including Quantum Key Distribution (QKD) offer a promising approach for quantum communications.

- Along with using **Quantum signals**, it works at **Tera Hertz (Hz) frequency**, compared to well-established satellite-based communication that works in **Mega or Giga Hz**.
- However, choosing suitable site for sending quantum signals through the **multi-layered and complex Earth's atmosphere** with minimum losses forms a crucial part.

### Reasons for suitability of Hanle

- **Suitable Atmospheric Conditions:** Hanle is a **dry, cold desert** with winter temperatures reaching as low as **-25 to -30 deg. C**.
  - ⊕ Has a **lower level of atmospheric water vapour and oxygen concentrations**.
- **Suitable Natural Setting:** For establishing **ground stations** for long distance quantum communication.
- **Lesser signal loss (44 dB):** When compared to the other two best sites studied -**Mt Abu (47dB)**, and **Nainital (48dB)**.

### About Quantum Communication and QKD

- Based on the **laws of quantum physics** that uses **Qubits or Quantum bits** (particles which are mainly photons of lights) for **transmitting data**.
- Quantum particles exhibit the property of **Quantum entanglement** and **Superposition**, enabling them to exist in **multiple states (0s and 1s) simultaneously**.
  - ⊕ This offers **data security** as information **cannot be accessed or cloned** without tampering the quantum state.
- **QKD**, refers to a **secure communication method** for **exchanging encryption keys** known only to shared parties.

## Higher Global Mean Temperature in 2023 linked to declining Low-altitude Cloud cover: Study

A recent study published in journal 'The Science' reveals that, **Global mean temperatures in 2023** reached nearly **1.5 degrees Celsius** above **pre-industrial levels**, **0.2°C** of this rise may be attributed to **declining low-altitude cloud cover**.

### Key Findings of the Study

- Low-altitude cloud cover, which plays a crucial role in cooling the planet by reflecting sunlight back into space, globally **fell by 1.5% in 2023**, continuing a decade-long decline of 1.27%.
  - ⊕ This reduction has caused a measurable drop in planetary **albedo** – **the proportion of solar radiation reflected into space after interacting with Earth's atmosphere and surface**.
- Decline in cloud cover was most **pronounced in the northern mid-latitudes and tropical oceans, particularly in the Atlantic region**.
- Further, **~15% of the albedo decline is linked to the loss of Arctic snow and sea ice**, which are vital for reflecting sunlight.
- **Reasons for decline in cloud cover:** Could be likely explained by lower concentrations of anthropogenic aerosols in the atmosphere, especially due to stricter regulations on marine fuel.
  - ⊕ **Aerosols** are small particles suspended in the atmosphere and are known to influence climate, weather, health, and ecology.

#### Low altitude clouds

- They form within **2km of the Earth's surface**.
- They are **excellent reflectors of short waves**, but **don't stop long-wave energy** from escaping to space.
- **2 main types: Stratus** (develop horizontally), and **Cumulus** (develops vertically).

#### High altitude clouds

- They form above **6km from the mean sea level in cold atmospheric layers**, and also acts like a **blanket that traps heat** below.
- They are often **thin** and are **not good at reflecting short waves**, but are **very good at blocking long waves**.
- **3 main types - Cirrus, Cirrostratus, and Cirrocumulus**.

## Union Railways Minister inspected technological systems for enhancing overall Railway operations

The systems, namely, **Road Cum Rail Inspection Vehicle (RCRIV)** and **Integrated Track Monitoring System (ITMS)** would improve the health of railway tracks offering better operational outcomes.

### About RCRIV and ITMS

- **RCRIV:** A versatile machine to **inspect railway tracks** with precision and efficiency, operating seamlessly on both road and rail.
  - ⊕ **Features:** **Advanced cameras** and **sturdy wheels**, enabling continuous recording of track conditions for up to 15 days.
- **ITMS:** Installed on Track Recording Cars (TRCs), uses advanced technology to **monitor** and **measure track parameters** at speeds ranging from 20 to 200 kmph.
  - ⊕ **Features:** contactless monitoring with **laser sensors, high-speed cameras, and LiDAR** for precise data collection.
    - ◆ Enables **real-time reporting of structural defects**, provides real-time alerts to trackmen for quick response.

### Key Concerns with Railway Safety

- **Signalling Errors:** Recent accident involving **Kanchenjunga Express (June, 2024)** occurred due to non-functional automatic signalling system installed on the route.
- **Shortage of Safety Staff:** More than 1.5 lakh (out of 10 lakh sanctioned posts) under safety category are vacant adding to the high work pressure.
- **Human Error:** Lapses on the part of the staff including poor maintenance work, non-observance of safety rules, etc.

### Some Measures taken to Enhance Safety of Railways

- **Rashtriya Rail Sanraksha Kosh (RRSK):** Introduced in 2017-18 to replace, renew, and upgrade critical safety asset.
- **Electrical/Electronic Interlocking Systems:** With centralized operation of points and signals to eliminate accidents caused by human error.
- **Kavach:** Indigenously developed **Automatic Train Protection (ATP)** system.
  - ⊕ It assists loco pilots by **automatically applying brakes** and **ensures safe operation during adverse weather conditions**.

## Top Leaders of Indian and Bhutan discusses key Areas of Cooperation

Recently, on an official visit of the King of Bhutan, Prime Minister of India reaffirmed commitment to enduring friendship and cooperation between the two countries, ensuring support for Bhutan's socio-economic development.

### Key outcomes : Joint Statement on Official visit

- **Projects and initiatives:** King of Bhutan highlighted his vision for **Gelephu Mindfulness City (GMC) Special Administrative Region**, and prospects of India and Bhutan working together on the project.
  - ⊕ **GMC in Bhutan**, envisioned by Bhutan King, is an **innovative urban development project that integrates economic growth with mindfulness, holistic living, and sustainability**.
- **Energy Cooperation:** Leaders reiterated the importance of cooperation in the hydropower sector and agreed on the need for early conclusion of the **Punatsangchhu-I hydro power project** and noted progress on the 1020 MW Punatshangchhu-II hydro power project.
- **Connectivity and Infrastructure:** Opening of the **Integrated Check Post at Darranga** was acknowledged as beneficial for tourism and economic activity in eastern Bhutan.
- **Cooperation in Space and STEM:** Leaders welcomed progress made in implementation of Joint Plan of Action for cooperation in Space sector and expressed satisfaction on increased collaboration in the field of education, with emphasis on STEM disciplines.

### India - Bhutan Relations

- **Treaty of Friendship:** The foundational framework is the **Treaty of Friendship and Cooperation signed in 1949**, renewed in February 2007.
- **Trade and Economic Ties:** India is Bhutan's top trade partner, with trade nearly tripling **from USD 484 million in 2014-15 to USD 1606 million in 2022-23**.
- **Development Partnership:** India has been a principal development partner since the early 1960s, contributing significantly to Bhutan's Five-Year Plans.
- **Defence and Security:** India supports Bhutan's claims on **Doklam tri-junction** against China.



## RBI allows SFBs to extend Credit Line through UPI

Reserve Bank of India (RBI) has recently decided to permit **Small Finance Banks (SFBs)** to **extend pre-sanctioned credit lines through Unified Payment Interface (UPI)**.  
**Credit Line through UPI by SFBs**

- Under this facility, **payments through a pre-sanctioned credit line** issued by a Bank to individuals, with prior consent of the individual customer, **are enabled for transactions using UPI System**.
  - Previously, in **September 2023**, RBI allowed operations of **pre-sanctioned credit limits through UPI by Scheduled Commercial Bank** to individuals.
- Significance:** Aims to deepen **financial inclusion** and **enhance formal credit**, particularly for 'new to credit' customers.

### About SFBs

- Origin:** Announced in **Union Budget 2014-15**.
- Objective:** To further financial inclusion by -
  - Provision of savings** vehicles primarily to **unserved and underserved sections of the population**, and
  - Supply of credit** to small business units; small and marginal farmers; micro and small industries; and other unorganised sector entities, through **high technology-low cost operations**.
- Registration:** As a **public limited company** under **Companies Act, 2013**.
- Licensed under:** **Section 22 of Banking Regulation Act, 1949**.
- Capital requirement:** Minimum paid-up voting equity capital of **₹200 crore** (except for such SFBs which are converted from Urban Cooperative Banks).
- Priority Sector Lending (PSL) norms:** Required to extend **75% of its Adjusted Net Bank Credit (ANBC)** to the priority sectors, as classified by RBI.



## De-Dollarisation not on the Table: Reserve Bank of India (RBI) Governor

Recently, RBI Governor clarified that India has not taken steps toward de-dollarisation and is rather focused on de-risking its domestic trade from geopolitical upheavals.

### What is de-dollarization?

- About:** It aims to **reverse dollarization** (historical domination of US dollar in global market) causing a significant reduction of its use in world trade and financial transactions.
- Recent Trends:** Countries like India, Brazil, Russia, China and Indonesia are shifting to **local currency trade** to challenge US dollar dominance.
  - India has allowed **trade invoicing in Indian Rupees (INR)** with various countries, including Russia.
  - The recent **BRICS Summit (Kazan, 2024)** also discussed the potential for a **common BRICS currency**.

### Why are countries moving towards De-dollarization?

- Reduction of Exchange Rate Risk:** It allows countries to trade in their local currencies, minimizing the **risks associated with fluctuations in the US dollar's value**.
- Enhanced Monetary Policy Control:** Countries can implement strategies suitable to their economic conditions without being influenced by US Dollar.
- Geo-political benefits:** Shift the balance of power challenging US dominance and its weaponisation of dollar through sanctions, etc.

### What are the challenges associated with De-dollarization?

- Affect Financial Transactions:** As many commodities, like oil, gold, etc. are currently priced and exchanged in dollars.
- Financial Instability:** Abruptly abandoning dollar might expose domestic currencies with risks like fluctuating exchange rates, expensive debts, etc.

### Conclusion

In case of India, de-dollarisation can be complemented with **internationalisation of Rupee—rupefication**, that would provide complete freedom over buying or selling of the rupee by an entity.

## Also In News



### Privilege Motion

Recently, a Privilege Motion was moved in the Parliament by the opposition members.

#### About Privilege Motion

- It is a **formal request** made by member(s) to the presiding officer of the House to address an **alleged breach of Parliamentary Privileges**.
- Parliamentary privileges** are the **sum of the peculiar rights enjoyed by -**
  - each House collectively** as a constituent part of Parliament and
  - by members of each House individually**, without which they could not discharge their functions, efficiently and effectively, and which exceed those possessed by other bodies or individuals
- Parliamentary privileges are **not codified** and are derived from various provisions such as **Article 105, Code of Civil Procedure, 1908, Parliamentary Conventions**, etc.



### Foreign Currency Non-Resident (Bank) Accounts

Recently, RBI hiked the rate ceilings on **Foreign Currency Non-Resident (Bank) [FCNR (B)] accounts** to support foreign flows.

#### About FCNR (B)

- Term deposit account that can be opened by **Non-Resident Indians (NRIs)** and **Persons of Indian Origin (PIOs)** in any **permitted foreign currency** which is freely convertible.
- Other types of NRI Bank Accounts:**
  - Non-Resident (External) Rupee Account (NRE):** Savings, Current, Recurring, Fixed Deposit account that can be opened by NRIs or PIOs in **Indian Rupees**.
  - Non-Resident Ordinary Rupee Account (NRO):** Savings, Current, Recurring, Fixed Deposit account that can be opened by any resident outside India for their bonafide transaction in **rupees**.



## UN Commission on Narcotic Drugs (UNCND)

Recently, India has been chosen to chair the 68<sup>th</sup> Session of the UNCND for the 1st time.

### About UNCND

- **Origin:** Established by UN Economic and Social Council (ECOSOC) resolution in 1946 to assist in supervising the international drug control treaties.
- **Members:** 53 member states elected by ECOSOC.
- **Functions:** Act as the governing body of the United Nations Office on Drugs and Crime (UNODC).
- **Mandate:** Reviews and analyses the global drug situation, considering supply and demand reduction.



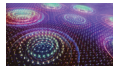
## MuleHunter.AI

RBI launched AI tool MuleHunter.AI to help financial institutions identify mule bank accounts and curb digital frauds.

- **Mule accounts** are used by criminals for illicit laundering of funds.
- They are often opened by unsuspecting individuals who offer their bank accounts for a fees making detection difficult.

### About MuleHunter.AI

- **Developed by Reserve Bank Innovation Hub (RBIH)**, a wholly owned subsidiary of RBI.
- **Uses AI/ Machine Learning based solutions** to identify suspected mule accounts efficiently on a near-real-time monitoring.



## Moire Materials

Recent study reported that moiré materials made from semiconductor materials can be **superconducting**, a property once considered to be exclusive to the graphene system.

### About Moire Materials

- **About:** They are a type of **superlattice material** (periodic structure formed by alternating layers of materials) with unique structures and properties.
  - ⊖ Created by **stacking two layers** of a semiconductor, and rotating one layer by a small angle.
- **Benefits:** Tunable electrical and optical properties, exhibit superconductivity, orbital magnetism, and quantum properties, etc.



## Kendriya Vidyalayas and Jawahar Navodaya Vidyalayas

Recently, Cabinet Committee on Economic Affairs approved setting up of 85 new Kendriya Vidyalayas (KVs), and 28 new Jawahar Navodaya Vidyalayas (JNVs).

- **Almost all KVs and JNVs** have been designated as **PM Shri schools** (exemplar schools that showcase the National Education Policy 2020).

### About KVs

- Primarily opened to cater to **educational needs of wards of transferable and non-transferable employees of Central Government** and for **children of floating population** including those living in remote and undeveloped locations.
- Set up under **Kendriya Vidyalaya Scheme** (Central Sector Scheme).

### About JNVs

- JNVs are **fully residential, co-educational schools** providing good quality modern education from **Class VI to XII** to the talented children, **predominantly from the rural areas**.
- Set up under **Navodaya Vidyalaya Scheme** (Central Sector Scheme).



## Convention for the Safeguarding of the Intangible Cultural Heritage

19th Session of the Intergovernmental Committee under Convention for the Safeguarding of the Intangible Cultural Heritage is being held in Paraguay.

### About the Convention

- International agreement **adopted in 2003** by the **UNESCO**.
- **Intangible cultural heritage** refers to practices, representations, expressions, knowledge and know-how, transmitted from over generations within communities.
- Identifies **5 broad domains of ICH**, including:
  - ⊖ Oral traditions and expressions.
  - ⊖ Performing arts.
  - ⊖ Social practices, rituals, and festive events.
  - ⊖ Knowledge and practices concerning nature and the universe.
  - ⊖ Traditional craftsmanship.
- **India has 15 ICH elements on the UNESCO Representative List of ICH of Humanity.**



## Indira Gandhi Prize

Former Chile President, Michelle Bachelet is to be conferred the **Indira Gandhi Prize for Peace, Disarmament and Development, 2024**.

- She would be awarded for her work to improve gender equality, human rights and democracy.

### About Indira Gandhi Prize

- Awarded **annually** to a **person or organization** in recognition of creative efforts towards **promoting international peace and disarmament**, etc.
- It consists of an **award of Rs. 10 million** and a **trophy with a citation**.
- Scrutiny of proposals and final selection is made by a **jury of 5 to 9 eminent persons**, named by the Chairperson of the Indira Gandhi Memorial Trust.



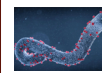
## PM e-Vidya Scheme

Recently, Government of India launched Channel 31 on DTH, dedicated to Indian Sign Language (ISL) training for hearing-impaired students, special educators, etc., under PM e-Vidya DTH TV Channels, component of PM e-Vidya scheme.

- **ISL** is a **well-structured language** that serves as the **primary means of communication for hearing-impaired individuals**.

### About PM e-Vidya Scheme

- Launched as **part of the Atmanirbhar Bharat Abhiyaan** by the **Ministry of Education in May 2020**.
- **Objective:** To provide multi-mode access to education through digital, online, and on-air platforms to minimise learning losses.
- **Key components:** DIKSHA (Digital Infrastructure for School Education), SWAYAM, Digitally Accessible Information System (DAISY), Virtual Labs & Skilling e-labs, etc.



## Marburg Virus Disease

A recent outbreak of Marburg Virus Disease (MVD) in Rwanda has killed at least 15 people, and infected at least 66.

### About MVD or Marburg Haemorrhagic Fever

- **Causative agents:** **Marburg virus (MARV)** and **Ravn virus (RAVV)** of the species *Orthomarburgvirus marburgense*.
- **Human MVD infection** results from **prolonged exposure to mines or caves inhabited by Rousettus fruit bat colonies**, most notably Egyptian fruit bat (*Rousettus aegyptiacus*).
- **Transmission:** Human-to-human transmission via direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of infected people.
- **Symptoms:** Begins abruptly, with high fever, severe headache, severe malaise, muscle aches and pains, etc.



AHMEDABAD



BENGALURU



BHOPAL



CHANDIGARH



DELHI



GUWAHATI



HYDERABAD



JAIPUR



JODHPUR



LUCKNOW



PRAYAGRAJ



PUNE



RANCHI