

ENVIRONMENT

PRE-CONTEXT

FOREST COVER REPORT

THE HINDU, PG.NO: 1.

News: "25% of India's total area under green cover: report."

About Forest cover in India 2024:

- According to *India State of Forest Report (ISFR) 2023* **India's forest and tree cover has reached a 25% of the country's total geographical area.**
 - The increase of 25% breaks down to 22% of forest cover (7.15 lakh sq.km) and 3% of tree cover (1,289 sq. km).
 - **Bamboo cover** is also included in the tree cover.
 - "Very dense" forests expanded, 'Moderately dense' and 'open' forests have shrunk.
 - **Largest 'area' under forest and tree cover** recorded in *Madhya Pradesh* (85,724 sq. km).
 - **Largest 'increase' in forest and tree cover** was recorded in *Chhattisgarh* (684 sq. km).
 - **Losses have been recorded** in the Western Ghats and Eastern States Area and the Northeast.
- Forest Survey of India (FSI) defines "forest cover" as **land with tree canopy density exceeding 10% and covering at least one hectare.**
- India has augmented its **carbon sink by 2.29 billion tonnes** over 2005 levels.
- India's **Nationally Determined Contributions** towards the **Paris Agreement's targets** require it to create an additional carbon sink of at least 2.5 billion tonnes by 2030.

About ISFR reports:

- A **biennial publication** by the **Forest Survey of India (FSI)** that assesses the country's forest resources.
- Released by **MoF&CC.**
- The current report **estimated green cover using Resourcesat series** of satellites operated by the ISRO.

22 Dec 2024

LIVESTOCK

PRE-CONTEXT

H5N1 VIRUS

THE HINDU, PG.NO: 10.

News: "Does 2022 H5N1 bind, replicate better in the respiratory tract?"

About H5N1 Virus:

- **Highly Pathogenic Avian Influenza** but can **occasionally infect humans** and other animals.
- **Caused widespread global outbreak**, carried by migratory birds.
- The outbreak is estimated to have **killed millions of birds** and the virus has infected over 200 mammalian species, including humans.
- **Neurotropism:** refers to the affinity or **tendency of certain pathogens, viruses, or biological agents to specifically target and affect the nervous system**, particularly neurons.

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ECONOMY

PRE-CONTEXT

GOODS & SERVICES TAX

THE HINDU, PG.NO: 1.

News: "Review of GST on life and health insurance deferred."

About GST:

- **Vision:** सरलीकृत कर, समग्र विकास
- One nation, one **indirect Tax** regime i.e a unified national market.
- **Destination based tax.**
- **Components of GST:** CGST, IGST, SGST.
- Both CGST, SGST are levied across the value chain **on both goods and services.**

Taxes subsumed by GST:

- **Central Taxes:** Cess, Surcharge, Central Excise Duty, Service Tax, Customs.
- **State Taxes:** VAT, Entertainment tax, Luxury Tax, Entertainment Tax.
- **Items not covered under GST:** Electricity, Alcohol, Petrol & its products. But sales tax & VAT are levied on Alcohol, Petrol & its products.

About GST COUNCIL:

- **Constitutional body under Art.279A,**
- It empowers the **President** to constitute a GST Council to make recommendations on levy of various taxes.
- **Responsibility:** To make recommendations on:
 - **Apex body** incharge of the **indirect tax regime.**
 - Inclusion & exclusion of Goods & services under GST.
 - GST floor rates.
 - Surcharges, taxes, cess levied by Centre, States, Local bodies that would get merged into GST.
 - Revenue sharing between Central and state govts.
- **Composition:**
 - **Chaired by Finance Minister.**
 - Union Minister of State in charge of revenue (finance) from the centre.
 - Members nominated by each State.
- **Decision making in council:**
 - Every decision = Minimum **3/4th Majority** of weighted votes.
 - Centre vote weighs = 33%, States = 66%.

55th meeting Dec 2024 outcomes:

- **Exemptions:** gene therapy and long-range surface-to-air missiles (LRSAMs) from the tax.
- **Raised tax levies** on used car sales, including electric vehicles, to 18% from 12%.
- **Tax levies reduced** on fortified rice kernels reduced.
- **Popcorn** is under taxation (Loose, unsalted popcorn is not under GST).

Other functions:

- **Adjudication of Disputes** b/w Centre & States, States & States etc.
- **GST Appellate tribunal:** Statutory body under CGST Act.

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TECHNOLOGY

PRE-CONTEXT

QUANTUM TECHNOLOGY

THE HINDU, PG.NO: 11.

News: "What are India's plans for a quantum satellite?"

Quantum Computing:

- Advanced type of computing that **uses the principles of quantum mechanics to perform certain calculations** more efficiently than classical computers.
- Classical computers use bits (0 or 1) as the basic unit of data, **quantum computers use quantum bits or qubits.**

Key concepts in quantum computing:

- Superposition:**
 - Unlike classical bits, qubits can exist in multiple states (**both 0 and 1**) at the same time, allowing quantum computers to perform many calculations at once.
- Entanglement:**
 - Two or more qubits become linked** in such a way that state of one particle directly influences the state of other **no matter how far apart they are in space.**
 - This property is key to the power and efficiency.
- Quantum Tunneling (QT):**
 - Unlike classical physics, QT **allows an electron or atom passes through a potential energy barrier.**
 - This allows quantum computers to explore many possible solutions to a problem simultaneously.
- Photon-based Communication:**
 - Photons are used as **carriers of quantum information** due to their robustness in long-distance transmission.
- Quantum Key Distribution (QKD):**
 - Ensures **secure encryption keys** are shared between users. Provides virtually unbreakable security based on quantum mechanics.

National Mission on Quantum Technologies and Applications.

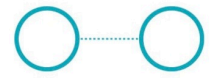
- Budget 2020-21 allocated **Rs.8000 crore** for focus on development of quantum computing and related technologies.
- Implemented by: Dept. of Science & Technology.**
- Objectives: Setting up 4 thematic Hubs:**
- Quantum computing.**
 - Developing intermediate scale quantum computers with 50-1000 physical qubits in 8 years.
- Quantum communication.**
 - Developing satellite based secure quantum communications between ground stations over range of 2000km.
 - Quantum Satellites:** They facilitate quantum information transmission (qubits) and secure communication via quantum key distribution (QKD).
- Quantum sensing & Metrology.**
 - Developing magnetometers with high sensitivity atomic systems and Atomic clocks for precision timing, communication and navigation.
- Quantum material devices.**
 - Development of quantum materials like superconductors novel semiconductor structures.

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SUPERPOSITION

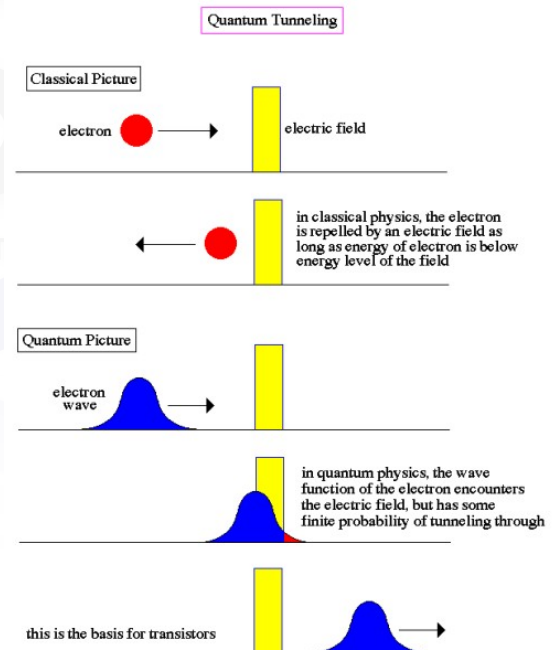
Superposition describes a particle's ability to exist across many possible states at the same time. So the state of a particle is best described as a "superposition" of all those possible states.



ENTANGLEMENT

Quantum entanglement refers to a situation in which two or more particles are linked in such a way that it is impossible for them to be described independently even if separated by a large distance.

Source: Deloitte analysis.





EXAMPLES FROM TODAY'S NEWS PAPER

THE HINDU, PG.NO: 4.

News: "Bihar is turning a new page with 'Didi Ki Libraries' for children living in rural areas".

Didi Ki Libraries

About Didi Ki Libraries:

- In 2023, Bihar govt. started **Community Library and Career Development Centres (CLCDC)**, across 100 blocks in the State, are known as 'Didi Ki Libraries' (roughly translating to a library run by an older sister).
- **Features:**
 - **Free-of-cost libraries** boon for children who come from families that cannot afford books.
 - **The library offers free Internet services** and a quiet space for children to study.
 - **The Education Department** supports the initiative by providing books.
- **World Bank supported JEEVIKA** runs the 'Didi Ki Libraries', with each headed by Vidya Didis, a dedicated cadre of community workers.

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Thank you!

ज्ञानं नेतृत्वं जनसेवा