



THE KNOWLEDGE AND LEARNING ENTERPRISE

THE KNOWLEDGE & LEARNING **DIGEST** PART 1

VOL 4 (2024)

No part of this publication may be copied or reproduced without prior written permission from the publishers.

For permission or enquiries about reproducing content, please contact the publishers at info@knowledgeandlearning.com

While we strive for accuracy, the publishers are not responsible for content referenced from the Press Information Bureau (Press Information Bureau) and other sources.

Credit for images goes to Pixabay and Flickr under the Creative Commons license.

Modulyst Learning OPC Private Limited, Pune, India, has created the graphics using Bing AI and Canva.



New Delhi, India



WELCOME TO THE WORLD OF

- Latest policies, programs, schemes of the government;
- Developments in the field of science;
- Topical analysis of constitutional issues;
- Interesting facts from the pages of history;
- Miscellany covering a host of general interest areas;
- And our quiz and inspiring quotes

"Knowledge has to be improved, challenged, and increased constantly, or it vanishes."

- Peter Drucker

The Knowledge and Learning Enterprise

Pages & Perspectives

“To know, is to know that you know nothing. That is the meaning of true knowledge.”

Socrates

*At **The Knowledge and Learning Enterprise**, we are driven by a deep passion for continuous learning and personal growth. The K&L digest is curated to keep you informed and intellectually engaged, offering a quick and easy way to broaden your horizons. Whether you’re looking to enhance your professional expertise or gearing up for competitive exams, our digest provides a blend of essential facts, insightful content, and engaging trivia. Dive in and discover a treasure trove of knowledge, designed to empower and inspire you!*

Note: This is the first part of Volume 4 of The K&L Digest Part 1

The Knowledge and Learning Enterprise

Contents

Contents	6
1. Australia’s Macquarie Dictionary Picks ‘Enshittification’ as Word of 2024.....	12
2. Balance Pollution and Sustainability: India’s Assertion.....	13
3. Promoting Electric Vehicles.....	18
4. Sagarmala Scheme in Brief.....	23
5. Support For Second Hand Vehicle Market.....	25
6. Transforming India, Empowering Indians.....	28
7. UPI: Revolutionizing Digital Payments in India.....	31
8. Strengthening India’s National Statistical System: GDP Changes.....	39
9. Understanding the E-Shram Card Benefits for Workers.....	41
10. Forest Cover in the Country.....	45
11. Promoting Indian Culture: The Indian Conservation Fellowship.....	50
12. Khelo India Scheme: Nurturing India’s Sports Talent for Global Success.....	54
13. Know Your Science: The Lithosphere.....	56
14. Marine Species Conservation.....	58
15. National Gallery of Modern Art NGMA.....	60
16. Preserving and Promoting India’s Rich Cultural Heritage.....	63
17. Oxford Word of Year.....	65
18. Promotion of Green and Eco-Tourism.....	68
19. Protected Monuments and Areas in the Country.....	71
20. Promoting Sustainable and Ecotourism in India: Key Initiatives by the Ministry of Tourism.....	76
21. Cyber Fraud And Digital Harassment.....	80
22. Advancing India's Electric Vehicle Ecosystem.....	85
23. Licensing of Battery Charging Facilities.....	87

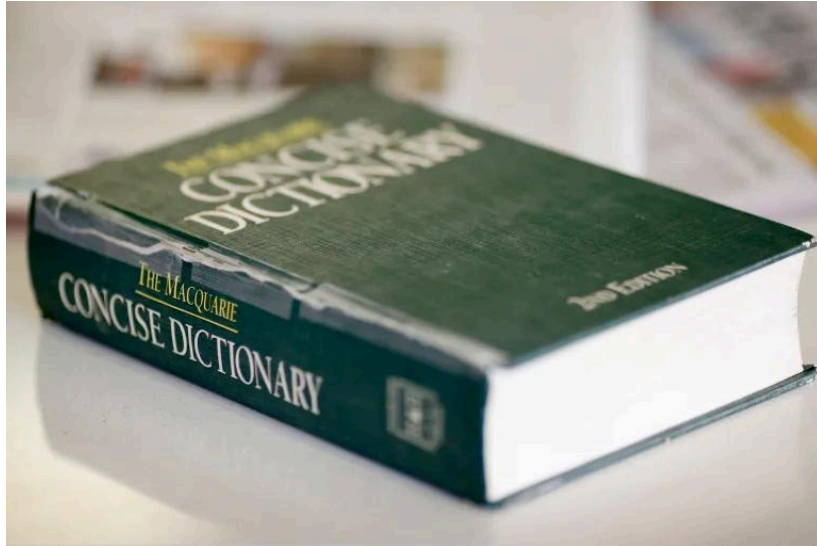
24. Adoption of Modern Animal Husbandry Practices.....	88
25. Proposed Novel Antenna Design Can Measure Faint Cosmological Radio-Frequency Signals.....	92
26. Production Of Electric Vehicles.....	97
27. India's Advancing Role in Global Trade Competitiveness.....	103
28. Steel Manufacturing Capacity.....	115
29. Sugamya Bharat Abhiyan or the Accessible India Campaign.....	120
30. India Signs the Supply Chain Resilience Agreement.....	131
31. The "Gilgamesh Solution".....	136
32. Boilers Bill, 2024 Moved in Rajya Sabha.....	138
33. Fourth Global Coral Bleaching Event.....	143
34. IISF 2024: A Commitment to a Science-Led Future for India.....	149
35. Decoding Commonly Used Latin Words: A Quick Guide.....	152
36. NASA-ISRO Synthetic Aperture Radar Mission.....	156
37. National Digital Communication Policy, 2018.....	159
38. SHe-Box portal for Implementing the Provisions of 'The Sexual Harassment of Women at Workplace Act, 2013' (SH Act).....	163
39. Schemes for Socio-Economic and Educational Empowerment of the Minorities in India....	166
40. Managing the Debris in Space: Space Situational Awareness.....	169
41. Eco-Tourism and Initiatives for Promoting MICE Tourism.....	172
42. Importance of Oil Exploration and Production.....	176
43. International Social Security Association Awards for India.....	179
44. National Library Mission.....	183
45. Philosophical Musings.....	194
46. Protecting and Preserving Heritage of Monuments.....	196
47. Scientific Research and Technological Innovation.....	197
48. International Advisory Body for the Lifeline of Global Communication.....	202
49. Advancement of Supercomputing: Status in India.....	209
49. A Move Towards Self-Reliance: Copper Quality Control.....	212

50. Impact of Climate Change on Agriculture.....	216
51. Carbon Tariffs: Green Transition of the Steel Sector.....	220
52. Nafithromycin: Country’s First Indigenous Antibiotic.....	223
53. The Hourglass Nebula.....	232
54. From the Pages of Science.....	234
55. Himalayan Heights May Be Ideal for India's 'Quantum Leap' into Space: A Report.....	236
56. Astronomers Spot Far UltraViolet Emissions from Novae in Andromeda Galaxy.....	241
57. How Did Humans Befriend Dogs?.....	248
58. India Secures Nationwide Access to 13,000 Journals.....	255
59. India's Digital Revolution: Transforming Infrastructure, Governance, and Public Services. 259	
60. The Heart's Independent 'Brain'.....	269
61. Revolutionizing Waste Heat to Electricity: The Breakthrough of 'Twisting Layers' in Solid State.....	272
62. Emperor Ming of Han (China).....	276
63. From Spices to Sustainability.....	279
64. Indian Carbon Market.....	284
65. New National Manuscripts Mission.....	288
66. AI’s Role in Environmental Threats.....	289
67. Cybercrime Update.....	291
68. Lithium Batteries in Electric Mobility.....	295
69. New Criminal Laws.....	298
70. Astronomers from India have Made an Intriguing Discovery in a Unique Tristar Solar System.....	308
71. Why People Remember Certain Things and Not Others.....	312
72. Anusandhan National Research Foundation (ANRF).....	316
73. Promoting Sustainable and Eco-friendly 6G Development.....	319
74. Growth Mindset.....	321
75. The Antarctic ‘Plastisphere’.....	330
76. Smart Cities Mission: An Ongoing Project.....	334

77. Prayagraj: Blending Tradition with Modernity.....	337
78. Public-Private Partnership to Conserve Heritage Sites.....	345
79. Effect of La Nina.....	346
80. Forest Survey of India Tables its Latest Report.....	348
81. Advancing Quantum Technology Hubs.....	351
82. Supply Chain Council (SCC) under the India-Pacific Economic Framework (IPEF) Meets Again.....	355
83. Mission Mausam.....	359
84. Plastic Waste Management in India.....	361
85. Scientists Develop Flexible Near-Infrared Plasmonic Devices for Wearable Sensors and Medical Imaging Tools.....	364
86. Epicurus the Greek Philosopher.....	367
87. Alternative Dispute Resolution Mechanisms.....	370
88. Addressing Mental Health Problems: Steps Taken by the Government in India.....	373
89. FSSAI Launches Special Festive Drives to Combat Food Adulteration During Holiday Season.....	377
90. Why is the Steel Inventory Rising in India?.....	381
91. Promoting Indian Art and Culture: Schemes and Assistance.....	385
92. Space and Galaxy Fundamentals.....	390
93. National Centres for the Arts in India.....	394
94. Controlling Illegal Wildlife Trade Cases.....	397
95. Import of Hazardous Waste.....	401
96. Advancing Renewable Energy in India: Key Initiatives and Progress.....	405
97. Enhancing Ethanol Blending in Petrol: Government Initiatives and Impact.....	415
98. Combating Urban Heat in Indian Cities: Initiatives and Developments.....	418
99. Impact of CBAM on Indian Steel Industry.....	422
100. The Value of India's Pharmaceutical Market for FY 2023-24.....	425
101. Revolutionizing Space Launch: Agnikul's Agnibaan and the Private Sector in India....	433
102. Sustainable Energy Production With High-Performance Photocatalysts.....	436
103. One Nation, One Election.....	439

104. Boosting Indian Shipbuilding: Government Initiatives and Progress.....	449
105. India Meteorological Department (IMD).....	453
106. Promoting Private Sector in India’s Space Environment.....	456
107. IUCN Red List of Threatened Species, Red List Index & Kunming-Montreal Global Biodiversity Framework.....	461
108. NITI Aayog Releases Report on “S.A.F.E. Accommodation: Worker Housing for Manufacturing Growth”.....	462
109. Understanding Jevons Paradox and Pareto Efficiency.....	469
110. India State of Forest Report 2023.....	470
111. Key Terms from the Cyber Security Economics for Emerging Markets.....	475
112. Science Essential.....	481

1. Australia's Macquarie Dictionary Picks 'Enshittification' as Word of 2024



Australia's oldest dictionary of Australian English has chosen "enshittification"—a slang term referring to the deterioration of products and services online – as the word of 2024. Macquarie Dictionary, which is widely considered the standard reference on Australian English, said on Tuesday that the term tapped into a widespread feeling that things were getting worse, especially in the digital world

The noblest pleasure is the joy of understanding.

Leonardo da Vinci

2. Balance Pollution and Sustainability: India's Assertion

India's intervention at the final plenary of INC-5, in Busan, bats for a critical balance between preventing plastic pollution and affecting sustainable development, especially of developing economies

Making an intervention at the final plenary of the 5th session of the Intergovernmental Negotiating Committee (INC-5), in Busan (Republic of Korea), India reiterated the enormity of the challenge of plastic pollution, that no nation alone can completely resolve. India thanked the Chair and Secretariat for all the efforts made to achieve a consensus based outcome at INC-5. "That is why", the statement read, "two years back, at UNEA 5, we all resolved to come together and work towards the international legally binding instrument."

Reminding that India is home to 1.4 billion people and the Nation understands its responsibility in tackling the challenge of plastic pollution, it said, "While we all are working to develop the instrument, India has already taken a series of measures including banning some of short lived plastic products and putting in place an ambitious and robust EPR regime on plastic packaging. We are moving towards sustainable plastic packaging, reducing the use of virgin material. At the same time, Chair, we cannot deny the important role plastic plays in the development of our societies and in varied sectors of the economy."

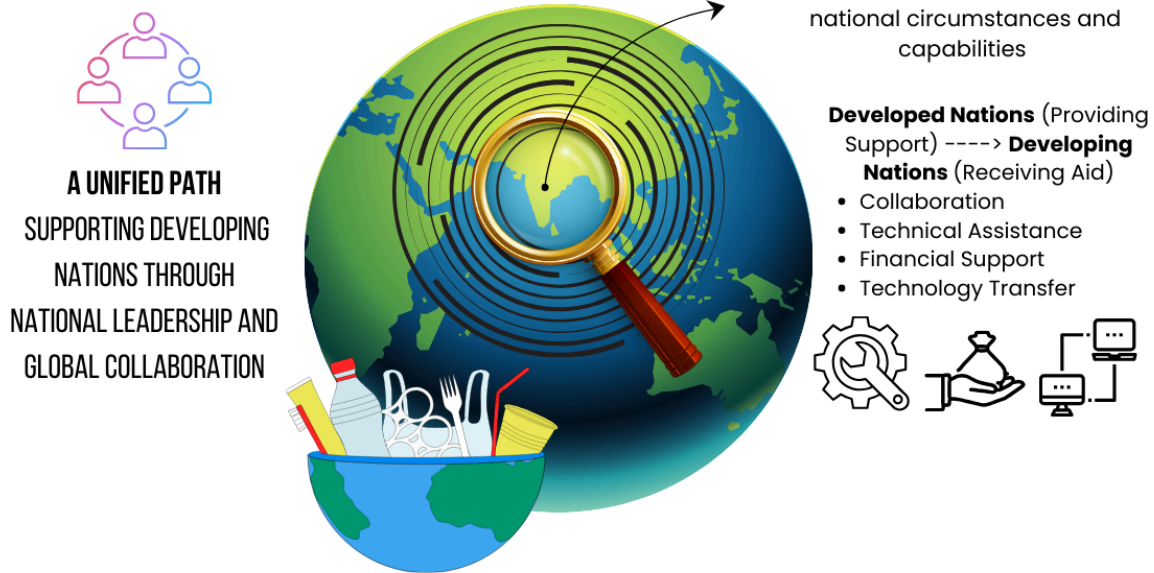
India emphasized the need to strike a critical balance between preventing the leakage of plastic in the environment and, at the same time, not affecting sustainable development, particularly of, developing economies. The statement noted that this is a difficult task which requires mutual trust and understanding of each other's circumstances. In this context, India stated, "Our approach to finalise the draft instrument should be based on mutual trust, cooperation and the spirit of consensus." India stressed that consensus must be the basis of all decisions, including amendments in the instrument and its annexures. India thanked the Chair for bringing out the updated version of Chair's nonpaper, and said, "Though India has some observations on the paper, we will be happy to further engage on it."

India highlighted the following observations:

As some recommendations made by member states were not reflected in the current version, India sought reassurance from the Chair that member states will get an opportunity to get their views reflected during further negotiations. India's statement said, "Abiding by the principle that nothing is agreed until everything is agreed, we look forward to developing a package agreed to by all ,in a fair, inclusive and transparent manner."

India further stated, “Any instrument, including our own, has to have clearly defined scope. This has been left out from the new version. India would request to reinsert it.” The statement further conveyed that the scope of the instrument should be limited to addressing plastic pollution only without overlapping with the mandate of other multilateral environmental agreements and other relevant instruments and bodies.

India clearly stated its inability to support any measures to regulate the production of primary plastic polymers, as it has larger implications in respect of the right to development of member states. It was further highlighted to consider the inclusion of an article on Reservations on Annexures, as the shape and form of some articles can have trade implications. India also did not support inclusion of any list with phase out dates, at this stage. This has not been reflected in the Chair’s text, the statement informed.



Taking into account that the instrument has to be implemented by member states, in a nationally driven manner, India's statement demanded that due consideration to national circumstances and capabilities should be given. Further, provision of technical and financial assistance, including technology transfer to developing countries, is the key for effective implementation of the new instrument. Therefore, a stand-alone dedicated multilateral fund providing financial resources to developing countries for meeting incremental costs for their compliance obligations is required, India stated.

Reiterating its commitment to engage in the forthcoming negotiations at time and place that may be decided in positive and constructive spirit, India stated that the country has always been committed to the principle of consensus in decision making in respect of substantive matters under multilateral environmental agreements. This principle reiterates collective decision-making and reflects shared responsibilities and commitment, and this position would remain unchanged in the forthcoming negotiations as well, the statement added.

Ref: PIB

3. Promoting Electric Vehicles

To facilitate the development of motor vehicles running on non-fossil fuels, the Government has notified mass emission standards in respect of various fuels such as blends of ethanol with gasoline, flex-fuel, Biodiesel, Bio-CNG, Liquefied Natural Gas (LNG), blends of Methanol with gasoline, Hydrogen etc.

The steps being taken by the Government to promote adoption of Electric Vehicles (EVs) in the country are as follows:

- Notification issued vide S.O. 5333(E) dated 18th October, 2018, has granted exemption from the requirements of permit to the Battery Operated Transport Vehicles and Transport Vehicles running on Ethanol and Methanol fuels.
- Notification issued vide GSR 525(E) dated 2nd August, 2021 has exempted Battery Operated Vehicles from the payment of fees for the purpose of issue or renewal of registration certificate and assignment of new registration mark.
- Notification issued vide G.S.R. 749(E) dated 7th August, 2018, has notified the registration mark for Battery Operated Vehicles to be in Yellow colour on Green background for the transport vehicles and, for all other cases, in White colour on Green background.

- Notification issued vide GSR 302(E) dated 18th April, 2023 to issue All India Tourist Permit for battery operated vehicles without payment of any permit fee.
- Notification issued vide GSR 167(E) dated 1st March 2019 for retro-fitting of hybrid electric system or electric kit to vehicles and their compliance standards shall be as per AIS 123.
- Advisory has been issued dated 17th July, 2019 to all States and Union Territories regarding incentivisation of electric vehicles and induction of electric vehicles in shared mobility and public transport operations.
- The Ministry of Road Transport and Highways has issued an advisory dated 12th August, 2020 to all States and UTs regarding sale and registration of Electric Vehicles without batteries.

Government in the Ministry of Heavy Industries (MHI) has formulated following schemes for promotion of electric vehicles and to reduce dependence of fossil fuels in the country:

- Faster Adoption and Manufacturing of Hybrid and Electric Vehicles in India (FAME India) Scheme: FAME India Scheme was launched in 2015 to promote adoption of electric/ hybrid vehicles (xEVs) in India. The Phase-1 of the scheme was

available up to 31st March, 2019 with budget outlay of Rs.895 Cr. Further, Phase-II of FAME India Scheme was implemented for a period of 5 years w.e.f. 01st April, 2019 with a total budgetary support of Rs. 11,500 Crore.

- Production Linked Incentive (PLI) Scheme for Automobile and Auto Component Industry: The Government on 15th Sep 2021 approved the PLI Scheme for Automotive Sector with a budgetary outlay of Rs.25,938 Crore. The scheme provides incentives up to 18% for electric vehicles.
- Production Linked Incentive (PLI) scheme, 'National Programme on Advanced Chemistry Cells (ACC) Battery Storage': The Government on 12th May, 2021 approved PLI Scheme for manufacturing of ACC in the country with a budgetary outlay of Rs. 18,100 Crore.
- Scheme to Promote Manufacturing of Electric Passenger Cars in India (SMEC): SMEC was launched on 15.03.2024 to attract investments from global EV manufacturers and promote India as a manufacturing destination for e-vehicles. This scheme helps to attract investments from global EV manufacturers and promote India as a manufacturing destination for e-vehicles. The scheme also helps put India on the global map

for manufacturing of EVs, generate employment and achieve the goal of "Make in India".

- PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) Scheme: The Government of India has notified scheme titled 'PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E- DRIVE) Scheme' on 29.09.2024 for promotion of electric mobility in the country. The scheme has an outlay of Rs.10,900 Crore over a period of two years from 01.04.2024 to 31.03.2026. The Electric Mobility Promotion Scheme (EMPS) 2024 implemented for the period of 06 months, from 01.04.2024 to 30.09.2024, is subsumed in this Scheme.
- PM-e Bus Sewa Payment Security Mechanism (PSM) Scheme: MHI on 28.10.2024 have notified PM-e Bus Sewa (PSM) Scheme to establish a Payment Security Mechanism Fund for procurement and operation of electric buses (e-Bus) under the GoI/State Govt/UT sponsored schemes with total financial outlay of Rs.3,435.33 Crore.

As per the information available in the VAHAN centralized database of RC (registration Certificate), the details of number of EV two wheelers, four wheelers, goods transport vehicle and passenger vehicles registered in India are as under:

Electric vehicle registered in India category wise till 25-11-2024		
Sr. No.	Vehicle category	Total
1.	Two Wheeler	28,21,756
2.	Three Wheeler	21,76,875
3.	Four Wheeler	2,56,520
4.	Goods Vehicles	11,765
5.	Public Service Vehicle	10,236
Total		52,77,152

The Union Minister of Road Transport & Highways, Shri Nitin Gadkari shared this information in the Lok Sabha in December 2024.

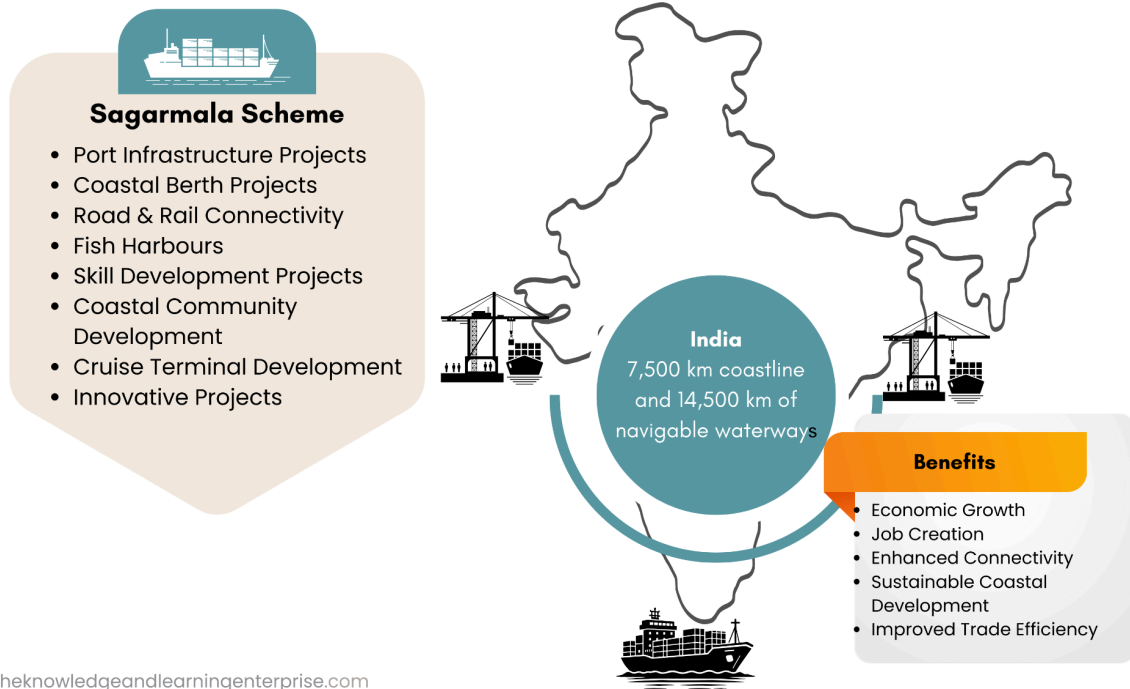
Ref: PIB

4. The Sagarmala Scheme of the Ministry of Ports

The Sagarmala is the flagship central sector scheme of the Ministry of Ports, Shipping and Waterways to promote port-led development in the country through harnessing India's 7,500 km long coastline, 14,500 km of potentially navigable waterways and strategic location on key international maritime trade routes.

SAGARMALA: TRANSFORMING INDIA'S MARITIME FUTURE

Harnessing Our Coastline for Port-Led Development

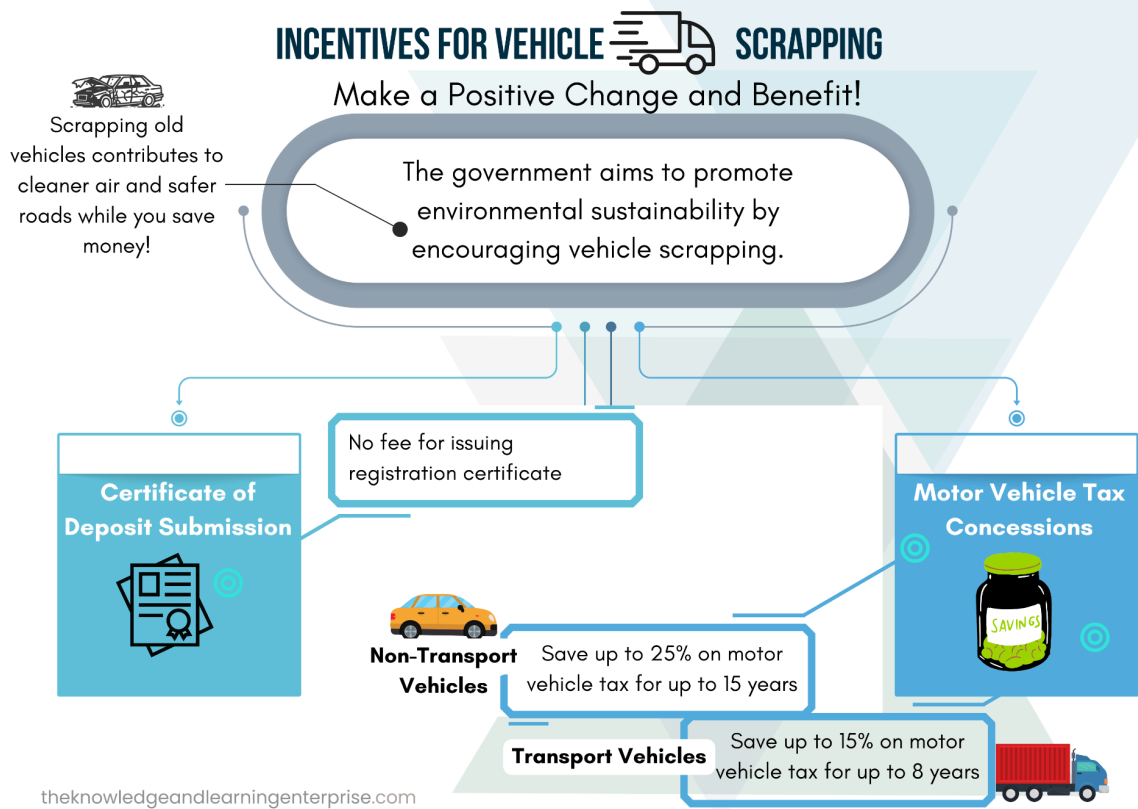


Under Sagarmala scheme, Ministry provide financial assistance to State Governments for port infrastructure projects, coastal berth projects, road &

rail projects, fish harbours, skill development projects, coastal community development, International standard cruise terminal and unique and innovative projects such as Ro-Pax ferry services etc.

5. Support For Second Hand Vehicle Market

The Government has issued a Notification G.S.R. 901(E) on 22.12.2022 to promote ease of doing business and transparency in the sale and purchase of registered vehicles through dealers. These rules will aid in recognizing and empowering intermediaries / dealers of registered vehicles as well as provide adequate safeguards against fraudulent activities in the selling or purchasing of such vehicles.



The following incentives are provided to citizens for scrapping of their vehicles:

- GSR Notification 714 (E) dated 04.10.2021 provides that in case the vehicle is registered on submission of "Certificate of Deposit", the fee for issue of certificate of registration shall not be levied.
- GSR Notification 720 (E) dated 05.10.2021 provides for concession in the motor vehicle tax (up to twenty five per cent, in case of non-transport vehicles and up to fifteen per cent, in case of transport vehicles) for the vehicle registered against submission of "Certificate of Deposit". Provided that this concession shall be available up to eight years, in case of transport vehicles, and up to fifteen years, in case of non-transport vehicles.

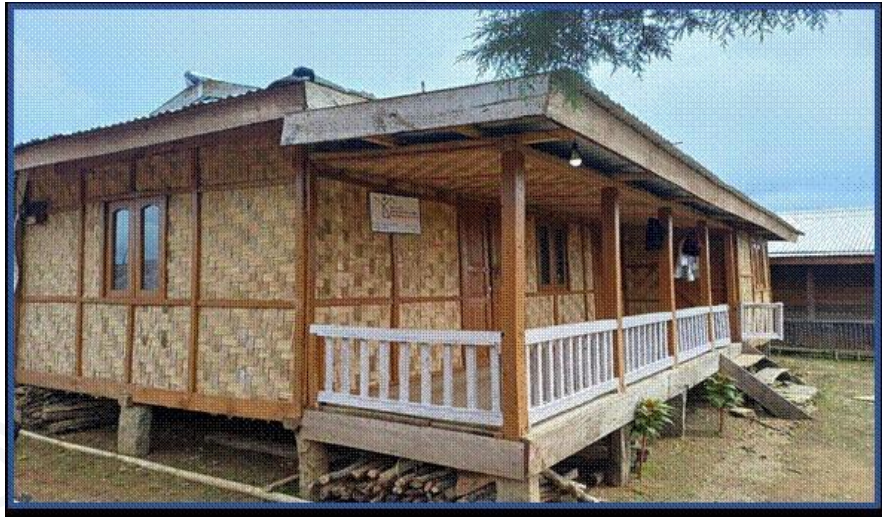
There is no specific policy for distributing compensation for any particular project. General policy/ rules will guide distributing compensation to the beneficiaries whose land is acquired under the National Highways Act, 1956. As per the provisions of NH Act, 1956, Under Section 3H (1) of NH Act, 1956, "The central government will determine the amount under section 3G and deposit it in such manner as may be laid down by rules made in this behalf by that Government, with the competent authority before taking possession of the land."

In this regard, the government has also issued National Highways (manner of depositing the amount by the Central Government; making requisite funds available to the competent authority for acquisition of land) Rules, 2019 vide G.S.R. 39(E) dated 18.01.2019.

Ref: PIB

6. Transforming India, Empowering Indians

A positive change is always welcomed, especially when it transforms lives. India has been undergoing such a remarkable transformation, steering its people toward security, dignity, and better living standards. What makes this journey extraordinary is its inclusivity and focus on equality. In a vast and diverse country like India, where development initiatives often face challenges in reaching remote regions, the winds of change now sweep across every corner, ensuring no one is left behind. Welfare schemes and initiatives have united Indians in the collective pursuit of a Viksit Bharat—a Developed India.



One of the most impactful aspects of this transformation is the shift from uncertainty to stability, particularly in housing. For millions of rural Indians, inadequate housing was once a harsh reality, exposing families to

extreme weather, social exclusion, and a constant state of vulnerability. The Pradhan Mantri Awaas Yojana Gramin (PMAY-G) has revolutionized lives, providing pucca houses that offer not just shelter but a sense of pride, safety, and belonging.

The impact is visible in the remote hills of Nagaland, where development projects often face logistical and geographical challenges. Here, PMAY-G has already sanctioned 48,826 houses and completed over 19,300 houses, transforming the lives of families who once struggled for basic shelter. These homes, built on sturdy stone columns and elevated structures, not only withstand the test of time but also symbolize resilience and renewal. The design prevents dampness and termite damage while ensuring longevity. For the families stepping into these homes, it is a moment of empowerment: a space where aspirations take root and flourish. The scheme's vision encapsulates an India where development is inclusive, empowering individuals while contributing to national progress.

But the transformation does not end with a roof over one's head. PMAY-G has catalysed economic empowerment across rural India by weaving local economies into its operations. In Nagaland, beneficiaries have harnessed local resources like bamboo and lightweight concrete to reduce construction costs while building skills and self-reliance.

PMAY-G also bridges the gap between tradition and modernity, ensuring that progress respects cultural identities. In Nagaland, the houses built

under the scheme reflect the region's architectural heritage, with modern aspects blending seamlessly with the natural landscape. Bamboo mats adorn the walls and ceilings, and CGI sheets serve as roofing, combining tradition with functionality. These homes are not just functional; they are a reflection of how development can honour and integrate local traditions.

Ultimately, PMAY-G is about transforming lives and, in doing so, transforming India itself. With safe and secure homes, families are free to focus on education, health, and livelihoods, paving the way for generational progress. In Nagaland, this transformation is vividly evident. Families stepping into their new homes carry with them hopes of brighter futures, embodying the scheme's success in turning policy into prosperity. This is the spirit of a changing India—where every citizen is a stakeholder in its growth and every dream has a foundation.

Ref: PIB

7. UPI: Revolutionizing Digital Payments in India

Introduction

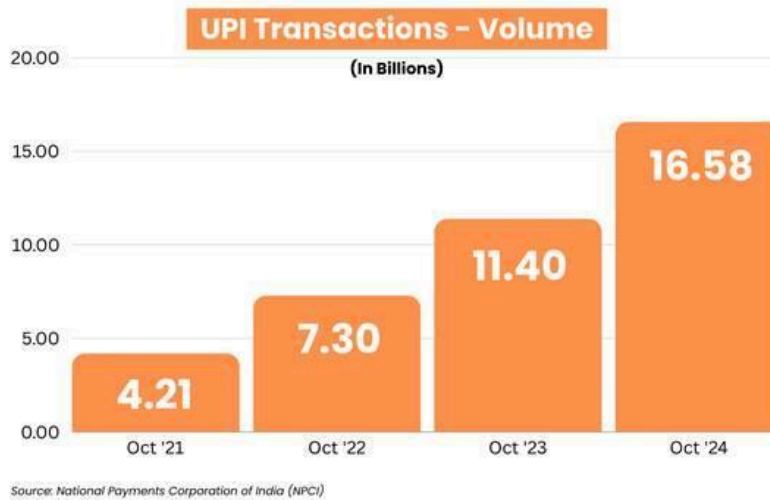
In October 2024, Unified Payments Interface (UPI) achieved a historic milestone by processing 16.58 billion financial transactions in a single month, underscoring its pivotal role in India's digital transformation. Launched in 2016 by the National Payments Corporation of India (NPCI), UPI has revolutionized the nation's payment ecosystem by integrating multiple bank accounts into a single mobile application. This system enables seamless fund transfers, merchant payments, and peer-to-peer transactions, offering users flexibility through scheduled payment requests.

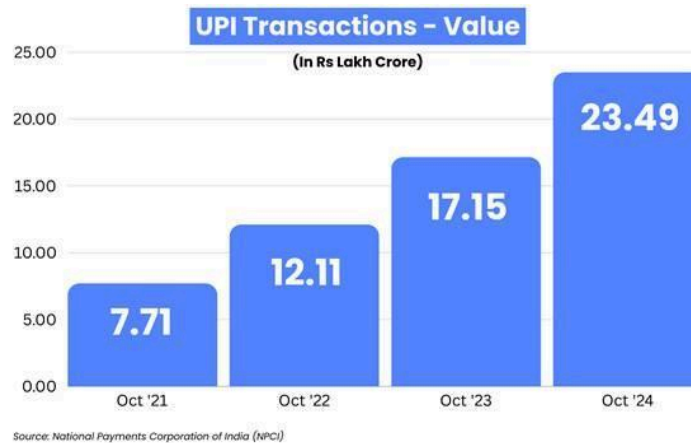


UPI has not only made financial transactions fast, secure, and effortless, but it has also empowered individuals, small businesses, and merchants, driving the country's shift toward a cashless economy. This remarkable achievement highlights India's commitment to leveraging technology for inclusive growth and economic progress.

UPI in Numbers

UPI processed an impressive ₹23.49 Lakh Crores across 16.58 billion financial transactions in October 2024, marking a 45% year-on-year growth from 11.40 billion transactions in October 2023. With 632 banks connected to its platform, this surge in usage highlights UPI's expanding dominance in India's payment landscape. As more individuals and businesses embrace the convenience and security of digital transactions, the increasing volume and value of transactions underscore UPI's pivotal role in advancing the country's shift toward a cashless economy.





What Makes UPI Unique?

UPI has transformed digital payments in India with its unparalleled ease, security, and versatility. By enabling round-the-clock transactions and offering features like single-click payments and virtual addresses, it ensures both convenience and privacy for users. Its ability to integrate multiple banking services into one app makes it a game-changer in financial technology.

Here are a few reasons why UPI stands out:

- Round-the-Clock Accessibility: Enables immediate money transfers 24/7, 365 days a year through a mobile device.

- Unified Banking Access: Allows users to access multiple bank accounts using a single mobile application.
- Seamless and Secure Payments: Offers Single Click 2-Factor Authentication, ensuring regulatory compliance and secure, one-click transactions.
- Enhanced Privacy: Uses a virtual address for transactions, eliminating the need to share sensitive details like account numbers or IFSC codes.
- QR Code Integration: Facilitates easy payments through QR code scanning, supporting quick and secure transactions.
- Cash-On-Delivery Alternative: Simplifies transactions by replacing the hassle of cash payments or exact change during deliveries.
- Merchant and In-App Payments: Supports payments for merchants via a single application or directly within apps.
- Diverse Payment Options: Covers utility bill payments, over-the-counter transactions, and scan-and-pay features.
- Flexibility in Transactions: Enables donations, collections, disbursements, and more with ease.

- Customer Support: Allows users to raise complaints directly from the mobile application.

Impact of UPI

UPI has had a profound impact on small businesses, street vendors, and migrant workers, offering them an easy and efficient way to transfer money and receive payments. Its adoption was particularly accelerated during the Covid-19 pandemic, as people sought safer, contactless alternatives to cash transactions. UPI's success, however, extends beyond the strength of its infrastructure; it also stems from the behavioural shift it has inspired, where trust in the system and its accessibility have been key factors in driving widespread use.

One of the small yet significant innovations that facilitated this shift is the use of voice boxes by payment apps. These devices, commonly found at snack carts and tea stalls, announce the amount of money received with each QR code transaction, ensuring that vendors who are often too busy to check phone messages are aware of their earnings. This simple yet effective feature has played a crucial role in gaining the trust of small merchants who were previously accustomed to cash transactions and wary of digital payments.

Another important design feature of UPI is its provision for users to choose their preferred payment apps, regardless of the bank where their account is

held. This flexibility has given consumers the power of choice, making it easier for them to embrace UPI as their go-to payment method.

The integration of RuPay credit cards with UPI marks another revolutionary step in the digital payment landscape. This feature allows users to access the benefits of both credit cards and UPI for transactions, enabling them to make payments through their credit lines instead of drawing from savings accounts.

UPI's Global Expansion

India's digital payments revolution is gaining international momentum, with both UPI and RuPay expanding rapidly across borders. Currently, UPI is operational in seven countries, including key markets like the UAE, Singapore, Bhutan, Nepal, Sri Lanka, France, and Mauritius.



UPI's entry into France is particularly significant, marking its first foray into Europe. This expansion enables Indian consumers and businesses to make and receive payments seamlessly, even while living or traveling abroad.

As part of its global outreach, Prime Minister Modi has actively pitched for UPI's expansion within the BRICS grouping, which now includes six new member states. This initiative is expected to further bolster remittance flows, improve financial inclusion, and enhance India's stature in the global financial landscape.

According to the ACI Worldwide Report 2024, India now accounts for around 49% of global real-time payment transactions as of 2023, underscoring India's leadership in digital payment innovation. With UPI's growing international presence and the continued rise of digital transactions, India is setting new global benchmarks for financial inclusion and economic empowerment.

Conclusion

In conclusion, UPI has not only revolutionized the way India conducts financial transactions but has also positioned the country as a global leader in digital payments. By offering a seamless, secure, and accessible platform for both individuals and businesses, UPI has played a pivotal role in promoting financial inclusion and accelerating the nation's shift towards a

cashless economy. Its remarkable growth, both in terms of transaction volumes and geographical reach, highlights its transformative impact on the financial landscape. As UPI continues to expand globally, it is setting new standards for digital payments, empowering citizens, enhancing economic opportunities, and contributing to India's increasing influence in the global financial arena.

Ref: PIB

8. Strengthening India's National Statistical System: GDP Changes

India Updates GDP Base Year to 2022-23: Steps to Strengthen National Statistical System

The Government of India has announced plans to update the base year for Gross Domestic Product (GDP) calculations from 2011-12 to 2022-23. This change aims to reflect the latest economic realities and improve the accuracy of National Accounts Statistics.

To facilitate this update, an Advisory Committee on National Accounts Statistics (ACNAS) has been established. The committee includes representatives from the Central and State Governments, the Reserve Bank of India (RBI), academic institutions, and research organizations. The ACNAS is tasked with identifying new data sources and advising on methodologies for compiling National Accounts Statistics under the revised series.

To enhance the statistical system, the Government is taking the following steps:

- Constitution of ACNAS: Providing expert guidance on data and methodology.

- Standardization of Data Structure: Ensuring harmonized and high-quality reporting across the National Statistical System.
- Utilization of Administrative Data: Leveraging administrative records to improve the comprehensiveness and reliability of statistics.

By adopting these measures, the Government aims to strengthen the accuracy, reliability, and transparency of India's statistical framework, aligning it with global best practices.

Stay updated on India's evolving statistical and economic systems!

Ref: PIB

*No amount of anxiety will change your future and no amount of regret can change your past.
The key is acceptance.*

9. Understanding the E-Shram Card Benefits for Workers

As on 26th November 2024, over 30.42 crore unorganised workers have registered on eShramportal.



For providing benefits, eShram portal is integrated / mapped with following portal/schemes:

1. eShram has been integrated with the National Career Service (NCS) Portal. An unorganised worker can register on NCS using his/ her Universal Account Number (UAN) and search for suitable job opportunities. An option/ link has also been provided to registrants' on eShram portal to seamlessly register on NCS.
2. eShram is integrated with Pradhan Mantri Shram Yogi Maandhan (PM-SYM). PM-SYM is a pension scheme for unorganised workers

who are aged between 18-40 years. It provides a monthly pension of Rs. 3000/- after attaining the age of 60 years. Using UAN any unorganised worker can easily enrol under PMSYM. In the scheme 50 percent of the contribution is borne by the Government of India and the rest is being contributed by the worker.

3. Provision has been added in eShram to capture family details of migrant workers.
4. Provision has been added in eShram to share construction workers' data with States/ Union Territories to facilitate their registration in respective Building and other Construction Workers (BoCW) boards.
5. To provide skill enhancement and apprenticeship opportunities to unorganised workers, eShram has been integrated with Skill India Digital portal of Ministry of Skill Development and Entrepreneurship.
6. eShram is also integrated with myScheme portal. myScheme is a National Platform that aims to offer one-stop search and discovery of the Government schemes. It provides an innovative, technology-based solution to discover scheme information based upon the eligibility of the citizen.

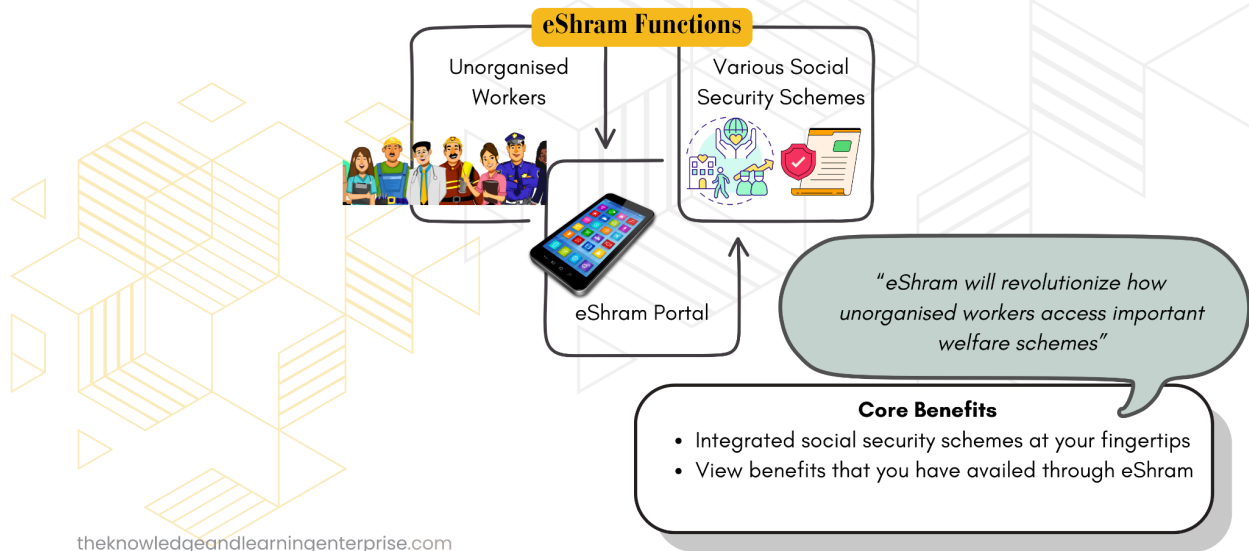
In keeping with the vision of the Budget Announcement recently on developing eShram as a One-Stop-Solution for unorganised labour to have

access to various social sector schemes, Ministry of Labour and Employment launched the eShram- “One- Stop-Solution” on 21st October 2024. eShram- “One-Stop-Solution” entails integration of different Social Security/ Welfare schemes at a single portal i.e., eShram. This enables unorganised workers registered on eShram to access social security schemes and see benefits availed by them so far, through eShram.

eShram: Transforming Access to Social Security

A One-Stop Solution for Unorganised Labour

Launched on October 21, 2024, eShram integrates various social security schemes for unorganised workers



So far, 12 schemes of different Central Ministries / Departments have already been integrated/ mapped with the eShram including Pradhan Mantri Suraksha Bima Yojana (PMSBY), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana, Prime Minister Street Vendors AtmaNirbhar Nidhi (PM-SVANidhi), PM Awas Yojana- Urban (PMAY-U), PM Awas Yojana- Gramin (PMAY-G), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).

Ref: PIB

Image: [Pixabay](#)

Making mistakes is better than faking perfection

10. Forest Cover in the Country



Forest Survey of India (FSI), Dehradun, an organization under the Ministry carries out the assessment of forest cover biennially. As per the latest India State of Forest Report (ISFR) 2021, the total forest cover of the country is 7,13,789 square kilometers which is 21.71% of the geographical area of the country. The State/UT wise details of forest cover in the country during the last five years are given in Annexure.

The forest and tree cover has increased by 7449 square kilometers as per the assessment in ISFR 2021 in comparison to assessment in ISFR 2017. As

there is no loss of forest and tree cover, the question of increase in emission of carbon dioxide due to loss of forest & tree cover does not arise.

The contradiction between India State of Forest Report 2021 and Global Forest Watch data may be due to differences in the definition of forest cover and tree cover adopted in these two reports.

The Forest (Conservation) Act, 1980, was amended through a gazette notification dated 4th August, 2023 and the revised provisions came into effect from 1st December, 2023. The amendments are being implemented to promote the conservation, management and restoration of forests, support ecologically sustainable development, ensure ecological security, preserve cultural and traditional values related to forests and address economic needs while advancing carbon neutrality.

Annexure

State/UT wise details of Forest Cover from ISFR 2017 to ISFR 2021 (Area in square kilometre)

State/UT	Geographical Area	ISFR 2017	ISFR 2019	ISFR 2021
Andhra Pradesh	1,62,968	28,147	29,137	29,784

Arunachal Pradesh	83,743	66,964	66,688	66,431
Assam	78,438	28,105	28,327	28,312
Bihar	94,163	7,299	7,306	7,381
Chhattisgarh	1,35,192	55,547	55,611	55,717
Delhi	1,483	192.41	195.44	195
Goa	3,702	2,229	2,237	2,244
Gujarat	1,96,244	14,757	14,857	14,926
Haryana	44,212	1,588	1,602	1,603
Himachal Pradesh	55,673	15,100	15,434	15,443
Jharkhand	79,716	23,553	23,611	23,721
Karnataka	1,91,791	37,550	38,575	38,730

Kerala	38,852	20,321	21,144	21,253
Madhya Pradesh	3,08,252	77,414	77,482	77,493
Maharashtra	3,07,713	50,682	50,778	50,798
Manipur	22,327	17,346	16,847	16,598
Meghalaya	22,429	17,146	17,119	17,046
Mizoram	21,081	18,186	18,006	17,820
Nagaland	16,579	12,489	12,486	12,251
Odisha	1,55,707	51,345	51,619	52,156
Punjab	50,362	1,837	1,849	1,847
Rajasthan	3,42,239	16,572	16,630	16,655
Sikkim	7,096	3,344	3,342	3,341

Tamil Nadu	1,30,060	26,281	26,364	26,419
Telangana	1,12,077	20,419	20,582	21,214
Tripura	10,486	7,726	7,726	7,722
Uttar Pradesh	2,40,928	14,679	14,806	14,818
Uttarakhand	53,483	24,295	24,303	24,305
West Bengal	88,752	16,847	16,902	16,832
A & N Islands	8,249	6,742	6,743	6,744
Chandigarh	114	21.56	22.03	22.88
Dadra & Nagar Haveli and Daman & Diu	602	227.49	227.49	227.75
Jammu & Kashmir **	2,22,236	23,241	21,358	21,287

Ladakh			2,254	2,272
Lakshadweep	30	27.10	27.10	27.10
Puducherry	490	53.67	52.41	53.30
Grand Total	3,287,469	7,08,273	7,12,249	713,789

*** From ISFR 2019 onwards Jammu & Kashmir was divided into two UTs viz. Jammu & Kashmir and Ladakh*

Ref: PIB

Image: [Pixabay](#)

The noblest pleasure is the joy of understanding.

Leonardo da Vinci

11. Promoting Indian Culture: The Indian Conservation Fellowship

The Ministry of Culture, through its autonomous bodies has undertaken various measures for the promotion of cultural tradition and literature in the rural and traditional areas which are given as follows:



Sahitya Akademi (SA) plays a vital role in fostering Indian literature in 24 recognized languages. In addition to its regular programs and publications,

SA has initiated several projects and schemes to enhance literary awareness and talent, particularly in rural and traditional areas. Notable among these are the *Ek Bharat Shreshtha Bharat* and *Gramalok* series.

Indira Gandhi National Centre for the Arts (IGNCA) focuses on cultural preservation and documentation, promotion of regional languages, promotion of performing arts and development of traditional art forms.

Centre for Cultural Resources and Training (CCRT) implements the scholarships and fellowship scheme like Cultural Talent Search Scholarship Scheme, Scheme for “Award of Scholarships to Young Artists (SYA) in different cultural fields”, fellowship scheme for the award of fellowships to outstanding persons in the field of culture for the promotion of cultural tradition and literature in the rural and traditional areas.

The Indian Conservation Fellowship Pilot Program (ICFPP) was undertaken by the Ministry of Culture in collaboration with the Metropolitan Museum of Art (MMA) in New York and the Stichting Restauratie Atelier Limburg (SRAL), the Netherlands. A Memorandum of Agreement (MoA) was signed between the Ministry of Culture, Government of India and the Metropolitan Museum of Art (MMA), New York on 19.03.2013 for a period of two years.

Thereafter, a Memorandum of Understanding (MoU) between Ministry of Culture and Metropolitan Museum of Art (MMA), New York was signed

on 27.06.2016 for launching of the Indian Conservation Fellowship Program (ICFP) for a period from 2016 to 2021 and was to be undertaken by the Ministry of Culture in collaboration with the Metropolitan Museum of Art (MMA), New York, the Stichting Restauratie Atelier Limburg (SRAL), the Netherlands, the Royal Institute for Cultural Heritage, Brussels (“KIK-IRPA”), and the Freer Gallery of Art and Arthur M. Sackler Gallery, The Smithsonian Museums of Asian Art, Washington, DC (“FG”) with support from the Andrew W. Mellon Foundation (the “Mellon Foundation”).

The aim of this fellowship was to equip the participants with skills to better care for collections at their home institutions and to establish a larger and stronger conservation community in India with international links to professionals in the field. So far, 36 conservators from India have received fellowships under ICFP (17 conservators during Pilot Program and 19 conservators during Main Program).

The Government of India has recognized the following 11 languages as Classical Languages: Tamil, Telugu, Sanskrit, Kannada, Malayalam, Odia, Marathi, Pali, Prakrit, Assamese, and Bengali. Each of these languages has a history spanning at least 1500 years, representing a rich cultural and literary heritage. They reflect the uniqueness of their respective communities and regions. These languages encompass a vast corpus of ancient literature and texts, regarded as invaluable heritage by generations of speakers. They include knowledge texts, particularly prose, alongside

poetry, epigraphical, and inscriptional evidence, showcasing their historical and cultural significance.

Indira Gandhi National Centre for the Arts (IGNCA) has created Digital Archives for regional languages, traditional art forms, and performing arts. Digital Museums have been created for showcasing regional art and culture, and various activities are carried out through National Cultural Audiovisual Archives (NCAA) of Cultural Informatics Lab (CIL) Division of the IGNCA. The National Mission for Manuscripts (NMM) under the Ministry of Culture is also engaged in documentation and digitization of ancient texts in these languages.

The Union Minister for Culture and Tourism Shri Gajendra Singh Shekhawat shared this information in the Lok Sabha in the first week of December 2024.

Ref: PIB

12. Khelo India Scheme: Nurturing India's Sports Talent for Global Success

The Khelo India Scheme plays a pivotal role in identifying and nurturing sports talent through its Khelo India Talent Development Program. Designed to support athletes across 21 sports disciplines, including para-athletics, the program operates under specific guidelines and benchmarks to ensure the development of world-class athletes.

Key Achievements of Khelo India Scheme

1. Identification of Khelo India Athletes (KIAs):

- To date, 2781 KIAs have been selected under the scheme.
- Athletes receive comprehensive support, including:
 - Coaching and training
 - Sports equipment
 - Medical care
 - A monthly Out of Pocket Allowance (OPA)

2. Training at National Centres of Excellence (NCoEs):

- KIAs undergo rigorous training at National Centres of Excellence (NCoEs) managed by the Sports Authority of India

(SAI) and other accredited academies, ensuring they are prepared for high-performance events.

Khelo India Athletes' Achievements

- Asian Games 2022 (Hangzhou, China):
 - Out of the 644 Indian athletes, 124 were KIAs.
 - KIAs contributed significantly by winning 42 out of India's 106 medals, including 9 Gold medals.
- Paris 2024 Olympics Preparation:
 - 28 KIAs were part of the Indian contingent of 117 athletes, showcasing the program's success in producing world-class talent for global competitions.

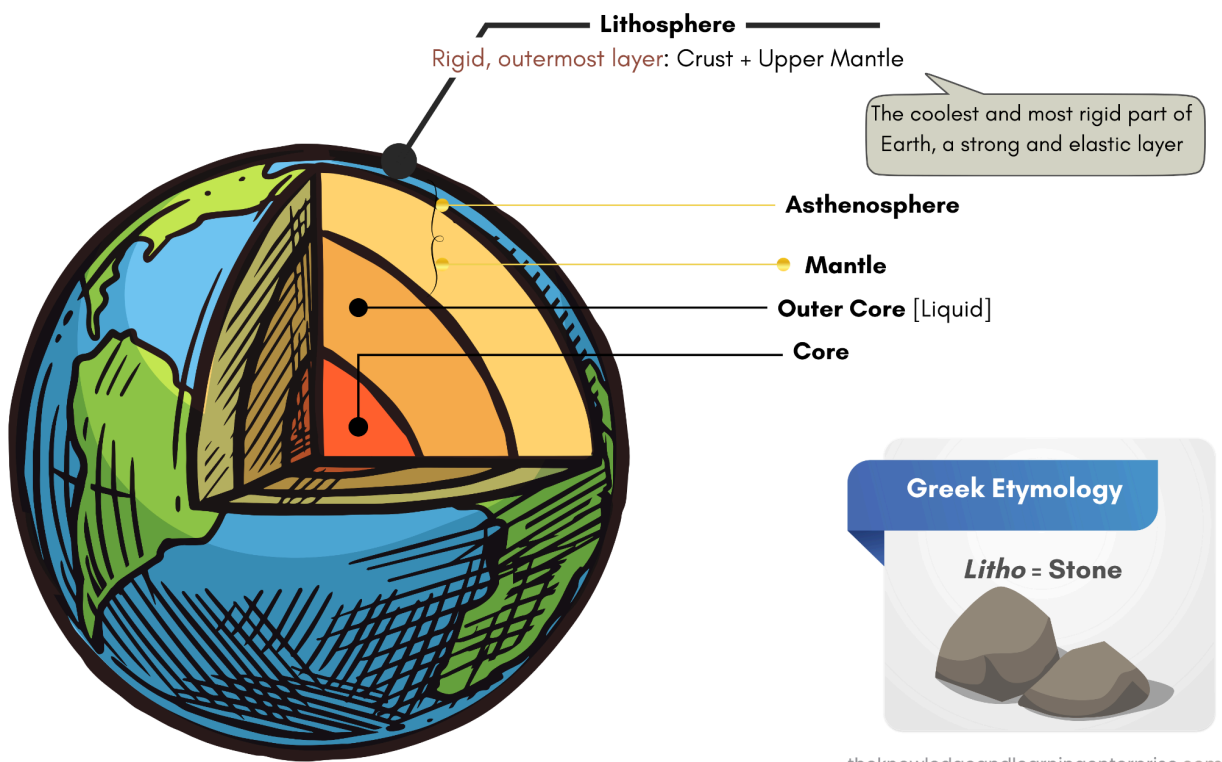
Why Khelo India Matters

The Khelo India Scheme has become a cornerstone of India's sports ecosystem, ensuring the identification and nurturing of young talent while providing them with resources and opportunities to compete on the global stage. The program not only strengthens India's sports talent pool but also enhances the country's performance at international sporting events, positioning India as a formidable force in the world of sports.

Ref: PIB

13. Know Your Science: The Lithosphere

The lithosphere is the rigid, outermost layer of Earth, made up of the crust and the top part of the upper mantle. The term comes from the Greek words litho, meaning "stone", and "sphere". The lithosphere is the coolest and most rigid part of Earth. It's a strong and elastic layer that sits above the asthenosphere, which is weaker and more ductile.



The lithosphere is important for life on Earth in many ways, including:

- **Minerals:** The lithosphere is a rich source of minerals, including copper, magnesium, aluminum, and calcium.
- **Nutrients:** The lithosphere, along with the hydrosphere and atmosphere, provides nutrients for plant and animal life.
- **Terrain:** The lithosphere's rocky terrain is essential for the biosphere.
- **Volcanoes, mountains, and continents:** Tectonic plates shifting within the lithosphere create volcanoes, mountains, and continents. The oceanic lithosphere is denser than the continental lithosphere because it cools, thickens, and ages as it moves away from the mid-ocean ridge. This process is called thermal contraction.

14. Marine Species Conservation

The Government has taken various important steps for the conservation of marine species which includes the following:

- A network of protected areas across the Coastal States and Islands of the country has been created for the conservation of marine species under the Wild Life (Protection) Act, 1972.
- Many threatened marine species have been listed in Schedule I and II of the Wild Life (Protection) Act 1972 providing them protection against hunting.
- The Ministry has amended Wild Life (Protection) Act, 1972 to empower Indian Coast Guards for entry, search, arrest and detention in case of contravention of provisions of the Act.
- The Ministry has released a National Marine Turtle Action Plan with the aim to conserve marine turtles and their habitats in India.
- The Ministry has released 'Marine Megafauna Stranding Management Guidelines' in 2021 for management of stranding and entanglement of marine megafauna.
- The Coastal Regulation Zone (CRZ) Notification, 2019, promulgated under Environment (Protection) Act 1986, has specific focus on conservation and management plans of Ecologically Sensitive Areas

(ESAs), like Mangroves, Sea grasses, Sand dunes, Corals and Coral reefs, Biologically active mudflats, Turtle nesting grounds, and Horseshoe crabs' habitats.

- The Ministry provides financial assistance to States/UTs under the Centrally sponsored Scheme 'Development of Wildlife Habitats' for conservation of wildlife including marine fauna and its habitat.
- The Ministry is granting funds under the Centrally Sponsored Schemes to maritime States for the conservation of corals and mangroves.
- The Ministry under the National Compensatory Afforestation Fund Management and Planning Authority provides funding support for conservation of dugongs and their habitats.

Ref: PIB

15. National Gallery of Modern Art NGMA

Country's Premier Art Institution for Modern and Contemporary Indian Art



National Gallery of Modern Art (NGMA), Delhi, a subordinate office under the Ministry of Culture (MoC) Government of India, is India's premier art institution for modern and contemporary Indian art, with the singular aim

of promoting and preserving modern Indian art. It has two branches i.e. Bengaluru and Mumbai. The National Gallery of Modern Art (NGMA) in India plays a crucial role in promoting modern and contemporary art by providing a platform for artists, curators, and art enthusiasts. It has more than 17,000 works of modern art, both of Indian and foreign origin, covering a time span of over 160 years from approximately 1850 AD onwards.

National Gallery of Modern Art also provides a platform to organize regular exhibitions showcasing a wide variety of modern and contemporary Indian and international art. These exhibitions present the works of well-established artists as well as emerging talents. By featuring diverse artistic expressions and styles, the gallery introduces audiences to the evolving trends in modern art.

INTERNSHIP AT NGMA

To encourage students studying art and museum-related subjects and to provide them with professional training and career opportunities, NGMA offers on-the-job internships.

To further our core objective of knowledge dissemination, we offer passionate young professional's opportunities to work with our vast collection and gain exposure to key museological concepts. This initiative

ensures that our experienced staff can mentor and train the next generation of museum professionals.

GUIDED TOUR VOLUNTEER PROGRAMME

NGMA's educational imperatives of disseminating knowledge is held in the highest accord. To fulfil this vital aspect of our vision, we seek highly motivated and enthusiastic young volunteers to guide students, occasional dignitaries, and the general public through the museum. Our two-week training module is designed to equip volunteers with a strong foundation in NGMA's collection, Indian modern art in its socio-cultural context, the evolving role of museums in society, and various artmaking techniques.

Besides, Ministry of Culture, operates a Museum Grant Scheme under which financial assistance is provided for setting up new museum/development of existing museum by Central/State Governments and Public Sector Undertakings, Societies, Autonomous bodies, Local Bodies and Trust registered under the Societies Registration Act 1860 at the regional, state and district level. Modern Art museums/galleries are also funded under this Scheme. The guidelines of the Museum Grant Scheme are available on the website of the Ministry at www.indiaculture.gov.in.

Ref: PIB

Image: [Tracy Hunter at Flickr](#)

16. Preserving and Promoting India's Rich Cultural Heritage

National Mission on Cultural Mapping and Roadmap (NMCMR)

To preserve and promote India's rich cultural heritage, the Ministry of Culture has established the National Mission on Cultural Mapping (NMCM). Implemented by the Indira Gandhi National Centre for the Arts (IGNCA), the mission aims to document India's cultural heritage and its potential to revitalize rural economics.

As a part of *Azadi Ka Amrit Mahotsav*, NMCM launched the *Mera Gaon Meri Dharohar* (MGMD) portal in June 2023 (<https://mgmd.gov.in/>). This initiative aims to document the cultural heritage of 6.5 lakh villages of India. Currently, 4.5 lakh villages are live on the portal with their respective cultural portfolios.

The MGMD portal captures a wide range of cultural elements, including oral traditions, beliefs, customs, historical significance, art forms, traditional food, prominent artists, fairs and festivals, traditional dress, ornaments and local landmarks. NMCM is a significant step towards preserving India's cultural heritage and empowering rural communities. By documenting and promoting cultural assets, the mission aims to strengthen cultural identity and foster economic development.

At present, NMCM is undergoing with its component MGMD and the state-wise details are available at *Mera Gaon Meri Dharohar* Web Portal (<https://mgmd.gov.in/>) which is an open access portal.

State-wise details are available on MGMD Portal; we have a set format for identification and collection of data for different cultural domains, artist and traditional art forms on the portal.

This information was given by Union Minister for Culture and Tourism Shri Gajendra Singh Shekhawat in a written reply in Lok Sabha today.

Ref: PIB

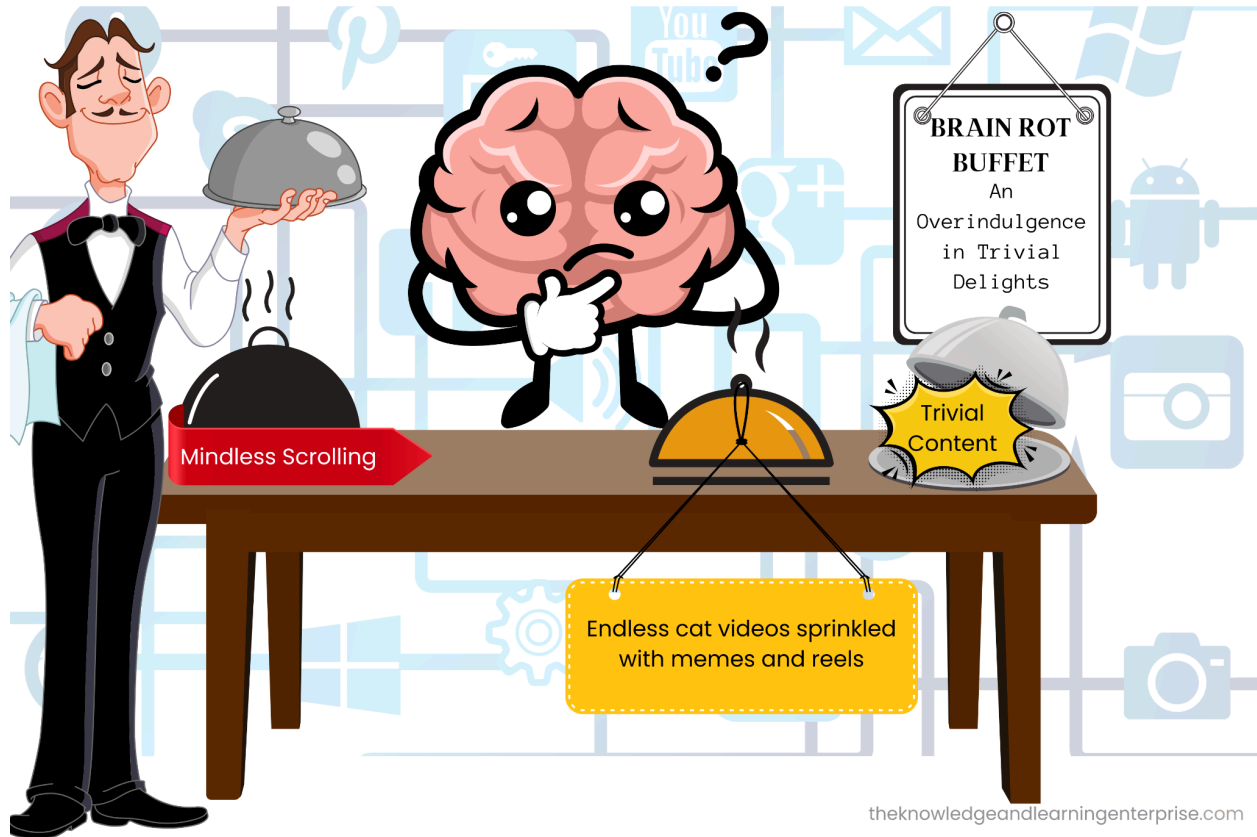
17. Oxford Word of Year

Do you indulge in endless, pointless scrolling on your phone for hours? You're not alone! Oxford University Press (OUP) named brain rot as its 'Word of the Year' for 2024.

Brain rot is defined as "the supposed deterioration of a person's mental or intellectual state, especially viewed as the result of overconsumption of material (now particularly online content) considered to be trivial or unchallenging. Also: something characterised as likely to lead to such According to OUP, the result comes after a public vote, in which more than 37,000 people voted for their favourite word after OUP's language experts created a shortlist of six words to reflect the moods and conversations that helped shape the past year. The list consisted of brain rot, demure, lore, slop, romantasy, and dynamic pricing.

Brain rot was chosen after OUP "experts came together to consider the public's input, voting results, and language data".

They noticed that brain rot gained new prominence this year as a term used to capture concerns about the impact of consuming excessive amounts of low-quality online content, especially on social media. The term increased in usage frequency by 230 per cent between 2023 and 2024.



theknowledgeandlearningenterprise.com

“The term has taken on new significance in the digital age, especially over the past 12 months. Initially gaining traction on social media platforms — particularly on TikTok among Gen Z and Gen Alpha communities — ‘brain rot’ is now seeing more widespread use, such as in mainstream journalism, amidst societal concerns about the negative impact of overconsuming online content.

“In 2024, ‘brain rot’ is used to describe both the cause and effect of this, referring to low-quality, low-value content found on social media and the

internet, as well as the subsequent negative impact that consuming this type of content is perceived to have on an individual or society.”

The first recorded use of brain rot was in American essayist Henry David Thoreau’s 1854 book ‘Walden’ which reports his experiences of living a simple lifestyle in the natural world.

“While England endeavours to cure the potato rot, will not any endeavour to cure the brain-rot — which prevails so much more widely and fatally?” Thoreau wrote.

However, now, brain rot refers to hundreds of thousands of pointless social media posts and the effect they have on users — case in point, the videos of people dropping jars on stairs so they roll along and break. The purpose? There is none, which is the whole meaning of brain rot.

18. Promotion of Green and Eco-Tourism



The Ministry of Tourism promotes India in a holistic manner, through various initiatives. As part of on-going activities; promotion of Ecotourism and Sustainable Tourism is also taken up. In order to provide impetus for development of Ecotourism and Sustainable Tourism in the country, Ministry of Tourism formulated National Strategies for Ecotourism and Sustainable Tourism and initiated Travel for LiFE programme to promote sustainable tourism in the country and to encourage the tourists and tourism businesses to adopt sustainable tourism practices.

Tourism is primarily a state government subject. However, the Ministry of Tourism provides financial assistance to State Governments/Union Territory Administrations/Central Agencies for the development of tourism related infrastructure in the country under its schemes. The Ministry has identified Eco Circuit as one of the thematic circuits under its Swadesh Darshan Scheme.

The Ministry of Tourism has revamped its Swadesh Darshan scheme in the form of Swadesh Darshan 2.0 with the mission to create a robust framework for integrated development of tourism destinations in partnership with the States/UTs and local governments for promoting sustainable and responsible tourism in the country.

“Challenge Based Destination Development”, a sub-scheme under Swadesh Darshan 2.0 aims for holistic development of a destination to enhance tourist experience across all of the tourism value chain to transform our tourist destinations as sustainable and responsible destinations.

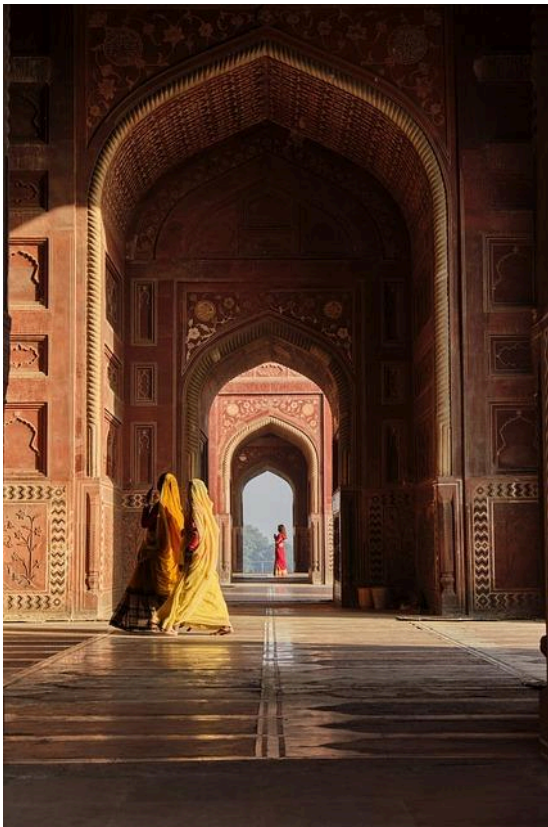
Ref: PIB

Image: [Pixabay](#)

No amount of anxiety will change your future and no amount of regret can change your past.

The key is acceptance.

19. Protected Monuments and Areas in the Country



There are 3697 ancient monuments and archaeological sites and remains declared as of national importance by and under the Ancient Monuments and Archaeological Sites and Remains Act, 1958 in the country.

The Archaeological Survey of India (ASI) maintains these monuments and sites declared as of national importance based on their requirement in order to preserve them in their originality and pass them on to the future generations.

Sl.No.	Name of State	Protected Monuments/Areas
1.	Andhra Pradesh	135
2.	Arunachal Pradesh	03
3.	Assam	55
4.	Bihar	70
5.	Chhattisgarh	46
6.	Daman & Diu (U. T.)	11
7.	Goa	21
8.	Gujarat	205
9.	Haryana	91
10.	Himachal Pradesh	40

11.	Jammu & Kashmir (U. T.)	56
12.	Jharkhand	13
13.	Karnataka	506
14.	Kerala	29
15.	Ladakh (U. T.)	15
16.	Madhya Pradesh	291
17.	Maharashtra	286
18.	Manipur	01
19.	Meghalaya	08
20.	Mizoram	01
21.	Nagaland	04

22.	N.C.T. Delhi	173
23.	Odisha	81
24.	Puducherry (U. T.)	07
25.	Punjab	33
26.	Rajasthan	163
27.	Sikkim	03
28.	Telangana	08
29.	Tamil Nadu	412
30.	Tripura	08
31.	Uttar Pradesh	743
32.	Uttarakhand	44

33.	West Bengal	135
	TOTAL	3697

Ref: PIB

Image: [Pixabay](#)

20. Promoting Sustainable and Ecotourism in India: Key Initiatives by the Ministry of Tourism

The Ministry of Tourism is dedicated to promoting India as a global tourist destination in a holistic and sustainable manner. Recognizing the growing importance of Ecotourism and Sustainable Tourism, the Ministry has introduced several initiatives aimed at fostering environmentally responsible travel practices.

Key Initiatives for Sustainable and Ecotourism

1. National Strategies for Ecotourism and Sustainable Tourism:
 - The Ministry has formulated comprehensive strategies to boost ecotourism and sustainable tourism across India. These frameworks are designed to encourage tourists and tourism businesses to adopt environmentally friendly practices.
2. Travel for LiFE Program:
 - The Travel for LiFE (Lifestyle for Environment) program promotes sustainable tourism practices by emphasizing environmentally conscious behaviors among tourists and tourism stakeholders.
3. Eco Circuit under Swadesh Darshan Scheme:

- The Ministry has identified Eco Circuit as one of the thematic circuits under its flagship Swadesh Darshan Scheme, which supports the development of eco-friendly tourism infrastructure.

Swadesh Darshan 2.0: Integrated Development for Sustainable Tourism

The Ministry of Tourism has revamped its Swadesh Darshan Scheme into Swadesh Darshan 2.0, focusing on the integrated development of tourism destinations in collaboration with States, Union Territories, and local governments.

Features of Swadesh Darshan 2.0

- **Sustainable and Responsible Tourism:**
 - Aims to transform India's tourist destinations into sustainable and responsible hubs by improving infrastructure and facilities.
- **Challenge-Based Destination Development:**
 - A sub-scheme designed for the holistic development of tourist destinations, enhancing visitor experiences across the tourism value chain.

SWADESH DARSHAN 2.0: REVAMPING INDIA'S TOURISM



Role of the Ministry in State Tourism Development

While tourism is primarily a state government subject, the Ministry of Tourism provides financial assistance to state governments, Union Territory administrations, and central agencies to develop tourism-related infrastructure. This collaborative approach ensures the growth of sustainable and responsible tourism across the country.

Why Sustainable Tourism Matters

The ministry's initiatives are aligned with global sustainability goals, focusing on preserving natural resources, promoting eco-friendly travel, and enhancing the overall tourist experience. By integrating sustainability into tourism development, India is positioning itself as a leader in responsible travel practices.

21. Cyber Fraud And Digital Harassment

'Police' and 'Public Order' are state subjects as per the seventh schedule of the Constitution of India. The states/UTs are primarily responsible for the prevention, detection, investigation and prosecution of crimes including cybercrime through their law enforcement agencies. Cyber crimes cases are handled under the provisions of the Information Technology Act, 2000, the Bhartiya Nyaya Sanhita, 2023 and Protection of Children from Sexual Offences Act, 2012 (POCSO Act). The central government supplements the initiatives of the states/UTs through advisories and financial assistance under various schemes for capacity building of their LEAs.

The National Crime Records Bureau (NCRB) compiles and publishes the statistical data on crimes in its publication "Crime in India". The latest published report is for the year 2022. The NCRB maintained information regarding certain categories of fraud for cyber crime such as credit/debit cards, ATMs, online banking frauds, OTP frauds and others. As per the data published by the NCRB, details of cases registered under fraud for cyber crimes (involving communication devices as medium/target) for the period of 2022 is as under:

Cases Registered under Fraud for Cyber Crimes	Credit/Debit cards	ATMs	Online Banking frauds	OTP frauds	Others	Total
	1665	1690	6491	2910	4714	17470

To strengthen the mechanism to deal with cyber crimes in a comprehensive and coordinated manner, the central government has taken steps which, inter-alia, include the following:

- i. The Ministry of Home Affairs has set up the 'Indian Cyber Crime Coordination Centre' (I4C) as an attached office to deal with all types of cybercrime in the country in a coordinated and comprehensive manner.
- ii. The 'National Cyber Crime Reporting Portal' (<https://cybercrime.gov.in>) has been launched, as a part of the I4C, to enable the public to report incidents pertaining to all types of cyber crimes, with special focus on cyber crimes against women and children. Cyber crime incidents reported on this portal, their conversion into FIRs and subsequent action thereon are handled by the State/UT law enforcement agencies concerned as per the provisions of the law.
- iii. The 'Citizen Financial Cyber Fraud Reporting and Management System', under I4C, has been launched in 2021 for immediate reporting of financial frauds and to stop siphoning off funds by the fraudsters. So far, a financial amount of more than Rs. 3431 crore has been saved in more than 9.94 lakh complaints. A toll-free helpline number '1930' has been operationalized to get assistance in lodging online cyber complaints.
- iv. Seven Joint Cyber Coordination Teams (JCCTs) have been constituted for Mewar, Jamtara, Ahmedabad, Hyderabad, Chandigarh, Vishakhapatnam, and Guwahati under I4C

covering the whole country based upon cyber crime hotspots/ areas having multi jurisdictional issues by on boarding States/UTs to enhance the coordination framework among the law enforcement agencies of the States/UTs. Seven workshops were organized for JCCTs at Hyderabad, Ahmedabad, Guwahati, Vishakhapatnam, Lucknow, Ranchi and Chandigarh.

- v. The state of the art 'National Cyber Forensic Laboratory (Investigation)' has been established, as a part of the I4C, at New Delhi to provide early stage cyber forensic assistance to Investigating Officers (IOs) of State/UT Police. So far, National Cyber Forensics Laboratory (Investigation) has provided its services to State/UT LEAs in around 11,203 cases pertaining to cyber crimes.
- vi. The Massive Open Online Courses (MOOC) platform, namely 'CyTrain' portal has been developed under I4C, for capacity building of police officers/judicial officers through online courses on critical aspects of cyber crime investigation, forensics, prosecution etc. More than 98,698 police officers from States/UTs are registered and more than 75,591 certificates issued through the portal.
- vii. National Cyber Forensic Laboratory (Evidence) has been set up at Hyderabad. Establishment of this laboratory provides the necessary forensic support in cases of evidence related to cyber crime, preserving the evidence and its analysis in line with the provisions of IT Act and Evidence Act; and reduced turnaround time.

- viii. The Ministry of Home Affairs has provided financial assistance to the tune of Rs. 131.60 crores under the 'Cyber Crime Prevention against Women and Children (CCPWC)' Scheme, to the States/UTs for their capacity building such as setting up of cyber forensic-cum-training laboratories, hiring of junior cyber consultants and training of LEAs' personnel, public prosecutors and judicial officers. Cyber forensic-cum-training laboratories have been commissioned in 33 States/UTs and more than 24,600 LEA personnel, judicial officers and prosecutors have been provided training on cyber crime awareness, investigation, forensics etc.
- ix. I4C has imparted cyber hygiene training to 7,330 officials of various ministries/ departments of Government of India.
- x. I4C has imparted cyber hygiene training to more than 40,151 and 53,022 NCC cadets and NSS cadets respectively.
- xi. Till 15.11.2024, more than 6.69 lakhs SIM cards and 1,32,000 IMEIs as reported by police authorities have been blocked by the Government of India.
- xii. The central government and Telecom Service Providers (TSPs) have devised a system to identify and block incoming international spoofed calls displaying Indian mobile numbers appear to be originating within India. Such international spoofed calls have been made by cyber-criminals in recent cases of fake digital arrests, FedEx scams, impersonation as government and police officials, etc. Directions have been

issued to the TSPs for blocking of such incoming international spoofed calls.

- xiii. To spread awareness on cyber crime, the central government has taken steps which, inter-alia, include; dissemination of messages through SMS, I4C social media account i.e. X (formerly Twitter) (@CyberDost), Facebook(CyberDostI4C), Instagram (cyberDostI4C), Telegram(cyberdosti4c), Radio campaign, engaged MyGov for publicity in multiple mediums, organizing Cyber Safety and Security Awareness weeks in association with States/UTs, publishing of *Handbook for Adolescents/Students*, newspaper advertisement on digital arrest scam, announcement in Delhi metros on digital arrest and other modus operandi of cyber criminals, use of social media influencers to create special posts on digital arrest, digital displays on railway stations and airports across, etc.

Ref: PIB

22. Advancing India's Electric Vehicle Ecosystem

The Ministry of Heavy Industries has formulated the following schemes for advancing and strengthening India's Electric Vehicle (EV) ecosystem by supporting local manufacturing aligned with the vision of *Atmanirbhar Bharat* and *Viksit Bharat 2047*.

These schemes are implemented on pan India basis including Uttar Pradesh and Maharashtra:

- i. PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) Scheme: PM E-DRIVE Scheme was notified on 29.09.2024 for promotion of electric mobility and to reduce dependence on fossil fuels in the country. The scheme has an outlay of Rs.10,900 crore over a period of two years from 01.04.2024 to 31.03.2026. The Electric Mobility Promotion Scheme (EMPS) 2024 implemented for the period of 06 months, from 01.04.2024 to 30.09.2024, is subsumed in PM E-DRIVE Scheme. This scheme aims to incentivise sale of e-2W, e-3W, e-Trucks, e-Ambulances, and e-buses. The scheme also supports development of charging infrastructure and upgrading testing agencies over two years, i.e. up to FY 2025-26.
- ii. Production Linked Incentive Scheme for Automobile and Auto Component Industry (PLI-Auto): PLI-Auto Scheme was launched on 15.09.2021, for enhancing India's manufacturing capabilities for Advanced

Automotive Technology (AAT) products with a budgetary outlay of Rs. 25,938 crores for a period of 5 years. The details of the scheme are available [here](#).

iii. Production Linked Incentive (PLI) scheme for manufacturing Advanced Chemistry Cells (ACC): Government on 12th May, 2021 approved PLI-ACC in order to promote manufacturing of ACC in the country with a budgetary outlay of Rs. 18,100 crore. The scheme envisages to establish a cumulative ACC battery manufacturing capacity of 50 GWh. The details of the scheme may be seen [here](#).

iv. Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme: Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) scheme Phase-II (FAME II) was implemented for a period of 5 years w.e.f. 01st April, 2019 with a total budgetary support of Rs.11,500 Crore. Under FAME India scheme Phase-II, Phased Manufacturing Programme (PMP) was introduced with the objective of domestic manufacturing of electrical vehicles, its assemblies/ sub-assemblies and parts/sub-parts thereby increasing the domestic value addition.

Ref: PIB

23. Licensing of Battery Charging Facilities



As per clarification on charging infrastructure for electric vehicles issued by Ministry of Power on 13th April, 2018, it was clarified that the electric vehicle battery charging through charging station does not require license under the provisions of Electricity Act, 2003.

NITI Aayog released the draft Battery-Swapping Policy for public consultation in 2022. The battery swapping is an alternative which involves exchanging discharged batteries for charged ones and provides flexibility to charge them separately. The details of the draft [Battery Swapping Policy](#) are available at the website of NITI Aayog.

Image: [Gerd Altmann on Pixabay](#)

24. Adoption of Modern Animal Husbandry Practices

The details of steps to encourage the adoption of modern animal husbandry practices is as follow:

Rashtriya Gokul Mission

The following steps/initiatives are taken under RGM for adoption of modern animal husbandry practices, advance breeding methods and enhancement of livestock productivity in all states of the country including Rajasthan and Jharkhand:

01. Nationwide Artificial Insemination Program: Under the Rashtriya Gokul Mission, the Department of Animal Husbandry and Dairying is expanding artificial insemination coverage in the districts with less than 50% AI coverage to boost the milk production and productivity of bovines, including indigenous breeds. Under the programme Artificial Insemination services are delivered at farmers' doorstep free of cost. As on date, 7.3 crore animals have been covered, with 10.17 crore artificial inseminations performed, benefiting 4.58 crore farmers in the country. In Rajasthan, 45.26 lakh animals have been covered, with 55.99 lakh artificial inseminations performed, benefiting 32.47 lakh farmers and in Jharkhand 22.21 lakh animals have been covered, with 27.34 lakh artificial inseminations performed, benefiting 15.81 lakh farmers.

02. Progeny Testing and Pedigree Selection: This program aims to produce high genetic merit bulls, including bulls of indigenous breeds. Progeny testing is implemented for Gir, Sahiwal breeds of cattle, and Murrah, Mehsana breeds of buffaloes. Under the Pedigree selection programme Rathi, Tharparkar, Hariana, Kankrej breed of cattle and Jaffarabadi, Nili Ravi, Pandharpuri and Banni breed of buffalo are covered. So far 3,988 high genetic merit bulls have been produced and inducted for semen production.
03. Accelerated Breed Improvement Programme using sex sorted semen aims to produce female calves with up to 90% accuracy, thereby enhancing breed improvement and farmers' income. Farmers receive support for assured pregnancy up to 50% of the cost of sex sorted semen. As of now, 341,998 farmers have benefited from this program.
04. Accelerated Breed Improvement Programme using In-Vitro Fertilization (IVF) technology: This technology is utilized for the rapid genetic upgradation of bovines and an incentive of Rs 5,000 per assured pregnancy is made available to farmers interested in taking up IVF technology. To propagate elite animals of indigenous breeds, the Department has established 22 IVF laboratories and has produced 22,896 viable embryos, with 12,846 embryos transferred and 2019 calves born.

05. **Genomic Selection:** To accelerate genetic improvement of cattle and buffaloes, the Department has developed unified genomic chips—Gau Chip for indigenous cattle and Mahish Chip for buffaloes—specifically designed for initiating genomic selection in the country.
06. **Multi-purpose Artificial Insemination Technicians in Rural India (MAITRIs):** Under the scheme MAITRIs are trained and equipped to deliver quality Artificial Insemination services at farmers' doorstep. During the last 3 years 38,736 MAITRIs have been trained and equipped under Rashtriya Gokul Mission.

National Livestock Mission

01. The department supports inclusion of superior male germplasm in existing native gene pool for genetic upgradation of indigenous crossbred animals with higher per animal productivity
02. The department is allowing import of good genetic small animals for improvement of the indigenous stock through scientific breeding programmes.
03. The department is promoting innovation and extension sub-mission which aims to incentivize the institutes, universities, organizations carrying out research and development related to sheep, goat, pig and feed and fodder sector, extension activities, livestock insurance

and innovation. Under this sub-mission, assistance will be provided to the central Agencies, ICAR Institutes and University farms for applied research required for development of the sector, extension services including promotional activities for animal husbandry and schemes, seminars, conferences, demonstration activities and other IEC activities for awareness generation. Assistance is also provided to mitigate risk through livestock insurance activity.

04. Under the sub-mission of Feed and Fodder, fodder development activity is undertaken through strengthening of fodder seed chain to improve availability of certified fodder seed required for fodder production and encouraging entrepreneurs for establishment of fodder Block/Hay Baling/Silage Making Units through incentivisation (50% subsidy on capital cost upto Rs.50.00 lakh). This in turn will increase the productivity of the animals.

Ref: PIB

25. Proposed Novel Antenna Design Can Measure Faint Cosmological Radio-Frequency Signals

Scientists at the Raman Research Institute, Bangalore, have come up with a novel antenna design which can perform sky measurements 2.5-4 Gigahertz (GHz), a frequency range with the best possibility of detecting the faint Cosmological Recombination Radiation (CRR) signals. These elusive and undetected signals hold vital clues capable of improving our understanding of the thermal and ionization history of the Universe.

Our universe is about 13.8 billion years old. Soon after the Big Bang, the infant Universe was an extremely hot and dense place. So hot, that matter could not exist as atoms. It instead broke down into electrons, protons, and other light nuclei (Helium, Lithium). Also, co-existing with matter in the early Universe is radiation. Today we observe this radiation as the Cosmic Microwave Background (CMB). This CMB is capable of retaining crucial information about the cosmological and intervening astrophysical processes by means of distortions in its spectral shape.

One such distortion comes from the process of the formation of the first atoms in the early Universe over the Epoch of Recombination. This period is characterised by the expansion and gradual cooling of the Universe which resulted in ordinary matter (Baryonic matter) to enter into a transition phase -- from a fully ionized primordial plasma into mostly neutral atomic hydrogen and helium atoms. This process is accompanied by the emission of photons or radiation, which is termed as Cosmological Recombination Radiation (CRR). This forms an additive distortion to the underlying CMB spectrum.

The detection of the never-before-detected CRR, which is nine orders of magnitude (1 part in a billion) fainter than the CMB which measures about 3-degree Kelvin (-270 degree Celsius, the temperature of deep space), will be an important confirmation of our understanding of the thermal and ionization history of the Universe. A detailed measurement of the CRR will provide the only way to experimentally measure the abundance of helium in the Universe before more helium starts forming in the cores of the stars.

Due to the weak and elusive nature of CRR, the challenge before the scientific community is to design highly sensitive instruments that can aid in their detection.

As a first step towards detection of such a signal, a group of researchers from Bengaluru have designed a unique ground-based broadband antenna capable of detecting signals as faint as one part in 10,000.

Researchers Mayuri Rao and Keerthipriya Sathish from Raman Research Institute (RRI), an autonomous institute of the Department of Science and Technology (DST), Government of India, and their collaborator Debdeep Sarkar from the Indian Institute of Science (IISc), have come up with an antenna design which can perform sky measurements between 2.5 - 4 Gigahertz (GHz), the frequency range identified to be best suited for CRR detection.

“For the sky measurements we plan to perform, the broadband antenna offered us the highest sensitivity when compared to other antennas designed for the same bandwidth. The metric of being frequency-independent over the wideband and ensuring smooth frequency performance is unconventional, something only a custom design, such as

ours, could achieve. An off-the-shelf wideband antenna just won't work," said Keerthipriya Sathish, lead author of the paper and Research Scientist at RRI.

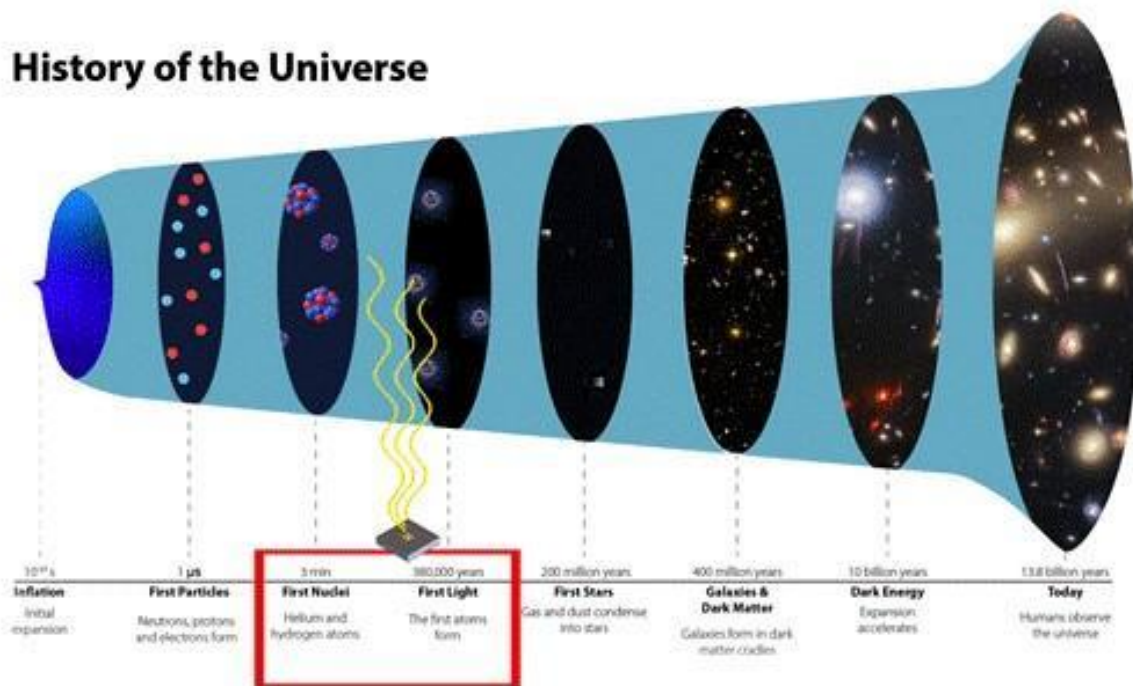
A fantail antenna has been proposed as it has a radiation pattern with the same shape across frequencies with just a +/- 1% variation in its characteristics. This antenna is a dual polarised dipole antenna with four arms and each arm shaped in the form of a fantail. What makes a fantail antenna unique is that using its custom design, the antenna stares perfectly at the same patch of the sky over its full operational bandwidth of 1.5 GHz (2.5 to 4 GHz) which is important in being able to separate spectral distortions from galactic foregrounds.

Weighing 150 grams, the square box-shaped antenna measures 14cm x 14cm. The top flat substrate is a low loss dielectric on which the antenna is etched in copper and the bottom is an aluminium ground-plate. Sandwiched in between these two plates is a radio-transparent, thick foam layer that houses the antenna's connectors with the receiver base.

"The antenna has a sensitivity of around 30 millikelvin (mK) across the 2.5-4 GHz frequency range, enabling it to detect very small temperature variations in the sky. Even before scaling it to an array, this antenna will enable exciting first science results once integrated with its custom receiver. We plan to study a reported excess radiation in the sky from a previous experiment at 3.3 GHz, which has been attributed to exotic physics including Dark Matter annihilation. Such experiments with this antenna will help inform improvements in the antenna and experiment design to go

all the way to the sensitivity needed for a CRR detection” said Mayuri Rao, faculty, RRI.

The researchers said that an antenna array will be deployed in radio-quiet locations, that is, where there is minimal or no radio frequency interference. The design of this planar antenna is such that it is easily fabricated using methods similar to those used in Printed Circuit Board (PCB) printing. Thus, this design offers high machining accuracy and consistency during replication for multiple-element arrays, is portable and easily deployable.



Using techniques adopted in this antenna design, the trio are already planning improvements that can take them closer to achieving their formidable goal of 1 part per billion sensitivities.

Ref: PIB

26. Production Of Electric Vehicles

As per the inputs provided by Society of Indian Automobile Manufacturers (SIAM), the total annual production of Electric Vehicles (EVs) in India during the last five years, year-wise is as given below:

Total Annual Production of Electric Vehicles (EVs) [in ('000)]					
Category	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Passenger Vehicles ¹	3.30	5.83	22.36	62.28	92.17
Commercial Vehicles ²	0.53	0.41	2.22	3.11	8.66
Three-Wheelers ²	143.83	91.97	185.38	404.88	632.78
Two-Wheeler ²	26.84	44.83	252.78	728.21	948.42
1. SIAM Production Data 2. Vahan Registration Data					

State-wise data of production of Electric Vehicles in the country is not available.

Government has introduced following schemes /programmes /initiatives to increase the production of EVs in India:

- I. Production Linked Incentive Scheme for Automobile and Auto Component Industry (PLI-Auto): PLI-Auto Scheme was launched on 15.09.2021, for enhancing India's manufacturing capabilities for Advanced Automotive Technology (AAT) products with a budgetary outlay of Rs. 25,938 crores for a period of 5 years. The details of the scheme are available [here](#).
- II. Production Linked Incentive (PLI) scheme for manufacturing Advanced Chemistry Cells (ACC): Government on 12th May, 2021 approved PLI-ACC in order to promote manufacturing of ACC in the country with a budgetary outlay of Rs. 18,100 crore. The scheme envisages to establish a cumulative ACC battery manufacturing capacity of 50 GWh. The details of the scheme may be seen [here](#).
- III. Scheme to Promote Manufacturing of Electric Passenger Cars in India (SPMEPCI): SPMEPCI was notified on 15.03.2024 to promote the manufacturing of electric passenger cars in India. Under the scheme, approved applicants would be allowed to import Completely Built-in Units at a reduced customs duty of 15% for 5 years subject to setting up of electric passenger cars manufacturing facilities in India. The details of the scheme are available [here](#).

Under the schemes, no specific focus is there for any particular state in the country. As on 28.11.2024, there are 82 approved applicants under the PLI-Auto scheme having multiple manufacturing facilities/ engineering research & design units across India. The state-wise number of

manufacturing facilities as reported by approved applicants under the scheme is given below:

Sr. No.	State	Number of Manufacturing Units
1	Andhra Pradesh	4
2	Assam	1
3	Delhi	1
4	Gujarat	12
5	Haryana	37
6	Jharkhand	4
7	Karnataka	28
8	Kerala	1
9	Madhya Pradesh	6

10	Maharashtra	77
11	Puducherry	1
12	Punjab	2
13	Rajasthan	8
14	Tamil Nadu	46
15	Telangana	4
16	Uttar Pradesh	13
17	Uttarakhand	12
Total		257

State-wise details of the total number of beneficiary firms approved under the PLI-ACC Scheme are as follows:

S. No.	State	Application approved
1	Gujarat	2
2	Karnataka	1
3	Tamil Nadu	1

PLI-Auto Scheme was launched on 15.09.2021 with a budgetary outlay of Rs. 25,938 crores for a period of 5 years. As on 28.11.2024, no disbursement has been made to applicants claims received under this scheme. SPMEPCI entails no financial outlay for applicants and only envisages benefit of reduced basic customs duty rate on the import of electric passenger cars, subject to compliance with the Scheme guidelines. The PLI-ACC scheme is under gestation period till December, 2024. Therefore, no disbursement has taken place so far.

The government does regular campaigns to incentivise purchase of domestically produced EVs in the country including consultations/conclaves. The details of major events organized by Ministry of Heavy Industries are as under:

1. PLI Auto Conclave held on 16th January, 2024;

2. OEM's Consultation for Electric Trucks adoption in India held on 8th May, 2024;
3. Stakeholder consultation on Future Roadmap for e-Bus held on 9th May, 2024;
4. Event on FAME's Success in Transforming India's EV Landscape held on 18th September, 2024; and
5. Consultation with OEMs/dealers before the launch of PM E-DRIVE held on 28-29th September, 2024.

Ref: PIB

27. India's Advancing Role in Global Trade Competitiveness

India's journey toward becoming a global economic powerhouse is marked by remarkable achievements in its export landscape. The nation has demonstrated significant progress in diverse sectors, ranging from petroleum oils and agrochemicals to semiconductors and precious stones. This growth reflects India's ability to leverage advanced technology, innovative practices, and competitive manufacturing to meet global demands. Supported by robust government initiatives, the country is not only expanding its export base but also strengthening its position as a reliable global supplier. India's export performance in several key product categories at the 4-digit HS level has shown notable success, with the country maintaining or improving its rank among the top 10 global suppliers, all with export values exceeding \$1 billion in 2023.

Below is a detailed exploration of India's robust performance in various key export categories, highlighting its advancements in global trade:

India's Global Export Landscape				
Global Rank				
Sr. No.	4HS Code	Description	Global Rank 2014	Global Rank 2023
1	7104	Precious & Semi-Precious Stones	11	1
2	2710	Petroleum Oils & Oils obtained from Bituminous Minerals	5	2
3	1701	Cane or Beet Sugar	4	2
4	3808	Insecticides, Rodenticides, Fungicides & Similar Products	5	3
5	2707	Other Coal Tar Distillation Products	14	4

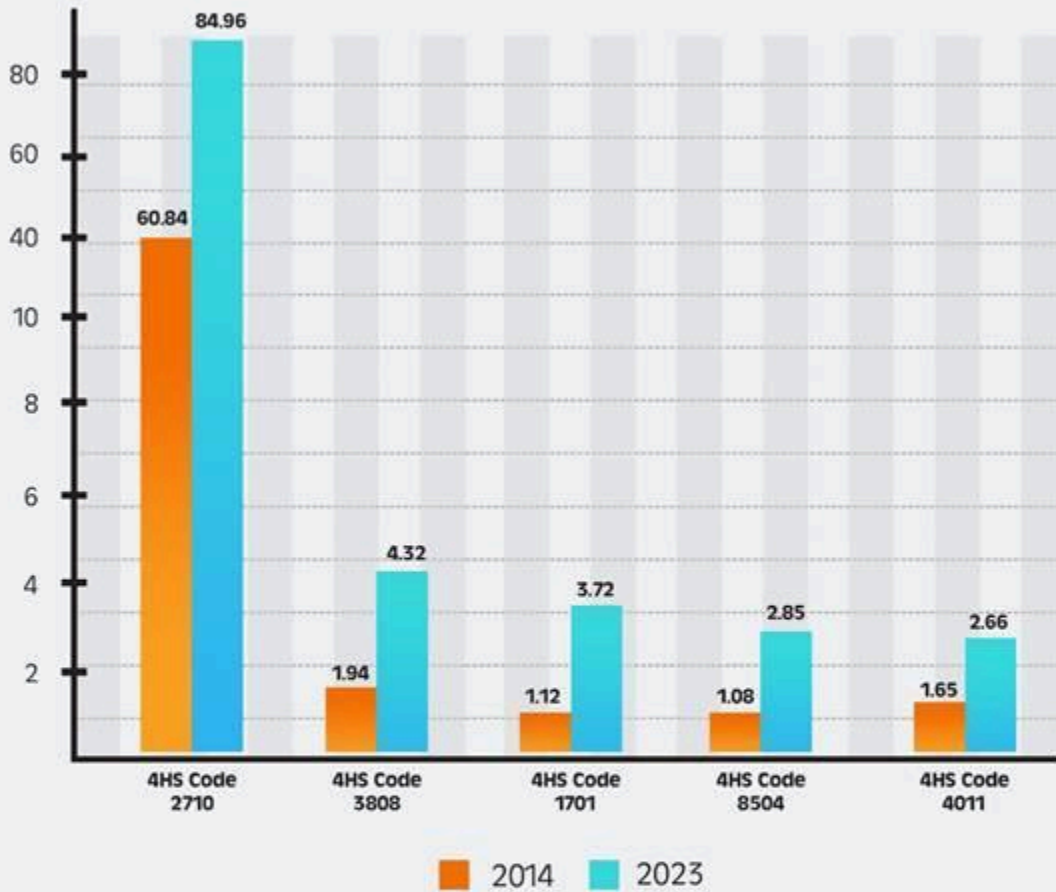
India has emerged as a dominant player in the global export market, showcasing remarkable growth across various sectors. The petroleum sector (Petroleum Oils and Oils Obtained from Bituminous Minerals) has seen a dramatic rise, with export values increasing from \$60.84 billion in 2014 to \$84.96 billion in 2023, capturing a global market share of 12.59%. This significant leap has propelled India to the position of the second-largest global exporter, driven by advanced refining infrastructure, increased production capacity, and adherence to international standards, solidifying its reputation as a dependable energy supplier worldwide.

In the agrochemical sector, India has achieved notable success, particularly in insecticides, rodenticides, and fungicides. By 2023, exports reached \$4.32 billion, marking a global market share of 10.85%, up from 5.89% in 2014. Investments in research and development, coupled with compliance with international agricultural standards, have positioned India as the third-largest exporter globally. This growth underscores India's pivotal role in supporting sustainable agriculture.

India's sugar exports have also witnessed exceptional growth, with the country's share in the global market for cane or beet sugar rising from 4.31% in 2014 to 12.21% in 2023. Export values reached \$3.72 billion in 2023, cementing India's position as the second-largest sugar exporter. Strong production bases and favourable agricultural policies have enabled India to cater to growing demand, particularly in Southeast Asia and Africa, strengthening its agricultural economy.

India's Global Export Landscape

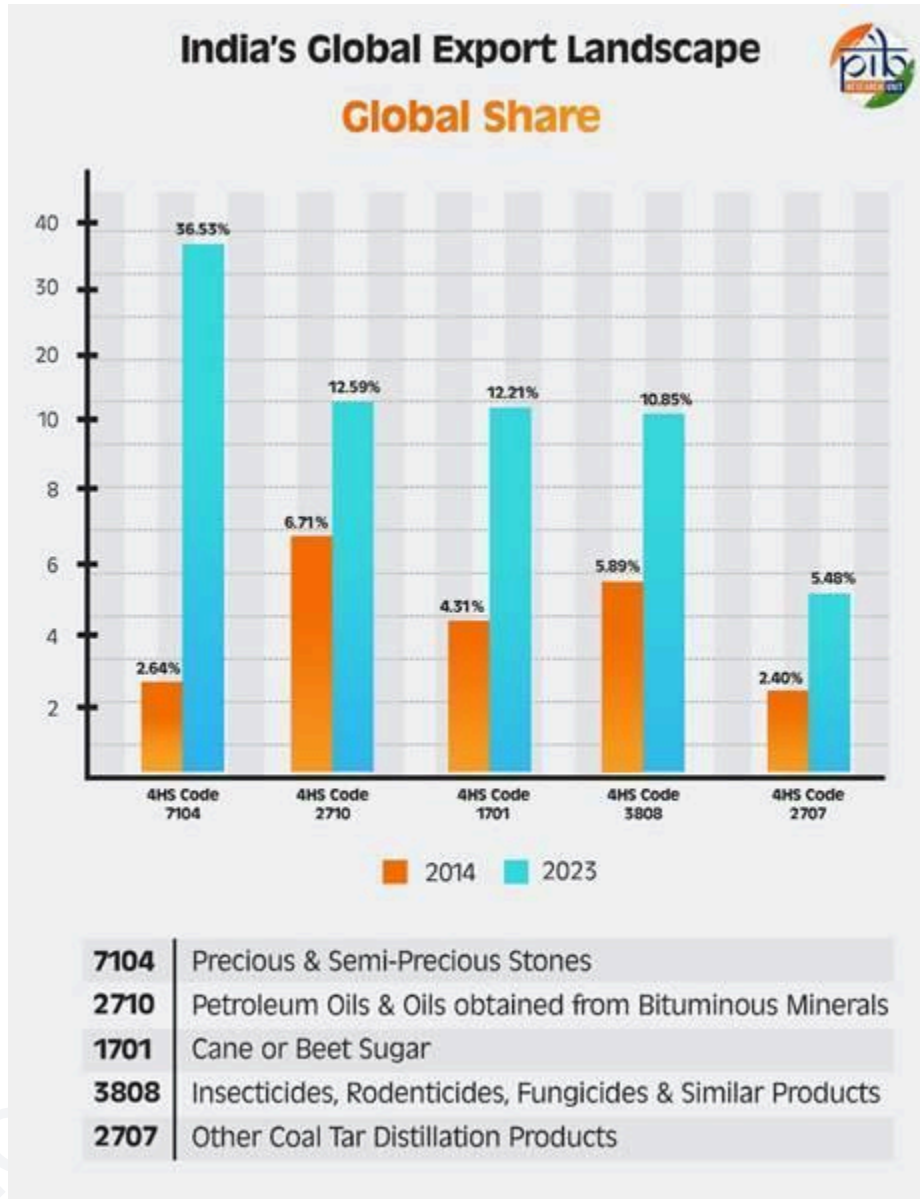
Value in USD billion



2710	Petroleum Oils & Oils obtained from Bituminous Minerals
3808	Insecticides, Rodenticides, Fungicides & similar products
1710	Cane or Beet Sugar
8504	Electrical Transformers & Parts
4011	New Pneumatic Tyres of Rubber

The electronics manufacturing sector has shown significant advancements, reflected in the exports of electrical transformers and related components, which grew from \$1.08 billion in 2014 to \$2.85 billion in 2023. India's global market share increased to 2.11% in 2023, and it is in 10th position, up from 17th in 2014. Government initiatives such as "Make in India" and production-linked incentive schemes have bolstered this progress, creating a robust manufacturing ecosystem.

India has made remarkable strides in rubber pneumatic tyre exports, which reached \$2.66 billion in 2023. Its global market share rose to 3.31%, securing the 8th position, a notable leap from 14th in 2014. This growth reflects India's emphasis on quality, cost competitiveness, and the ability to serve diverse markets, particularly in emerging economies. Similarly, exports of taps, valves, and similar industrial products reached \$2.12 billion in 2023, capturing a 2.16% global market share and earning India the 10th position globally. Advanced manufacturing processes and adherence to international standards have contributed to this success.



The country's strategic focus on electronics and semiconductors has yielded impressive results. Exports grew from \$0.23 billion in 2014 to \$1.91 billion in 2023, achieving a global market share of 1.40% and securing the

9th position, a significant jump from 20th in 2014. This progress highlights India's growing role in the global semiconductor supply chain, supported by efforts to enhance domestic manufacturing and innovation. Additionally, India's exports of coal tar distillation products reached \$1.71 billion in 2023, capturing a 5.48% global market share and securing 4th place globally showcasing its importance in industrial value chains.

In the export of precious and semi-precious stones, India has established itself as the world leader, with its global share surging from 2.64% in 2014 to an astounding 36.53% in 2023. Exports valued at \$1.52 billion highlight India's centuries-old craftsmanship and adoption of modern technology in gemstone processing. Exports of parts for electric motors and generators have also shown significant growth, reaching \$1.15 billion in 2023, with a global share of 4.86%, elevating India to 6th place from 21 in 2014 globally. This growth aligns with the rising global demand for renewable energy and electric vehicle components, positioning India as a key supplier in this transformative industry.

Government Initiatives to Strengthen India's Export Landscape

The Central Government has implemented various initiatives and policies to enhance exports, attract investments, and promote ease of doing business. A New Foreign Trade Policy was launched on March 31, 2023, and took effect on April 1, 2023. The policy's core approach is built on four key pillars: (i) Incentives for Remission, (ii) Export promotion through collaboration with exporters, states, districts, and Indian missions, (iii) Enhancing ease of doing business by reducing transaction costs and implementing e-initiatives, and (iv) Focus on emerging areas such as

e-commerce, developing districts as export hubs, and streamlining the SCOMET (Special Chemicals Organisms Materials Equipment and Technologies) policy. It emphasizes emerging sectors like dual-use high-end technology under SCOMET, boosting e-commerce exports, and fostering collaboration between states and districts for export growth. The new Foreign Trade Policy (FTP) introduces a one-time Amnesty Scheme to help exporters clear old pending authorizations and start anew. It also promotes the recognition of new towns through the "Towns of Export Excellence Scheme" and acknowledges exporters via the "Status Holder Scheme."

To further support exporters, the Interest Equalization Scheme on pre- and post-shipment rupee export credit has been extended until August 31, 2024, with an allocation of Rs. 12,788 crores. Assistance is also being provided through schemes like the Trade Infrastructure for Export Scheme (TIES) and the Market Access Initiative (MAI).

To promote labour-intensive sector exports, the Rebate of State and Central Levies and Taxes (RoSCTL) Scheme has been in place since March 7, 2019, while the Remission of Duties and Taxes on Exported Products (RoDTEP) Scheme has been implemented since January 1, 2021. The RoDTEP Scheme was further expanded on December 15, 2022, to cover previously excluded sectors like pharmaceuticals, organic and inorganic chemicals, and iron and steel products. Additionally, anomalies in 432 tariff lines were addressed with revised rates effective from January 16, 2023. A Common Digital Platform for the Certificate of Origin has been launched to boost Free Trade Agreement (FTA) utilization by exporters.

The Districts as Export Hubs initiative identifies export-potential products in each district and addresses bottlenecks while supporting local exporters and manufacturers to generate employment. Indian missions abroad play an enhanced role in promoting India's trade, tourism, technology, and investment goals. There is regular monitoring of performance involving Commercial Missions abroad, Export Promotion Councils, Commodity Boards/ Authorities and Industry Associations, with corrective measures implemented as needed.

To attract domestic and foreign investments, the Government has introduced reforms such as the Goods and Services Tax (GST), corporate tax reduction, FDI policy changes, measures to reduce compliance burdens, and initiatives to boost domestic manufacturing through public procurement orders, the Phased Manufacturing Programme (PMP), and Quality Control Orders (QCOs). The Production-Linked Incentive (PLI) Schemes for 14 key sectors, with an outlay of Rs. 1.97 lakh crore, aim to enhance manufacturing capabilities and exports.

The Government has prioritized simplifying, rationalizing, digitizing, and decriminalizing its interface with businesses and citizens across all States and UTs. Over 42,000 compliances have been reduced, and more than 3,800 provisions have been decriminalized. The National Single Window System (NSWS) allows businesses to apply for 277 Central approvals, with information on 661 approvals available through the Know Your Approvals (KYA) module. The Jan Vishwas (Amendment of Provisions) Act, 2023, promotes trust-based governance, decriminalizing 183 provisions under 42 Acts managed by 19 ministries and departments.

India's roadmap for 2047 emphasizes global competitiveness, innovation, and integration into global supply chains. Policy reforms have improved India's rank in the World Bank's Doing Business Report from 142nd in 2014 to 63rd in 2019. Also, India's rank in the Global Innovation Index (GII) amongst 132 economies has improved from 81st in 2015 to 40th in 2023. Intellectual Property Right (IPR) reforms have boosted patent grants from 5,978 in 2014-15 to 103,057 in 2023-24, while the number of designs registered grew from 7,147 to 30,672 during the same period.

The Startup India initiative, launched to foster innovation and entrepreneurship, has created a strong ecosystem, with 1.33 lakh DPIIT-recognized startups. Its action plan spans simplification, funding support, and industry-academia partnerships. Trade policy reforms have furthered India's participation in global supply chains. The Foreign Trade Policy focuses on cost competitiveness, trade facilitation, and emerging sectors, and provides a strong framework for promoting global supply chain participation.

On October 13th, 2021, the Government of India launched the PM GatiShakti National Master Plan to support infrastructure and social sector planning through the PM GatiShakti NMP GIS-enabled portal. The implementation of PMGS promotes multimodal connectivity, improves last-mile connectivity, and contributes to both Ease of Doing Business and Ease of Living. To complement the PM GatiShakti NMP, the National Logistics Policy (NLP) was introduced on September 17th, 2022 with the goal of reducing logistics costs and enhancing logistics efficiency across the country. Together, these policies are driving innovation and enabling greater integration with global supply chains.

The comprehensive Trade Connect e-Platform launch has successfully linked more than 6 lakh IEC holders, 185 Indian Mission officials, and over 600 Export Promotion Council members with the Directorate General of Foreign Trade (DGFT)/DoC offices and banks. This digital initiative improves the ease of doing business for small and medium enterprises (SMEs) by offering them valuable information and support, creating a more efficient and transparent export ecosystem. The government has rolled out Enhanced Insurance Cover for MSME Exporters to promote exports, which is expected to provide Rs. 20,000 crore in credit at reduced costs. This initiative aims to enhance the competitiveness of Indian exports and will benefit approximately 10,000 exporters.

The self-certified electronic Bank Realization Certificate (eBRC) system reduces compliance costs, saving exporters over ₹125 crore. This system also supports the government's broader objectives of fostering a digital, eco-friendly economy, reducing both administrative and environmental costs. The bulk generation and Application Programming Interface (API) integration of eBRCs streamline the process for exporters, especially small e-commerce businesses, by efficiently managing high-volume, low-cost transactions. This system helps them claim benefits and refunds more effectively, supporting their growth in international trade.

The E-Commerce Export Hub (ECEH) initiative aims to revolutionize India's cross-border e-commerce, potentially reaching USD 100 billion in exports by 2030. These hubs connect SMEs, artisans, and One District One Product (ODOP) producers to global markets, boosting logistics efficiency and economic inclusion in Tier 2 and Tier 3 cities. On the Government

e-Marketplace (GeM), revised pricing slabs now cap charges at ₹3 lakh for orders above Rs. 10 crore, significantly reducing transaction costs. The Bharat Mart in Dubai provides Indian MSMEs affordable access to Gulf Cooperation Council (GCC), African, and CIS markets, enhancing exports to these regions.

Jansunwai, a platform that facilitates direct communication between stakeholders and the Government, eliminating intermediaries and saving time. A revamped National Programme of Organic Production (NPOP) is set to benefit approximately 20 lakh farmers from 5,000 grower groups through enhanced export opportunities. It is expected to drive organic exports beyond USD 1 billion by 2025-26, benefiting approximately 20 lakh farmers.

ICEGATE (Indian Customs Electronic Commerce/Electronic Data Interchange Gateway) offers e-filing services to trade, cargo carriers, and other trading partners. Additionally, it provides facilities like e-payment, online registration for IPR, document tracking status at Customs EDI, online verification of DEPB/DES/EPCG licenses, IE code status, PAN-based CHA data, and links to various other key Customs-related websites and information. The platform also features a 24/7 helpdesk for trading partners.

These initiatives underline the Government's dedication to expanding India's trade and fostering inclusive development, positioning India as a global economic powerhouse by 2047.

Conclusion

India's export achievements are a testament to its evolving manufacturing capabilities, strategic policies, and commitment to innovation. From dominating the global market in precious stones to making inroads in advanced sectors like semiconductors and electrical components, India's export journey underscores its growing economic prowess. The government's forward-looking initiatives, such as the New Foreign Trade Policy, PLI Schemes, and many others, play a pivotal role in enhancing India's competitiveness on the global stage. As India diversifies its export portfolio and strengthens its global presence, it is poised to achieve its vision of becoming a global economic power by 2047.

Ref: PIB

28. Steel Manufacturing Capacity



The steel sector in India is a deregulated industry, with the government acting as a facilitator to create a conducive policy environment. Decisions regarding increased manufacturing capacity are made by the industry based on techno-commercial considerations, including raw material availability, logistics, and proximity to ports.

To support the growth of the steel sector, including in Jharkhand, the government has implemented the following measures:

1. Promotion of 'Made in India' Steel and Expanded Investments

- Domestically Manufactured Iron & Steel Products (DMI&SP) Policy:
 - This policy promotes the use of 'Made in India' steel for government procurement.
- Production Linked Incentive (PLI) Scheme for Specialty Steel:
 - Launched to encourage the domestic manufacturing of specialty steel and reduce imports by attracting capital investments.
 - Expected outcomes:
 - Investment: ₹27,106 crore
 - Additional Capacity: ~24 million tonnes
 - Direct Employment: 14,760 jobs
- Infrastructure Push in Union Budget 2024-25:
 - A capital expenditure of ₹11,11,111 crore announced, driving infrastructure expansion and increasing domestic steel consumption.

2. Improving Raw Material Availability and Reducing Costs

- Basic Customs Duty Reduction:
 - Customs duty on Ferro Nickel, a key raw material, reduced from 2.5% to zero.
- Duty Exemption on Ferrous Scrap:
 - Extended until 31st March 2026 in Budget 2024 to reduce raw material costs.
- Steel Scrap Recycling Policy:
 - Designed to enhance the availability of domestically generated ferrous scrap, promoting sustainable steel production.

3. Import Monitoring and Quality Control

- Revamped Steel Import Monitoring System (SIMS):
 - Provides granular details on steel imports to support domestic producers.
- Quality Control Orders (QCO):
 - Prohibits the import and sale of sub-standard steel products in India.

- Ensures the availability of high-quality steel conforming to BIS standards for consumers and industries.
- As of now, 151 Indian Standards have been notified, covering carbon steel, alloy steel, and stainless steel.

4. Infrastructure Development to Support Steel Sector Growth

- Coordination for Statutory Clearances:
 - Facilitating faster clearances for raw material access and steel production under favorable terms.
- Infrastructure in Jharkhand:
 - Current industrial infrastructure in Jharkhand includes:
 - National Highway Length: 3,633 km
 - Railway Line Length: 3,070 km
 - Installed Power Capacity: 3,002.50 MW
 - Over ₹70,000 crore worth of infrastructure projects are at various stages of commissioning in Jharkhand, supporting the growth of industries, including steel.

5. Production Linked Incentive (PLI) Scheme for Specialty Steel

- The Ministry of Steel has launched the PLI Scheme for Specialty Steel, which focuses on:
 - Promoting the manufacturing of specialty steel in India.
 - Generating employment opportunities in the steel sector.
 - Driving industrial growth in states like Jharkhand.

The Government of India is committed to creating a robust ecosystem for the steel sector through policies like the DMI&SP Policy, PLI Scheme for Specialty Steel, and infrastructure development initiatives. These efforts ensure the availability of quality steel, promote domestic manufacturing, and strengthen supply chains to boost the sector's growth across the country, including key states like Jharkhand.

Ref: PIB

Image: [Pixabay](#)

"Choice, not chance, determines your destiny."

Aristotle

29. *Sugamya Bharat Abhiyan* or the Accessible India Campaign

Introduction

Nine years ago, the Sugamya Bharat Abhiyan, also known as the Accessible India Campaign, embarked on a mission to reshape India into a truly inclusive society. Launched on 3rd December 2015 by the Honourable Prime Minister, this flagship initiative was a direct response to the long-overlooked challenges faced by persons with disabilities. Rooted in the vision of "*Sabka Sath, Sabka Vikas, Sabka Vishwas*," the campaign aimed to ensure universal accessibility across three vital domains: built infrastructure, transport systems, and the information and communication technology (ICT) ecosystem.



India, as a signatory to the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), had committed to creating an accessible environment for persons with disabilities. Yet, prior to 2015,

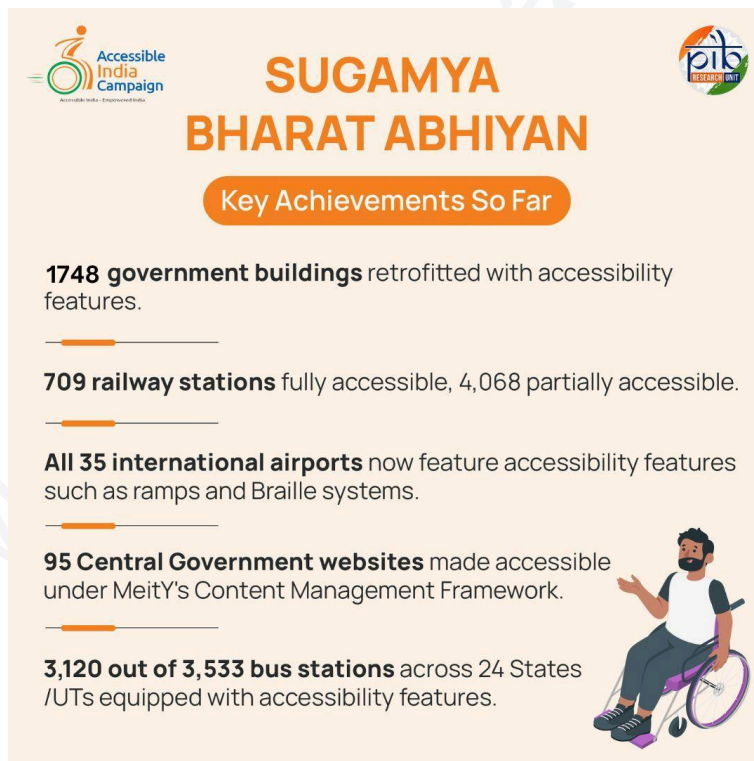
efforts lacked a cohesive strategy or enforceable timelines. The Persons with Disabilities Act of 1995, though welfare-oriented, did not adequately address accessibility issues or empower persons with disabilities to demand their rights. Recognising this gap, the Sugamya Bharat Abhiyan was launched to bring accessibility to the forefront of national development.

The campaign introduced a structured approach, focusing on making public buildings, transport networks like buses and trains, and digital platforms accessible to Divyangjans. It also sought to create awareness and set enforceable standards for accessibility compliance. Although initially planned to conclude by March 2024, the campaign's objectives have been absorbed into the Creation of Barrier-Free Environment Scheme under the broader umbrella of the Scheme for Implementation of the Rights of Persons with Disabilities Act (SIPDA). This transition reinforces the idea that accessibility is a continuous endeavour, requiring sustained efforts to meet evolving challenges.

As the Sugamya Bharat Abhiyan marks its ninth year, it stands as a milestone in India's journey towards fulfilling its commitment to an inclusive and equitable society, where every individual can thrive without barriers.

Campaign Achievements

The Accessible India Campaign has achieved significant milestones in creating an inclusive environment for persons with disabilities over the past nine years, with improvements spanning built infrastructure, transportation, digital platforms, education, and media accessibility. From retrofitting thousands of government buildings and transport facilities to developing sign language training and ensuring accessible TV content, the campaign has laid the groundwork for universal accessibility in India.



Following are the key achievements:

Accessible Infrastructure

- Accessibility audits of 1,671 government buildings were conducted under the target of auditing 25-50 buildings in 50 cities.
- A fund of ₹562 crore was released for retrofitting 1,314 buildings.
- Accessibility features have been incorporated into 1,748 government buildings, including 648 buildings under State/UT governments and 1,100 Central Government buildings retrofitted by the CPWD.

Transportation

- All 35 international airports and 55 out of 69 domestic airports now feature ramps, accessible toilets, helpdesks, and lifts with Braille and auditory systems.
- Aerobridges have been provided at all international/customs airports.
- 709 railway stations have been made fully accessible, while 4,068 stations are partially accessible.

- Out of 1,45,747 buses, 8,695 (5.96%) are fully accessible, and 42,348 (29.05%) are partially accessible.
- Across 24 States/UTs, 3,120 out of 3,533 bus stations have been equipped with accessibility features.

Digital Accessibility

- 95 Central Government websites have been made accessible under the Content Management Framework by the Ministry of Electronics and Information Technology (MeitY).
- 676 State Government websites have been made accessible, with 476 of them live.

Education and Language Accessibility

- The Indian Sign Language Research and Training Centre (ISLRTC) was established in September 2015 to promote the use, teaching, and research of Indian Sign Language.
- Over 1,013 individuals have been trained in Indian Sign Language through diploma and short-term courses offered by ISLRTC.

- A total of 183 students have completed the Diploma in Indian Sign Language Interpretation (DISLI) course between 2016-17 and 2023.

Media Accessibility

- The Ministry of Information & Broadcasting has published Accessibility Standards for TV Viewing for persons with hearing impairments.
- Accessibility in TV content is being implemented in phases, with 19 news channels having telecast 2,447 accessible news bulletins and 17 General Entertainment Category (GEC) channels broadcasting 3,686 accessible programmes and movies.

Other Initiatives and the Way Forward

Sector-Specific Accessibility Guidelines: Efforts are ongoing to finalise accessibility standards for the four remaining identified sectors: Road Transport and Highways, Tourism, Information and Broadcasting, and Financial Services. Currently, 13 out of 20 Central Government Ministries/Departments have notified sector-specific guidelines, while three have adopted guidelines from other departments. Regular follow-ups are underway to expedite notifications.

Web Accessibility: A plan to make 500 additional Government of India websites accessible is in progress. The department, in collaboration with the National Informatics Centre (NIC), is organising training sessions for officers from Central Government Ministries/Departments to ensure compliance with web accessibility standards.

Training of Access Auditors: The Department, in partnership with the Council of Architecture (CoA), has initiated training programs to expand the cadre of certified Access Auditors. The second phase of training for master trainers was conducted in July 2024, raising the total number of access auditors to 59.

Sugamya Bharat App: This crowdsourcing platform empowers individuals to report accessibility issues in infrastructure, transport, and information systems. With features like font adjustments, colour contrast options, and integrated screen readers in Hindi and English, the app is accessible to persons with disabilities. Available in 23 languages, it promotes public participation by enabling users to report issues that are then addressed by relevant authorities.

Curriculum Development: The Department, in collaboration with IIT Kharagpur, is working to introduce specialised courses on accessibility in B. Tech, B. Plan, and B. Arch programs. Stakeholder consultations were held, and recommendations are being reviewed for inclusion in the model curriculum by AICTE.

Technology and Innovation: Basic Indian Sign Language (ISL) training has been provided to over 1,013 airline staff and employees of various public-facing corporate entities. These efforts aim to foster inclusivity in service industries.

Accessible Pilgrimage Sites: A dedicated initiative has been launched to make 75 pilgrimage sites accessible for persons with disabilities (PwDs). Proposals have been received from multiple states, and funds have been allocated to enhance accessibility at locations like Solophek Chardham in Sikkim.


Workshops for Universal Accessibility: A training workshop for State Public Works Department (PWD) officers was conducted from 28th to 31st August 2023, focusing on universal accessibility in built-up environments. The session saw participation from representatives of 14 states and Union Territories, underlining a collaborative approach to accessibility.

Web Accessibility Training Program: In partnership with the National Informatics Centre (NIC), a certified training course on Web Accessibility is being developed. This initiative aims to train approximately 10,000 web developers nationwide and sensitise government departments to adopt and implement Web Accessibility Guidelines. The proposal is currently under review with the Department of Empowerment of Persons with Disabilities (DePwD).

Financial Commitment Towards Empowerment

From 2013-14 to 2023-24, the financial allocations for the Department of Empowerment of Persons with Disabilities have witnessed a significant increase, reflecting the government's unwavering commitment to inclusivity and accessibility under initiatives like the Sugamya Bharat Abhiyan. Budget Estimates (BE) have progressively risen from ₹560 crore in 2013-14 to ₹1,225.15 crore in 2023-24, with Revised Estimates (RE) and Actual Expenditures (AE) demonstrating alignment with these goals. The ₹1,143.89 crore spent in 2023-24 represents the highest expenditure in a decade, underscoring the government's focus on achieving universal accessibility and empowerment of persons with disabilities through dedicated campaigns and schemes.

Budget Allocation
Department of Empowerment of
Persons with Disabilities



Sr. No.	Year	Budget Estimates	Revised Estimates	Actual Expenditure
1	2013-14	560.00	460.00	341.49
2	2014-15	565.00	375.00	337.96
3	2015-16	565.40	540.00	487.96
4	2016-17	783.56	783.56	772.66
5	2017-18	855.00	955.00	928.32
6	2018-19	1070.00	1070.00	1017.56
7	2019-20	1204.90	1100.00	1016.18
8	2020-21	1325.39	900.00	861.63
9	2021-22	1171.77	1044.31	1009.45
10	2022-23	1212.42	1015.98	989.35
11	2023-24	1225.15	1225.01	1143.89

(In Rupees Crore)

Conclusion

The Sugamya Bharat Abhiyan has emerged as a landmark initiative, driving India's journey toward a truly inclusive and accessible society. Over the past nine years, it has successfully addressed long-standing challenges faced by persons with disabilities, setting a strong foundation for universal accessibility across infrastructure, transportation, digital platforms, and education. The campaign's integration into the broader Scheme for Implementation of the Rights of Persons with Disabilities Act (SIPDA) underscores its enduring relevance and the government's commitment to inclusivity. With sustained efforts, innovative solutions, and increased financial support, the mission to empower every individual

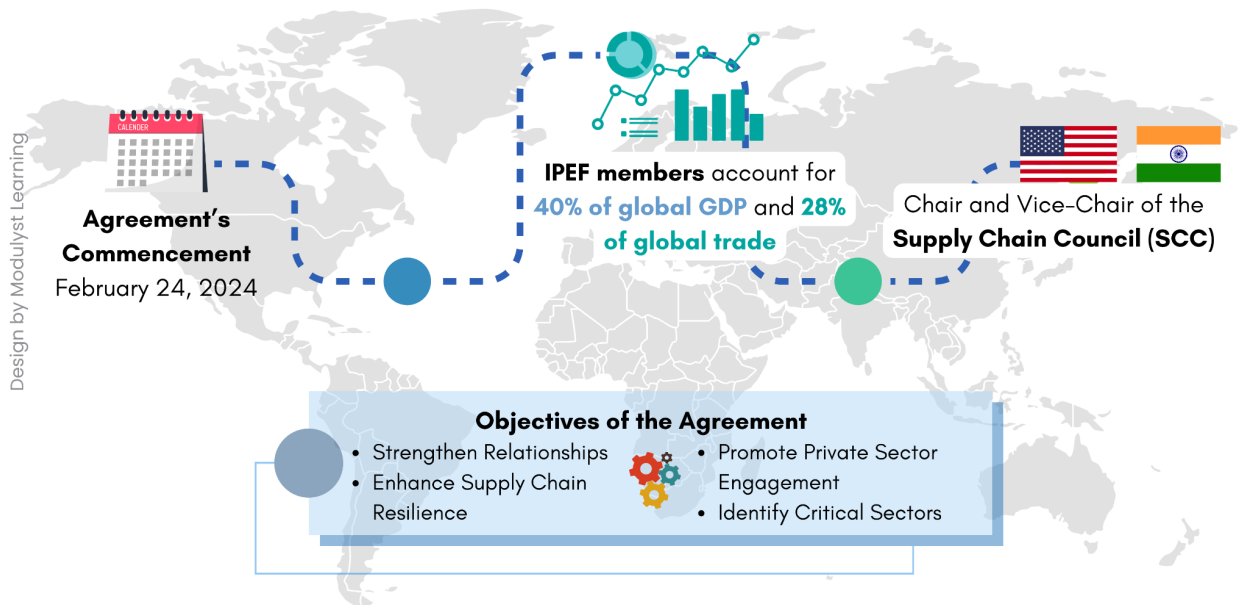
to live with dignity and independence remains steadfast, ensuring that no one is left behind in India's path toward equitable development.

Ref: [Sugamya Bharat](#)

30. India Signs the Supply Chain Resilience Agreement

India signed the Supply Chain Resilience Agreement (Pillar-II) in November 2023 under the Indo-Pacific Economic Framework for Prosperity (IPEF), a 14-member plurilateral grouping. This agreement aims to strengthen supply chain resilience, a critical factor for national security and economic stability.

KEY HIGHLIGHTS OF THE INTERNATIONAL PARTNERSHIP AGREEMENT



Design by Modulyst Learning

theknowledgeandlearningenterprise.com

Key Highlights of the Agreement

1. Effective Date and Leadership:

- The Agreement came into force on February 24, 2024.
- A Supply Chain Council (SCC) was established, with the US as Chair and India as Vice-Chair, to drive collaborative efforts among IPEF partners.

2. Global Importance of IPEF Partners:

- IPEF members account for approximately 40% of global GDP and 28% of global trade in goods and services, making this agreement a cornerstone of international trade and economic dynamics.

3. Objectives of the Agreement:

- Strengthen economic, commercial, and trade relationships among member countries.
- Enhance supply chain resilience in critical sectors like semiconductors, critical minerals, and chemicals.
- Promote private sector engagement under Article 6.10, focusing on improving resilience, efficiency, sustainability, and inclusivity.

- Identify critical sectors or key goods (under Article 10) to safeguard national security, public health, and economic stability.

India is closely working with stakeholders such as industry, academia, experts, etc. for identification of critical sectors or key goods for collaboration with IPEF partners for India's supply chain resiliency. In September 2024, the first SCC meeting in Washington led to the formation of Action Plan Teams focusing on key areas such as Semiconductors, Critical Minerals, and Chemicals.

In the meeting, India has expressed its willingness to lead a proposed action plan team on the healthcare/pharma sector. Two sub-committees focusing on logistics and movement of goods, along with data and analytics have also been formed. India participated in the first meeting of the Crisis Response Network held in Washington DC in September 2024, which included a tabletop exercise aimed at shortening response time in actual crisis situations by simulating scenarios where supply chain disruptions are highly likely.

Further, two Memorandum of Understanding (MoUs) have also been signed by the Department of Commerce with the USA in the last two years: one in the sector of semiconductors and other in the sector of critical minerals both of which are a strong step towards securing India's Supply Chain resilience in these sectors.

31. The "Gilgamesh Solution"

The oldest surviving tablets of written text are from the Sumerian civilization. They date back 4,200 years and tell the story of King Gilgamesh of Uruk.



Gilgamesh was a tyrant who brutalised his subjects. The people were unhappy and appealed to the pantheon of Sumerian deities. In response, the Gods created an exact double of Gilgamesh called Enkidu with comparable power and authority. The result was the creation of a "narrow corridor" in which both checked and balanced each other into cooperating

rather than competing. Uruk returned to peace. The "Gilgamesh solution" is to create a space in which conflictual forces can work together to generate a positive sum outcome.

Source: Why Nations Fail - Daron Acemoglu and James A Robinson

*Don't watch the clock;
do what it does.
Keep going !!*

32. Boilers Bill, 2024 Moved in Rajya Sabha

In December 2024, the Boilers Bill, 2024 was moved in the Rajya Sabha by Shri Piyush Goyal, Union Minister of Commerce and Industry. It was for consideration and passing and after detailed discussions. Consequently, it was passed by the Rajya Sabha. The Bill shall now be moved for consideration and passing in the Lok Sabha.

Background

The Government of India is examining all the pre-constitution Acts from the point of view of their suitability and relevance in the current times.

The Boilers Act, 1923, a pre-constitution Act, deals with the safety of life and property. Hence, it is important to continue with the enactment by reviewing the provisions of the existing Act and introduction of a new Boilers Bill, 2024 in Parliament.

The Boilers Act, 1923 was comprehensively amended in the year 2007 by the Indian Boilers (Amendment) Act, 2007 wherein inspection and certification by independent third party inspecting authorities was introduced. However, on further examination of the existing Act, a need has been felt for review of the Act and also to incorporate the decriminalised provisions in consonance with the Jan Vishwas (Amendment of Provisions) Act, 2023.

The existing Act has, accordingly, been reviewed wherein redundant/obsolete provisions have been omitted and certain substantive enabling provisions have been made for the rules and regulations which were not earlier provided. Certain new definitions have also been incorporated and few existing definitions have been amended so as to give more clarity to the provisions of the Bill.

Salient Features of the Boilers Bill, 2024

1. The Act has been divided into six chapters and provisions have been rearranged chapter wise. (In existing Act there are no chapters and similar provisions are at different places) .
2. Following redundant/obsolete provisions in the Boilers Act,1923 have been omitted:
 - i. Section 1(2): Applicability of Act to the whole of India,
 - ii. Section 2A: Applicability of Act to feed-pipes, and
 - iii. Section 2B : Applicability of Act to Economiser.
3. Following new definitions have been incorporated in the Clause -2 of the Boilers Bill, 2024: 2(k) : notification, 2(p):regulations, 2(q): State Government.

4. Following definitions have been amended in the Clause -2 of the Boilers Bill, 2024 in line with provisions in the Act: 2(d): Boiler component, 2(f): Competent Authority, 2(j): Inspecting Authority.
5. Decriminalization provisions for the Boilers Act,1923 as contained in the Jan Vishwas (Amendment of Provisions) Bill, have been incorporated in clauses 27, 28, 29, 30, 31, 39 & 42 and two new clauses namely, 35(Adjudication) & 36 (Appeal) have been incorporated in the Boilers Bill, 2024. Accordingly, for non-criminal offences 'fine' has been converted into 'penalty' (Clauses : 27, 28, 30(1) and 31).
6. Following provisions have been incorporated in the Bill for making substantive enabling provisions for the rules and regulations existing in the Act: Clauses, 3(7), 5(8), 10(1)(f), 10(2), 11(2), 12(9), 23(4) & 32(2).
7. Power of Central Government to make rules (clause 39) ; Power of Board to make regulations(clause 40) and Power of State Government to make rules (clause 42) in the Bill have been enumerated in detail, in line with different provisions in the Bill.
8. Following new provisions have been incorporated in the Bill:
 - (i) Clause 43(Power to remove difficulties): For removal of any difficulty in giving effect to the provisions of the Boilers Act, 2024 within a period of three years

(ii) Clause 44(Repeal and Saving): For saving different rules, regulations, orders etc. under the Boilers Act,1923 till new rules, regulations, orders etc. are notified under the re-enacted Boilers Act, 2024.

9. Redrafting of different clauses done as per current drafting practices and referencing of different provisions incorporated.

The re-enacted legislation meets the current requirements of stakeholders including industry, personnel working on/with boilers and implementers in the country and is as per need in the current times. The salient features of the Bill are as under:

(i) It has been drafted as per modern drafting practices to give more clarity to the provisions of the Bill. The similar provisions which are at different places in the Boilers Act,1923 have been grouped together in six chapters for easier reading and understanding of the Act. All the functions/powers of the Central Government, State Governments and Central Boilers Board have been enumerated in detail to avoid any confusion.

(ii) For Ease of Doing Business (EoDB), the Bill will benefit boiler users including those in the MSME sector as provisions related to the decriminalisation have been incorporated in the Bill. Out of the seven offences, to ensure safety of boilers and personnel dealing with boilers, in four major offences which may result in loss of life and

property, criminal penalties are retained. For other offences, provision is being made for fiscal penalty. Moreover, for all non-criminal offences 'fine' has been converted into 'penalty' to be levied through executive mechanism instead of courts as existed earlier.

(iii) The proposed bill will enhance safety as specific provisions have been made in the Bill to ensure the safety of persons working inside a boiler and that repair of boiler is undertaken by qualified and competent persons.

Ref: PIB

33. Fourth Global Coral Bleaching Event

In India, the Fourth Global Coral Bleaching Event (GCBE4) has impacted regions such as the Andaman and Nicobar Islands, Gulf of Mannar, Lakshadweep, and the Gulf of Kachchh.

Sl. No.	Coral Reef Areas of India faced Fourth Global Coral Bleaching	Bleaching impact	Cause of Bleaching
1.	Andaman and Nicobar Islands	Observed small scale bleaching in the Andaman region only especially South Andaman region	Increase in sea surface temperature: El Niño effect
2.	Gulf of Mannar	Small scale bleaching in some patchy areas	Increase in sea surface temperature: El Niño effect
3.	Lakshadweep	Widespread bleaching	Increase in sea surface temperature: El Niño effect

The Government of India has launched several programs using advanced technologies like satellite imagery to manage and protect coral reef ecosystems:

- National Centre for Sustainable Coastal Management (NCSCM), under Ministry of Environment Forest and Climate Change (MoEF&CC) is working on *Coral Reef in situ Observation Network* (CReON) program which focuses on long-term coral reef health monitoring, calcification rates and ocean acidification, based on deployment of Data Buoy and Automated Weather Stations at various coral reef sites along the Indian Coast including Andaman & Nicobar and Lakshadweep Islands. NCSCM has mapped 1439 sq km of the coral reefs of India, as per the Coastal Regulation Zone Notification (CRZ), 2011 and 2019. Recently, NCSCM has submitted a proposal to the MoEF&CC to map the coral biodiversity of the Lakshadweep Islands, to determine the current extent and status (health) of the coral reefs of Lakshadweep under the National Coastal Mission.
- Space Applications Centre (SAC), ISRO, Ahmedabad has undertaken a project on *Inventory of Indian Coral Reefs: Mapping, monitoring and their Health Assessment* at the behest of Department of Biotechnology & Department of Space (DBT & DOS). As part of this study, SAC is mapping the coral reef regions of India at 1:25,000 scale and has mapped the reefs of Malvan, Maharashtra using Resourcesat-2 Linear Imaging Self Scanner (LISS) – IV sensor's data pertaining to 2020 timeframe using digital image processing, image classification and Geographic Information System (GIS) based post-classification

analysis. The new geospatial database is also compared with SAC, ISRO's earlier coral reef database pertaining to 2004-08 timeframe based on Resourcesat-1 LISS-IV and LISS-III sensors' data for decadal monitoring.

- Indian National Centre for Ocean Information Services (INCOIS), Hyderabad under the Ministry of Earth Sciences (MoES) provides coral bleaching alert services based on satellite-derived sea surface temperature data for Indian coral ecosystems. These alerts highlight coral regions impacted by bleaching due to thermal stress.
- National Centre for Coastal Research (NCCR), Chennai under MoES is also carrying out coral bleaching monitoring studies in Palk Bay, Andaman Island and Lakshadweep Island. Regular monitoring of the health of the reef, bleaching event & recovery status, mapping the coral reefs using remote sensing and in situ efforts and restoration activities are also being done.

The Zoological Survey of India is dedicated to monitor the India's coral reefs through various efforts such as LTPMPs, Coral Restoration, Coral Transplantation, research on the reproductive biology of scleractinian corals, studies on bleaching-resistant corals and zooxanthellae, and more.

Sl. No.	Coral Reef Areas	Coral Bleaching Status 2023-24	Post Bleaching Status
1.	Andaman and Nicobar Islands	15-18% in South Andaman Islands only	Most of the reefs recovered. Studies are going on to record the status
2.	Gulf of Mannar	27%	Most of the reefs recovered. Studies are going on to record the status
3.	Lakshadweep	84.6%	Some of the reefs recovered. Studies are under progress to record the status

Preliminary results from the project on Inventory of Indian coral reefs by SAC, Ahmedabad indicates apparent loss of reef area for Malvan reef in Maharashtra over a period of thirteen years (2007 to 2020). The same condition is observed for four reefs (Koswari, Nalla Tanni Tivu, Pichaimoopan Valasai and Shingle reef) over a period of twelve to fourteen years (2004/05 to 2018) out of the eleven reefs mapped for Gulf of Mannar.

The Government of India has taken the following initiatives in order to reduce the stress faced by coral reefs of the Indian subcontinent:

- Zoological Survey of India (ZSI) has been collecting coral reef data through in-situ observations, focusing on restoration strategies and ecological threats from 2002 onwards.
- Corals and coral reefs are classified as CRZ-IA areas under the Coastal Regulation Zone Notification 2011 and 2019.
- Marine Protected Areas (MPAs) have been established and expanded to limit human activities, promoting ecosystem (coral reef) recovery.
- The ZSI has mapped 143.46 square kilometers of coral reefs outside Protected Areas in the Andaman Islands and is conducting research on coral growth and reproductive strategies.
- India's largest coral translocation project in the Gulf of Kachchh has successfully moved over 16,000 corals to new locations to aid reef restoration.
- India collaborates with international organizations like NOAA and ICRI to enhance coral conservation efforts and align with global standards.

- The government has implemented legal protections for corals under the Wildlife Protection Act, 1972, and the Coastal Regulation Zone (CRZ) notifications to regulate human activities impacting coral reefs.
- Successful restoration of corals in the Gulf of Mannar and Palk Bay was carried out by NCCR jointly with the Department of Environment & Forest (WildLife Division-Gulf of Mannar Marine Park Authority). Species such as *Acropora* sp., *Porites* sp., *Favites* sp., *Favia* sp., *Goniastrea* sp., and *Montipora* sp. corals were used for the restoration programs.

Ref: PIB

34. IISF 2024: A Commitment to a Science-Led Future for India

The 10th India International Science Festival (IISF) held at IIT Guwahati was started from November 30th and culminated on December 4th, 2024. The 4-day mega science festival featured 24 different events in which 7000 delegates and 45000 people including a large number of students participated.



The Moon replica hogged the limelight and pulled the crowd. It's a giant 10-metre high 'real surface' replica of #Moon erected at IIT Guwahati, showcasing India's advancement in space science.

This year some new events were added. Sagarika – The Tale of Earth Sciences event as the name suggests aims to engage and educate people on different areas of earth science such as meteorology, oceanography, ecology etc. Through this event, IISF desires to raise public awareness on environmental issues.

Science beyond Borders - aimed at fostering international collaboration, partnerships and exchange of dialogues among scientists, researchers and institutions to address global challenges in S&T.

Fusion Forum – The Atomic Assembly event discussed the current perspectives, future benefits, and pressing challenges in implementing nuclear energy in India for various sectors pressing generation of power, nuclear medicine, agriculture, additive manufacturing etc.

Another captivating event was the Saga of Science Chronicles that told the history and recent developments of Indian science and scientists through LED light shows that happened during 7:30 pm – 9:30 pm during each day of IISF 2024.

The events like Science Odyssey of the North East addressed the challenges that hindered the growth of science and technology in the North East and

discussed the ways of promotion of science and technology of the North East.

While The Taste of the Hills - North East Food Street showcased the food heritage of North East and let the people eat and enjoy their traditional food items. The Food Street remained open throughout IISF 2024.

Two significant events in IISF 2024 discussed effective science communication S&T media strategies: first Vigyanika and second S&T Media Conclave. Vigyanika event played a pivotal role in disseminating science in simple language to the masses. Organized by CSIR-National Institute of Science Communication and Policy Research (NIScPR), these events aimed to bridge the gap between science communicators, scientists, journalists, and media professionals.

Ref: PIB

35. Decoding Commonly Used Latin Words: A Quick Guide

Latin may be considered a "dead language," but its influence is very much alive in our everyday conversations, legal documents, academic writing, and even pop culture. Words and phrases derived from Latin have seamlessly integrated into English, often carrying meanings that are both precise and timeless. In this blog post, we'll explore some of the most commonly used Latin expressions, what they mean, and how they are applied in different contexts. This is the first in a series designed to help you understand and use these fascinating phrases with confidence.

1. AD HOC: "For this purpose only"

This phrase is used to describe something created or done for a specific, immediate purpose. You might hear it in professional settings, such as:

- "The team formed an ad hoc committee to address the crisis."
Here, the committee isn't permanent; it exists solely to tackle a specific issue.

2. IPSO FACTO: "By that very fact"

This phrase is often used to point out that something is inherently true due to its nature. For example:

- "If you're the owner of the company, you are ipso facto responsible for its success or failure."

It's a way to emphasize that a fact is self-evident.

3. DE FACTO: "In fact, effectively"

Used to describe a situation that exists in reality, even if it isn't formally acknowledged. For example:

- "She's the de facto leader of the group, even though she doesn't hold the official title."

It points to practical realities rather than formalities.

4. ET CETERA (Etc.): "And the others"

A familiar term abbreviated as "etc.," it's used to indicate that a list continues in the same pattern. For example:

- "I bought pencils, notebooks, erasers, et cetera."

It saves you from listing every single item while implying that there are more.

5. ALTER EGO: "Other I"

This term is often used to describe a second identity or persona, either literal or metaphorical. For example:

- "Clark Kent is Superman's alter ego."

It can also refer to a close friend who shares your thoughts and personality:

- "She's like my alter ego; we think so alike."

6. PER SE: "Through itself"

This phrase is used to indicate something in its pure or intrinsic form. For example:

- "The idea isn't bad per se, but it needs refinement."

It highlights that something isn't inherently flawed but may need contextual adjustments.

7. STATUS QUO: "The current state of affairs"

This phrase refers to the existing condition of things, often in a political or social context. For example:

- "The reforms aim to challenge the status quo."

It's commonly used when discussing efforts to maintain or change the way things are.

Why Should You Care About Latin Phrases?

Understanding these Latin terms not only enriches your vocabulary but also helps you sound more precise and articulate in both casual and

professional conversations. Latin phrases carry a certain weight and sophistication, often simplifying complex ideas into a single term. From legal documents to business meetings, and even day-to-day discussions, these terms make communication both effective and elegant.

More to Follow!

This is just the beginning! Latin has gifted us a treasure trove of phrases that are deeply embedded in our language and culture. In future posts, we'll dive deeper into more commonly used Latin terms and their meanings, such as "quid pro quo," "carpe diem," and "mea culpa." Stay tuned for the next installment of this fascinating series on Latin words and phrases.

36. NASA-ISRO Synthetic Aperture Radar Mission

NASA-ISRO Synthetic Aperture RADAR (NISAR) is an Earth science mission being jointly developed by NASA and ISRO under a collaborative agreement.

The NISAR was earlier slated for launch in the first-half of 2024. However, during the assembly, integration & testing phase, NASA experts determined that the 12-meter Radar Antenna Reflector needs some corrective actions and has to be taken to the USA for rectification.

Subsequently, the Radar Antenna Reflector, was delivered to ISRO by NASA in October 2024, which is re-integrated with the satellite and currently undergoing necessary tests. Also, due to the eclipse season, the conditions are not conducive for deployment of NISAR's boom and the Radar Antenna Reflector. In view of the afore-mentioned factors, NISAR is now likely to be launched during March 2025.

Space exploration missions require indigenous development of several complex technologies. Such developments go through an exhaustive time cycle that includes conceptualisation, design, development of prototype, qualification and flight model and numerous tests, design iterations, supply chain, extensive reviews. Challenges in international collaborations include geo-political considerations, establishing common mission

objectives, alignment with respective national priorities and ensuring timely availability of resources/infrastructure.

The department is actively enhancing the capabilities through various technology development and advanced R&D programs. The programs include development of propulsion systems of various thrust capabilities, sensor technologies, advanced docking systems, enhancing launch vehicle capabilities such as stage recovery, satellite navigation, quantum communication related technologies, optical satellite systems etc.

The government has recently approved the Chandrayaan-4 and Venus Orbiter Mission that would further the capabilities in various elements of satellite realisation. The Chandrayaan-4 mission envisages extraction and return of lunar samples back to Earth. The Venus Orbiter Mission aims to successfully orbit Venus and better understand the Venusian surface and subsurface, atmospheric processes and influence of the Sun on Venusian atmosphere.

Further, realisation of various satellite systems/subsystems and integration are being outsourced to various Indian industries.

The government has taken following measures to encourage and incentivise private sector participation in space exploration and technology development in India:

- The space sector has been liberalised and the private sector allowed to carry out end to end space activities. IN-SPACe was created in the Department of Space for promoting, authorising and overseeing the activities of Non-Government Entities (NGEs) in the space sector.
- The Indian Space Policy, 2023 has been formulated by the government to provide regulatory certainty to space activities
- Various schemes to encourage and hand hold private sector also announced and implemented by IN-SPACe, i.e. Seed fund Scheme, Pricing Support Policy, Mentorship Support, Technical Centre, Design Lab for NGEs, Skill Development in Space Sector, ISRO Facility Utilisation Support, Technology Transfer to NGEs, Creation of IN-SPACe Digital Platform to connect with all the stakeholders of space ecosystem etc.
- In order to ease access to foreign capital by Indian NGEs, Government of India has brought out revised FDI policy for the space sector.
- The union cabinet has approved the establishment of a Rs.1,000/- crore venture capital fund dedicated to supporting India's space sector.

Ref: PIB

37. National Digital Communication Policy, 2018

The National Digital Communication Policy 2018 was launched by the Government of India in 2018 with a vision to fulfill the information and communication needs of citizens and enterprises through the establishment of a ubiquitous, resilient, secure, accessible, and affordable digital communications infrastructure. This has led to improvement in the telecom infrastructure and an increase in the coverage and affordability of telecommunication services across the country. In the last six years, the following improvements have taken place concerning infrastructure, affordability of broadband, coverage, etc., promoting digital empowerment and creating a vibrant digital ecosystem:

- The optical fiber cable network increased from 17.5 lakh km in March 2018 to 41.9 lakh km in October 2024.
- Base Transceiver Stations increased from 19.8 Lakh in October 2018 to 29.4 Lakh in October 2024.
- As of September 2024, out of 6,44,131 villages in the country (village data as per Registrar General of India), 6,22,840 villages are covered with mobile connectivity.
- The number of broadband subscribers increased from 48 Crore in September 2018 to 94 Crore in June 2024.

- Data usage increased from 8.32 GB per month in September 2018 to 21.30 GB per month in June 2024.
- The average tariff per GB of wireless data decreased from ₹10.91 in September 2018 to ₹8.31 in June 2024.

Further, the government is implementing various schemes through Digital Bharat Nidhi (erstwhile Universal Service Obligation Fund) to provide telecom coverage to all uncovered villages. The Union Cabinet has approved the amended BharatNet Program with funding of ₹1,39,579 crore for extending the scope of BharatNet to provide broadband connectivity to all 2.64 lakh gram panchayats and approximately 3.8 lakh villages on a demand basis across 28 States and 8 UTs.

To encourage competition in the telecom sector and ensure a level playing field, the Government established the independent regulatory authority, i.e., Telecom Regulatory Authority of India (TRAI), in 1997. In pursuance of the above objective, TRAI has occasionally issued recommendations, regulations, orders, and directives to deal with issues before it and provided the required direction for the evolution of a multi-operator, multi-service, open, competitive market.

Satellite Communication Reforms-2022 by the government have simplified the regulatory procedures and reduced financial charges on the licensees. The recent space sector reforms further enabled more significant participation of non-government entities in building/leasing, owning, and

operating satellite systems for satellite-based services. Many operators have applied for authorization to provide satellite communication over India, including connectivity in remote and under-served areas. A total of 5474 gram panchayats have been connected through satellite.

The various steps taken by the government to ensure a transparent and efficient spectrum management structure to address the concerns of telecom operators are as follows:

- Spectrum acquired through auction after 15.09.2021 can be surrendered after a minimum period of 10 years.
- For the spectrum acquired through auction after 15.09.2021, no Spectrum Usage Charges (SUC) shall be levied.
- The condition for a minimum 3% weighted average SUC and the SUC floor amount has been removed.
- To encourage spectrum sharing for better utilization and efficiency, spectrum sharing will not attract an increase in the SUC rate by 0.5%.
- Spectrum refarming was carried out in the 3.3-3.4 GHz band from the incumbent users to identify this band for IMT Services (5G) in the Country.

- The Telecommunications Act of 2023 defines spectrum assignment methodology for various services and applications, including satellite-based services.

Ref: PIB

“As long as you live, keep learning how to live.”

~SENECA THE YOUNGER

38. SHe-Box portal for Implementing the Provisions of 'The Sexual Harassment of Women at Workplace Act, 2013' (SH Act)



The Ministry of Women and Child Development recently launched the SHe-Box portal, an online system designed to help better implement various provisions of 'The Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act, 2013' (SH Act). This Act mandates the appropriate government to monitor its implementation and maintain data on the number of cases filed and disposed of.

The SHe-Box portal is an initiative of the Ministry to provide a publicly available centralized repository of information related to Internal Committees (ICs), and Local Committees (LCs) constituted at various workplaces across the country, whether in the government or private sector and also an end-to-end integrated complaint monitoring system. It provides for designating a nodal officer for every workplace who is required to ensure the updation of data/ information regularly for real-time monitoring of complaints.

A complaint on the portal can be filed by an aggrieved woman or any other person on behalf of the complainant. If the person filing a complaint is the aggrieved woman, she has to log on to the portal by registering her basic details, such as her work status, name, phone number, and email. Suppose the person filing a complaint is any other person. In that case, they have to log in to the portal by registering their name, relationship with the complainant, and undertaking from the complainant along with the work status, name, phone number, and email of the aggrieved woman/ complainant. Depending on her employment status, the person filing a complaint must select the IC/ LC of the workplace where they want to submit the complaint. If the IC or LC of the aggrieved woman is registered on the portal, the complaint will be automatically submitted and forwarded to the IC/ LC concerned. In case the IC of her workplace is not registered on the portal, the portal provides for an online process to obtain details of that workplace from the complainant and inform the State Nodal Officer and

District Nodal Officer of the state/UT and district concerned to ensure early registration of that IC.

The SHe-Box portal has a monitoring dashboard for nodal officers at the Centre / State/ UT and District levels to see the number of cases filed, disposed of, and pending, including those beyond the prescribed timeline.

A similar feature is built so the complainant can track the status of her complaint. Further, the portal can generate reports concerning the IC/ LC of a particular Ministry/ Department/ State/ UT/ Private sector/district to facilitate better monitoring by supervisory authorities and adherence to the prescribed timelines.

Any complaint filed on the SHe-Box portal reaches directly to the IC of the workplace concerned or LC of the district, as the case may be. The portal is designed to mask the complainant's details to maintain confidentiality. Except for the IC/ LC Chairperson, no other person can see the details or nature of the complaint registered.

The SHe-Box portal has been built per the provisions of 'The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013'. The time prescribed under the Act for inquiry is 90 days.

Ref: PIB

Image: [Pixabay](#)

39. Schemes for Socio-Economic and Educational Empowerment of the Minorities in India

Following new schemes have been launched for the minority communities during the last ten years and the current year:

- i) The *Nai Manzil* scheme started in 2015 and was implemented to benefit the minority youth who do not have formal school leaving certificates. The scheme provided a combination of formal education (Class VIII or X) and skills, enabling beneficiaries to seek better employment and livelihoods. Since its inception, 98,712 beneficiaries have been trained under the scheme.
- ii) The USTTAD scheme started in 2015 and targeted capacity building and upgrading of the traditional skills of master craftsmen/ artisans. Since its inception, about 21,611 beneficiaries have been trained under the scheme.

These schemes were implemented through Project Implementing Agencies (PIAs) selected by the Ministry via a transparent process at a pan-India level. Hence, State-wise fund allocation was not made under the schemes.

These schemes have now been converted into *Pradhan Mantri Virasat Ka Samvardhan* (PM VIKAS). PM VIKAS is a flagship Scheme of the Ministry of Minority Affairs (MoMA) which converges five erstwhile schemes of the Ministry, namely '*Seekho Aur Kamao*,' '*Nai Manzil*,' '*USTTAD*,' '*Nai Roshni*,' and '*Hamari Dharohar*' for the six notified minority communities. The

scheme focuses on uplifting minorities through skill development, entrepreneurship and leadership of minority women, and education support for school dropouts. The PM VIKAS scheme was launched this year but has not officially rolled out.

Further, the government implements various schemes for the welfare and upliftment of every strata, including minorities, especially the economically weaker and less privileged sections of society. The Ministry of Minority Affairs implements explicitly various schemes across the country for socio-economic and educational empowerment of the six (6) centrally notified minority communities. The schemes/programs implemented by the Ministry are as follows:

1. Educational Empowerment Schemes

- Pre-Matric Scholarship Scheme
- Post Matric Scholarship Scheme
- Merit-cum-Mean based Scholarship Scheme

2. Employment and Economic Empowerment Schemes

National Minorities Development and Finance Corporation (NMDFC): NMDFC provides concessional loans to "Backward sections" amongst the notified minorities for self-employed-income-generation activities under its schemes of Term loan, Education loan, Virasat scheme & Micro Finance

scheme through State Channelizing Agencies (SCAs) nominated by respective State Govt./ UT Administration and Canara Bank.

3. Infrastructure Development Scheme

Pradhan Mantri Jan Vikas Karyakram (PMJVK): To develop community infrastructure in the minority concentration areas of the country in the sectors viz. health, skill development, women centric projects, drinking water and supply, sanitation, and sports.

4. Special Schemes

(i) *Jiyo Parsi*: A scheme for reversing the population decline of Parsis in India.

The details of these schemes are available on the Ministry's website, www.minorityaffairs.gov.in.

All the schemes together have contributed to the acquisition of high-level skills, greater opportunities in livelihood, high employability potential, improved access to better infrastructure, improved health, and overall welfare of the minority communities.

Ref: PIB

40. Managing the Debris in Space: Space Situational Awareness



Recognizing the growing importance of Space Situational Awareness (SSA) for space sustainability, the ISRO System for Safe and Sustainable Space Operations Management (IS4OM) has been established to focus all efforts related to spaceflight safety and debris mitigation and to deal with the emerging challenges of operating in a congested space environment.

The Government of India has approved a network for Space Object Tracking and Analysis (NETRA) for SSA capacity building.

ISRO adheres to the internationally accepted space debris mitigation guidelines recommended by UN -COPOUS and the Inter-Agency Space Debris Coordination Committee (IADC) to the maximum extent possible.

For all Indian launch vehicles, Collision Avoidance Analysis (COLA) is performed to select collision threat-free lift-off time within the launch window. Continual assessments of any close approach risk to ISRO's operational satellites are carried out, and collision avoidance maneuvers (CAM) are performed as and when needed. Suppose the object posing a close approach risk is another active satellite. In that case, the required coordination is carried out with the owner/operator so that only one of the satellites performs the CAM. Continual efforts to improve the operational methodologies for close approach assessment are pursued to adapt to the challenges posed by the surging space traffic, apart from modeling on-orbit break-up events and predicting atmospheric re-entries of space objects.

ISRO contributes substantially to shaping the pertinent guidelines and recommendations for sustainable space use as an active member of various international agencies dealing with the safety and sustainability of outer space activities, such as IADC, IAA (International Academy of Astronautics), ISO (International Organization for Standardization), IAF (International Astronautical Federation), and the UN Long Term Sustainability Working Group.

The Indian Space Policy places significant importance on space debris mitigation requirements and SSA capacity building.

The recently unveiled Debris Free Space Mission (DFSM) initiative is also spearheaded by ISRO. Its aim is to achieve debris-free space missions by all Indian space actors, both governmental and non-governmental, by 2030. The initiative aligns with global efforts for space sustainability, positioning India as a nation prioritizing safety, security, and sustainability in outer space activities.

Ref: PIB

Image: [Pixabay](#)

41. Eco-Tourism and Initiatives for Promoting MICE Tourism

The Ministry of Tourism has formulated a National Strategy for Ecotourism to position India as a preferred global destination for Ecotourism. It has identified the following strategic pillars for the development of Ecotourism:

- State Assessment and Ranking
- State Strategy for Ecotourism
- IEC, Capacity Building and Certification
- Marketing and Promotion
- Destination and Product Development
- Public-Private and Community
- Partnerships Governance and Institutional Framework

The Ministry of Tourism is committed to promoting India holistically through various initiatives. As part of its ongoing activities, it regularly promotes various ecotourism destinations and products, demonstrating its dedication to sustainable tourism. These promotions are carried out through the Ministry's website and social media platforms.

Swadesh Darshan

The Ministry of Tourism has identified Eco-Circuit as one of the themes for the development of tourism infrastructure under the Swadesh Darshan scheme.

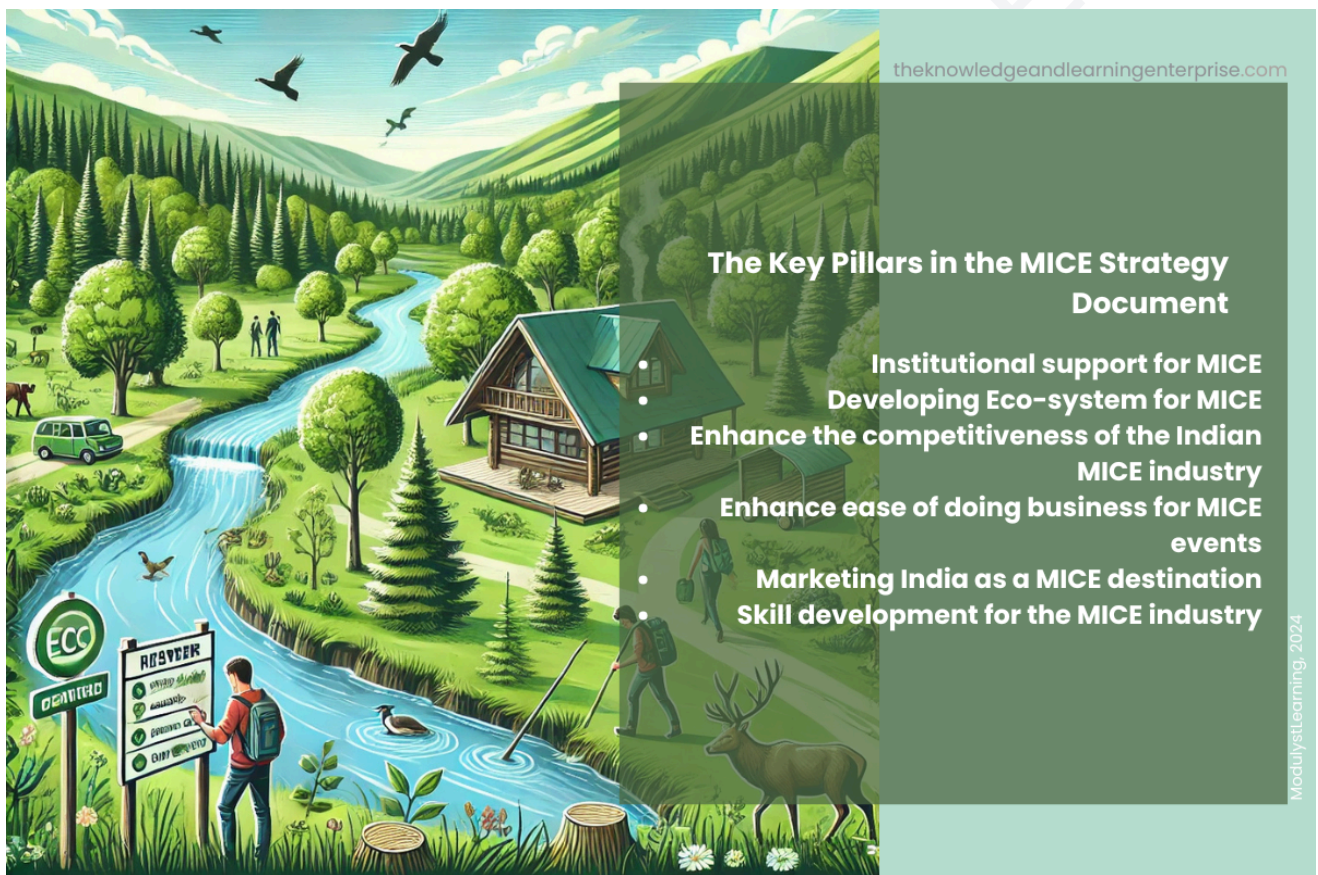
The Ministry of Tourism revamped its Swadesh Darshan Scheme as Swadesh Darshan 2.0 (SD2.0) with the objective of developing sustainable and responsible tourism destinations following a tourist- and destination-centric approach. The Scheme encourages the adoption of principles of sustainable tourism, including environmental sustainability, socio-cultural sustainability, and economic sustainability.

The Ministry of Tourism is actively involved in the development and promotion of tourist destinations and products, including the burgeoning MICE tourism segment. While the primary responsibility for this lies with the respective State Government/Union Territory (UT) Administration, the Ministry of Tourism plays a crucial role in promoting India as a holistic tourism destination, including MICE tourism, through various mediums such as social media and websites. This emphasis on MICE tourism ensures that the audience is well-informed and aware of the country's growing tourism segments.

The Ministry of Tourism identified MICE as one of the crucial segments of Tourism. The ministry has also formulated a national strategy and roadmap for the MICE industry to promote the country's growth, including Haryana and Delhi NCR. The key pillars in the MICE strategy document are as follows:

1. Institutional support for MICE
2. Developing Eco-system for MICE

3. Enhance the competitiveness of the Indian MICE industry
4. Enhance ease of doing business for MICE events
5. Marketing India as a MICE destination
6. Skill development for the MICE industry



theknowledgeandlearningenterprise.com

The Key Pillars in the MICE Strategy Document

- Institutional support for MICE
- Developing Eco-system for MICE
- Enhance the competitiveness of the Indian MICE industry
- Enhance ease of doing business for MICE events
- Marketing India as a MICE destination
- Skill development for the MICE industry

ModulystLearning, 2024

As per a MICE, study carried out in 2019 sponsored by the Ministry of Tourism, India's MICE industry is characterized by the following:

- The market is sized at Rs.37,576 crore, 60 percent of which is attributable to Meetings, Incentives, and Conferences
- International MIC accounts for 22% of the market size (~22%)
- 65 percent are Business to Business (B2B) events
- Meetings & Incentives form ~70% of the entire MICE segment for 5-star properties
- India's outbound MICE market is one of the fastest-growing markets globally

Ref: PIB

42. Importance of Oil Exploration and Production



As of 2024, India ranks as the world's third-largest energy consumer, according to the Energy Institute Statistical Review of World Energy. The country's energy demand continues to rise due to steady economic growth, driven by industrialization, urbanization, infrastructure development, and increasing transportation needs. Factors such as rising incomes, improved living standards, and greater access to modern energy also contribute to this growth. Consequently, India relies heavily on crude oil imports.

Currently, about 13% of oil and 53% of gas are produced domestically by Exploration and Production (E&P) companies. These companies play a crucial role in reducing dependence on imports.

In 2023-24, India produced 29.36 MMT of crude oil, with a provisional figure of 14.4 MMT for 2024-25. The International Energy Agency predicts India's oil demand will reach 6.6 million barrels per day (mb/d) by 2030, while petrol demand will hit 1.0 mb/d.

To boost domestic oil and gas production, the government has implemented several policies and initiatives:

1. Early Monetization Policy (2014) under the PSC regime.
2. Discovered Small Field Policy (2015).
3. Hydrocarbon Exploration and Licensing Policy (HELP, 2016).
4. PSC Extension Policies (2016 and 2017).
5. Coal Bed Methane Early Monetization Policy (2017).
6. National Data Repository (2017).
7. National Seismic Programme (2017) for unappraised sedimentary basins.
8. Pre-NELP Policy Framework (2016 and 2017).
9. Enhanced Recovery Methods Policy (2018) for oil and gas.
10. Unconventional Hydrocarbons Policy (2018) for PSCs and CBM contracts.
11. Natural Gas Marketing Reforms (2020).

12. Incentives for OALP Blocks, such as lower royalties and zero revenue share for Category II and III basins.
13. Release of 1 Million Sq. Km. of offshore 'No-Go' areas for exploration.
14. Seismic Data Acquisition: The government is investing ₹7,500 crore to gather seismic data and drill stratigraphic wells. Additionally, 20,000 LKM of land and 30,000 LKM offshore data beyond the Exclusive Economic Zone (EEZ) are being acquired.

These measures aim to accelerate exploration and enhance India's energy security.

Ref: PIB

Image: [Pixabay](#)

43. International Social Security Association Awards for India

Dr. Mohammed Azman, President of ISSA presented the International Social Security Association (ISSA) Good Practice Award for Asia and Pacific 2024 to India, at the Regional Social Security Forum in Riyadh, Saudi Arabia.

Employees' Provident Fund Organization (EPFO) received five certificates of merit for communication channels, E-proceedings: A case on use of information and communication technology in justice delivery, Massive district outreach programme (*Nidhi Aapke Nikat*), Multilingual call centres and Prayaas initiative. Mr. Ashok Kumar Singh, DG, ESIC, received the awards on behalf of EPFO.

Award Categories

The five award categories and brief description about each is as follows:

- **Communication Channels:** Reaching stakeholders through different media

EPFO has adopted the *ISSA Guidelines on Communication by Social Security Administrations* and implemented it by preparing communication framework document (CFD) to effectively and efficiently communicate with stakeholders. Digital and non-digital communication strategy is being adopted for efficient and timely communication. Webinars, short message services (SMS) and e-mails, social media, information education

communication (IEC) videos, camps under *Nidhi Aapke Nikat 2.0* (a massive district outreach programme, etc, are used to educate and communicate with stakeholders.

- **E-proceedings:** A case on use of information and communication technology in justice delivery

Ensuring regular compliance is a critical aspect of a contributory social security system. In this process, the regulators conduct judicial proceedings to determine the dues from the defaulting employers. They conducted the inquiries in a physical mode leading to time delays and there were concerns regarding higher levels of transparency. It has made the inquiry process online end-to-end, ensuring fairness, and enhanced transparency, in addition to reducing the average inquiry time.

- *Nidhi Aapke Nikat 2.0* : Ensuring the last mile delivery of services

EPFO has presence in the country through 139 regional offices and 117 District Offices. However, there is absence of EPFO in more than 500 districts of the country, leading members to sometimes undertake extensive journeys to EPFO offices for various tasks such as online claim submission, grievance redressal, etc. In an effort to enhance convenience for members, pensioners and employers, and bring services closer to their residences, the *Nidhi Aapke Nikat* programme was started. *Nidhi Aapke Nikat 2.0* is held throughout the country on 27th of every month, where grievances are

resolved on the spot. This has also promoted the Government's policy of ease of doing business and ease of living.

- **Multilingual Call Centres:** Effort towards an inclusive grievance redressal

Vast geographical expansion and a multitude of languages spoken across India present challenges in disseminating information about social security schemes under the Employees' Provident Fund and Miscellaneous Provisions Act 1952. To address the challenge, EPFO has made the information

accessible and free of charge in 12 major regional languages, in alignment with the ISSA Guidelines on Service Quality. These call centres help in efficient grievance redressal and ensuring member satisfaction by resolving doubts and problems in the language of the member.

- **Prayaas:** Prioritizing pensioners

It is an initiative undertaken by EPFO for handing over pension payment orders (PPO) to retiring members of the Employees' Pension Scheme, 1995 on the day of retirement itself. Numbers of the PPO issued under this initiative are rising consistently.

EPFO also received a special mention for digital life certificate (Jeevan Pramaan Patra), highlighting the commitment of EPFO to support

pensioners with digital ease. The digital life certificate also known as the *Jeevan Pramaan* Certificate is an additional facility for filing life certificates for pensioners enabled by the biometric authentication system that is Aadhaar-based.

These awards recognize the efforts undertaken by EPFO to reform and adopt good practices in line with changing economic and social milieu. This international recognition will further inspire team EPFO to strive harder for the service of its members.

Ref: PIB

44. National Library Mission



The Ministry of Culture through its National Mission on Libraries (NML) Scheme, under its setting up of the NML Model Library component, provides financial assistance to one state central library and one district library in each State /UT. Given that this is as per the recommendation of the concerned state authorities and six libraries under Ministry of Culture for following categories:

- i. Improvement of Infrastructure
- ii. Up-gradation of Technology & Modernization of Services
- iii. Creation of Facilities for Specially Abled groups
- iv. Procurement of Reading Resources to meet local need and Advocacy and Outreach Programmes

The details of financial assistance till date to all participating States/ UTs are given in Annexure-A.

Since as per the Seventh schedule of Constitution of India, library is a state subject, there is no plan to digitise libraries across the country. However, the Ministry of Culture through the National Mission on Libraries Scheme provides financial assistance under its component of Up-gradation of Technology & Modernization of Services.

The Union Minister for Culture and Tourism Shri Gajendra Singh Shekhawat shared this information in a written reply in Rajya Sabha.

Annexure-A

Financial Assistance Provided Under Setting-up of NML Model Library in Various state/UTs (*Rs. in Lakhs*)

S No	State	Name of the Library	Total Payment Released
1	Andaman & Nicobar Island	State Central Library, Port Blair	0.00
2	Andaman & Nicobar Island	District Library, Car Nicobar	0.00
3	*Andhra Pradesh	State Regional Library, Guntur	0.00
4	*Andhra Pradesh	Regional Library, Rajamundry	0.00
5	Arunachal Pradesh	State Central Library, Itanagar	219.71
6	Arunachal Pradesh	District Library, Phasighat	84.90
7	*Assam	District Library, Jorhat, Assam	39.99

8	*Assam	District Library, Guwahati, Assam	69.59
9	*Bihar	District Central Library, Jamui, Bihar	62.21
10	*Bihar	District Central Library, Hajipur, Vaishali	50.00
11	Chandigarh	Central State Library, Chandigarh	0.00
12	Chandigarh	Divisional Library	0.00
13	Chhattisgarh	District Library, Raigarh	41.32
14	Daman & Diu	District Library, Diu	0.00
15	Daman & Diu	Central Library, Daman	0.00
16	Goa	Dr. Francisco Luis Gomes District Library	3.38
17	Goa	Krishnadas Shama State Central Library	21.68

18	Gujarat	State Central Library, Gandhinagar	101.00
19	Gujarat	Government District Library, Bhavnagar	87.00
20	Haryana	State Central Library, Ambala Cantt.	122.65
21	Haryana	District Library, Narnaul	46.20
22	Himachal Pradesh	Government District Library, Bilaspur	74.66
23	Himachal Pradesh	Central State Library, Solan	95.00
24	Jammu & Kashmir	Gani Memorial U.T Central Library, Srinagar	100.00
25	Jammu & Kashmir	District Library, Samba	32.50
26	Jharkhand	State Central Library, Dhanbad	0.00
27	Jharkhand	District Library, Palamau	0.00

28	Karnataka	State Central Library, Bangalore	200.00
29	Karnataka	District Central Library, Shimoga	79.26
30	Kerala	State Central Library, Thiruvananthapuram	116.61
31	Kerala	State Public Library Research Centre	22.55
32	Lakshadweep	State Central Library, Kavaratti	88.00
33	Lakshadweep	District Library, Kadmat	27.64
34	Madhya Pradesh	Govt. District Library, Khandwa	65.59
35	Madhya Pradesh	Govt. Shri Ahilya Central Library, Indore	43.67
36	*Maharashtra	District Library, Nandurbar, Maharashtra	18.43
37	*Maharashtra	Govt. Divisional Library, Aurangabad	57.21

38	Manipur	State Central Library, Imphal, Manipur	45.25
39	Manipur	District Library, Senapati, Manipur	1.00
40	Meghalaya	State Central Library, Shillong	27.77
41	Meghalaya	District Library, Tura	0.00
42	Mizoram	State Central Library, Aizwal, Mizoram	137.04
43	Mizoram	District Library, Kolasib, Mizoram	50.00
44	Nagaland	State Central Library, Kohima	175.48
45	Nagaland	District Library, Dimapur	69.75
46	Odisha	H.K.M.State Library, Bhubaneswar	133.00
47	Odisha	District Library, Ganajam	0.00

48	Pondicherry	Romain Rolland Library, State Central Library,	142.37
49	Pondicherry	Dr. S. R. Ranganathan Government Public Library, Karaikal	66.17
50	Punjab	Guru Nanak District Library, Kapurthala	0.00
51	Punjab	MM Central State Library, Patiala	0.00
52	Rajasthan	Dr. Radhakrishnan Rajya Kendriya Pustakalaya, Jaipur	94.81
53	Rajasthan	Rajakiya Sarvajanic Mandal Pustakalaya, Kota	63.21
54	Sikkim	Sikkim State Central Library, Gangtok	65.30
55	Sikkim	District Library, Mangan	10.78
56	Tamil Nadu	District Library, Tiruchirapalli, Tamil Nadu	68.16

57	Tamil Nadu	District Library, Vellore, Tamil Nadu	79.27
58	Telangana	District Central Library, Mahabubnagar	50.00
59	Telangana	State Central Library, Hyderabad	103.72
60	Tripura	Birchandra State Central Library	222.93
61	Tripura	Unakoti District Library	86.92
62	Uttar Pradesh	State Central Library, Prayagraj	203.75
63	Uttar Pradesh	Government District Library, Etawah	85.93
64	Uttarakhand	Government District Library, Suman Pustakalaya, New Tehri	50.00
65	West Bengal	West Bengal State Central Library	219.82
66	West Bengal	North Bengal State Library, Coochbehar	79.73

TOTAL	4302.91
--------------	----------------

*Since, the States of Andhra Pradesh; Assam; Bihar and Maharashtra do not have Central Libraries, hence two District Libraries in each of these states have been identified.

B

Financial Assistance Provided Under Setting Up of NML Model Library to MoC Identified Libraries (Rs. in Lakhs)		
S No	Name of the MoC Library	Amount Released
1	National Library, Kolkata	84.67
2	Central Secretariat Library, New Delhi	126.28
3	Delhi Public Library, New Delhi	274.19
4	Khuda Baksh Oriental Public Library, Patna (Bihar)	199.39

5	Thanjavur MSSM Library, Thanjavur (Tamil Nadu)	667.48
6	Rampur Raza Library, Rampur (Uttar Pradesh)	NIL
	Total	1352.01

Ref: PIB

Image: [Pixabay](#)

45. Philosophical Musings

Man's life cannot "be lived" by repeating the pattern of his species; he must live. Man is the only animal that can be bored, that can be discontented, that can feel evicted from paradise. Man is the only animal for whom his own existence is a problem which he has to solve and from which he cannot escape. He cannot go back to the pre human state of harmony with nature; he must proceed to develop his reason until he becomes the master of nature, and of himself."

— Erich Fromm

Additional Insights on Erich Fromm's Insightful Quote

To expand on Erich Fromm's thought-provoking analysis of human existence, here are some complementary ideas, discussions, and resources:

1. Exploring Existentialism and Human Nature

Fromm suggests that humanity's unique challenge is its awareness of existence and the need to find meaning. Compare this with existentialist thinkers like Jean-Paul Sartre or Viktor Frankl, who discuss the burden and beauty of human freedom and responsibility.

Resources:

- [Stanford Encyclopedia of Philosophy: Existentialism](#)
- [Viktor Frankl's "Man's Search for Meaning"](#)

2. Man as a Master of Nature

Fromm argues that humanity must master both nature and itself. Consider how this idea relates to the challenges of the Anthropocene era, where human influence on nature has reached unprecedented levels, leading to ecological crises.

Resources:

- [The Anthropocene Reviewed Podcast by John Green](#)
- [United Nations: Harmony with Nature](#)

3. The Psychology of Boredom and Discontent

Fromm highlights boredom and discontent as uniquely human experiences. Dive deeper into how these feelings are addressed in modern psychology, particularly through mindfulness practices and the pursuit of flow states.

Resources:

- [Psychology Today: The Science of Boredom](#)
- [Mihaly Csikszentmihalyi's "Flow: The Psychology of Optimal Experience"](#)

46. Protecting and Preserving Heritage of Monuments

The Ancient Monuments and Archaeological Sites and Remains Act, 1958 (AMASR Act,1958) is a significant legislation with a provision under section 4 to declare any ancient monument or archaeological site and remains as of national importance. Section 4 of the AMASR Act, 1958 provides that the Government may declare any ancient monument or archaeological site and remains to be of national importance depending on their archaeological, historical, or architectural importance.

A notification is issued in the Gazette of India, giving two months' notice and inviting objections from the public. Authorities consider these objections carefully within the stipulated period. After this consideration, the Central Government may declare the ancient monument of national importance by publishing a notification in the official Gazette.

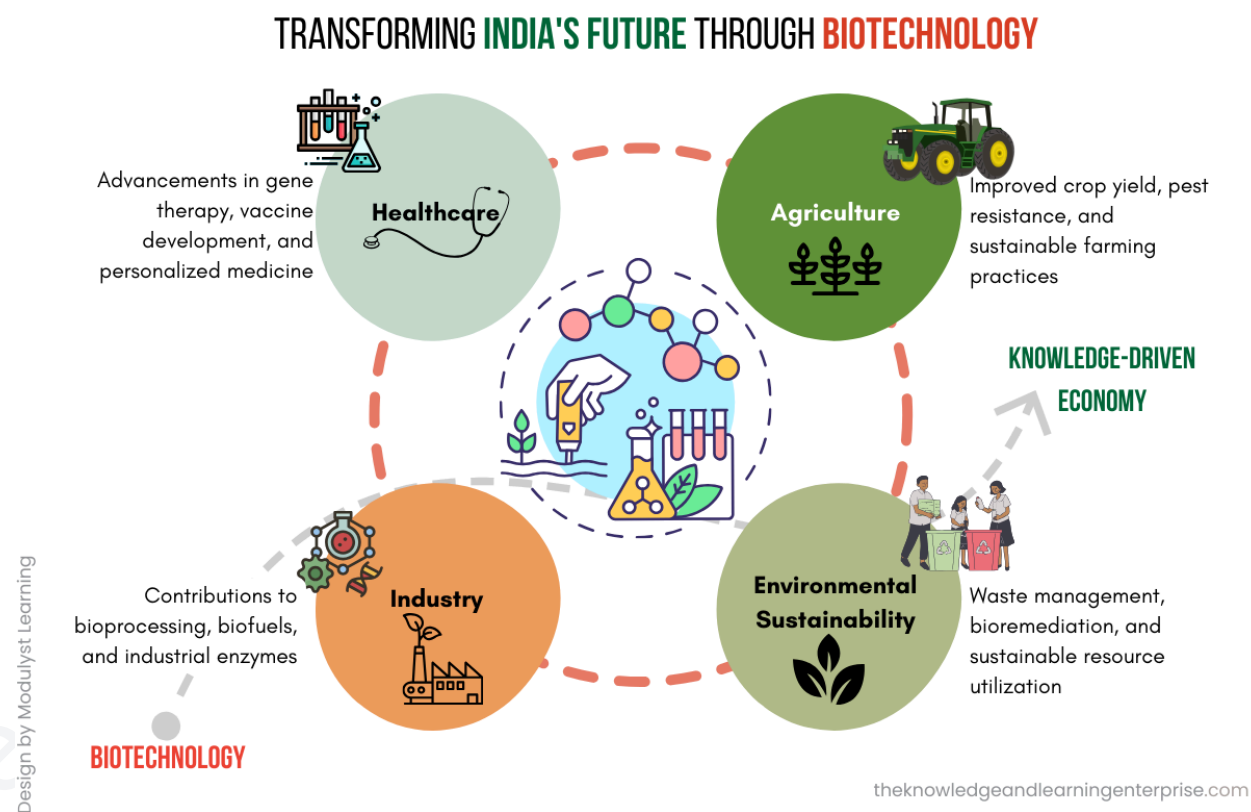
The Gazette of India has published a notification to declare the following archaeological sites in the State of Haryana:

- (i) Ancient Mound No. VI, at Rakhigarhi, District Hisar (Haryana)
- (ii) Ancient Mound No. VII, at Rakhigarhi, District Hisar (Haryana)

Ref : PIB

47. Scientific Research and Technological Innovation

Biotechnology has played a transformative role in reshaping India's scientific and technological landscape, contributing to advancements in healthcare, agriculture, industry, and environmental sustainability. Biotechnology is integral to India's journey toward becoming a knowledge-driven economy. By addressing societal challenges through innovation, biotechnology is helping to shape a sustainable and inclusive future.



Following are key highlights of the biotechnology impact in India's scientific landscape:

Advancements in Healthcare: India has emerged as a global hub for vaccine production and generic drugs. Biotechnological innovations enabled the development of affordable vaccines. Initiatives like GenomeIndia to construct a comprehensive catalogue of genetic variations for India's population have enhanced our understanding of genetic diseases, paving the way for precision medicine. Biotech startups have developed rapid and cost-effective diagnostic tools, such as RT-PCR kits for COVID-19, improving healthcare delivery.

Revolutionizing Agriculture: The introduction of BT cotton significantly boosted India's agricultural productivity by enhancing pest resistance. Biofertilizers and Biopesticides technologies have promoted sustainable farming practices through eco-friendly alternatives to chemical fertilizers and pesticides. Techniques like tissue culture and marker-assisted selection are being used to develop high-yield, drought-resistant, and disease-resistant crop varieties.

Environmental Sustainability: Biotechnology has enabled the cleanup of pollutants using microorganisms to restore contaminated environments. Conversion of organic waste into compost or energy is gaining momentum in India. India's push towards renewable energy includes advancements in biofuels, reducing dependency on fossil fuels.

Startups and Innovation: India's biotech ecosystem has flourished with the emergence of startups supported by Government initiatives like Make in India, and Biotechnology Industry Research Assistance Council (BIRAC) supported Public-private partnerships programs. Various funding opportunities have propelled biotech research, bringing India closer to becoming a global biotech hub.

Scientific advancements have significantly improved the quality of life for the general public, particularly in areas such as healthcare and agriculture. These fields have seen transformative changes that have enhanced accessibility, affordability, and efficiency. Scientific advancements in healthcare and agriculture have had a profound positive impact on society, addressing critical issues like food security and health equity.

In the **healthcare sector**, improved disease diagnosis and treatment, vaccine development, production of generic drugs etc. has made essential medicines more affordable. Public health campaigns backed by scientific research, such as sanitation drives (e.g., Swachh Bharat mission) and vaccination programs, have reduced disease burden. Advances in neonatal care, fertility treatments, and maternal health monitoring have significantly reduced infant and maternal mortality rates.

In the **agriculture sector**, the green revolution introduced high-yielding crop varieties, significantly boosting food production. Crops like Bt cotton have improved pest resistance and reduced dependence on chemical

pesticides. Drought-resistant and flood-tolerant crops developed through biotechnology help farmers cope with climate change. Biofertilizers and biopesticides promote eco-friendly farming, reducing soil and water pollution.



Organic farming techniques, supported by scientific advancements, cater to the growing demand for healthy and sustainable food. Scientific interventions like crop insurance, mobile apps for weather forecasting, and digital platforms for selling produce ensure better income and reduced risk for farmers. Advances in cold storage, food processing, and preservation

technologies have minimized waste and extended the shelf life of agricultural produce.

The Department of Biotechnology (DBT) continues to drive transformative initiatives, through support to biotechnology research & development programs, research resources, scientific infrastructure, and human resource & skill development programs. DBT- Biotechnology Research Innovation Council (BRIC) institutions focus on cutting-edge research and innovation by advancing programs in healthcare, agriculture, and environmental biotechnology. These efforts are fostering a robust ecosystem for biotechnological innovation, effectively bridging the gap between scientific research and societal benefits, and ensuring that advancements in biotechnology contribute to India's inclusive and sustainable development.

Overall, scientific advancements have made broader impacts for the general public in the form of improved nutrition, economic growth, enhanced quality of life, empowerment through technology.

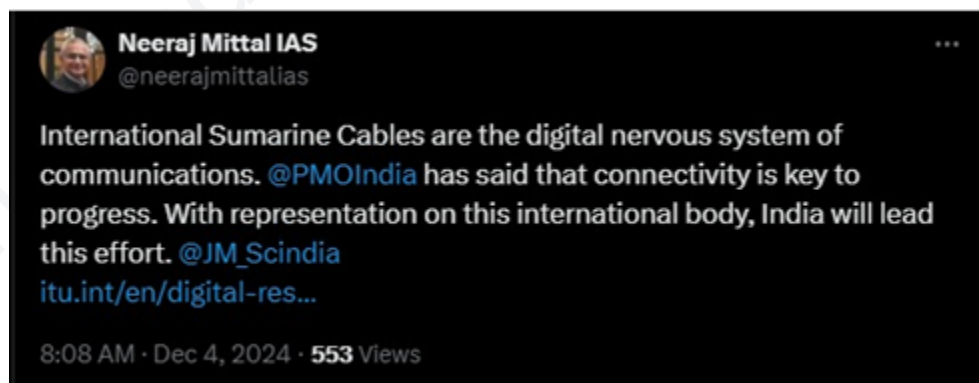
Ref: PIB



Image: [Pixabay](#)

48. International Advisory Body for the Lifeline of Global Communication



Submarine telecommunication cables, the lifeline of global communication, are facing a significant challenge. Approximately 99% of internet traffic and critical services such as commerce, finance, government operations, digital health, and education rely on these cables. However, they are vulnerable to damage, with an estimated 150-200 faults occurring globally annually. This is a problem that requires a coordinated international response.

Stepping up to the challenge, the International Telecommunication Union (ITU) and the International Cable Protection Committee (ICPC) have combined their expertise and leadership. They have jointly launched the International Advisory Body for Submarine Cable Resilience, a crucial initiative aimed at bolstering the resilience of these indispensable cables.




 **Doreen Bogdan-Martin** 
@ITUSecGen

Submarine cables carry over 99% of international data exchanges, making their resilience a global imperative. The Advisory Body will mobilize expertise to ensure this vital digital infrastructure remains resilient in the face of disasters, accidents, and other risks

 **Int'l Telecommunication Union**  @ITU · Nov 29

Launch of international advisory body to support resilience of submarine telecom cables itu.int/en/mediacentre...
Strengthening resilience of submarine cable networks is key to digital connectivity and economies



ALT

4:11 PM · Nov 29, 2024 · 825 Views

Advisory Body's Role and Global Representation

The newly formed International Advisory Body will proactively work towards promoting best practices across governments and industries to improve cable resilience, reduce risks of damage, and ensure the swift repair and deployment of these vital systems. The Advisory Body will also provide strategic guidance to address challenges related to increasing traffic, aging infrastructure, and growing environmental threats to submarine cables.

With 40 members from around the world—including ministers, heads of regulatory authorities, and senior experts in telecommunications—the body reflects a diverse global perspective. Members come from all regions to represent the voices of small island nations and large economies. The collective experience of the body, with its diverse representation, will help address the needs of those whose livelihoods depend on submarine cables, as well as those responsible for deploying, maintaining, and protecting this critical infrastructure.

Leadership and Meetings

H.E. Minister Bosun Tijani, Minister of Communications, Innovation, and Digital Economy of Nigeria, will co-chair the advisory body with Prof. Sandra Maximiano, Chair of the Board of Directors of Portugal's National Communications Authority (ANACOM).

The body will meet at least twice yearly to consult on international policies, telecommunications infrastructure, and best practices for improving resilience. The inaugural virtual meeting is scheduled for 12th December 2024, followed by a physical meeting at the Submarine Cable Resilience Summit in Abuja, Nigeria, in February 2025.

India's Role in Submarine Cable Infrastructure

India's role in the global submarine cable network is significant. The country hosts around 17 international subsea cables across 14 distinct landing stations in Mumbai, Chennai, Cochin, Tuticorin, and Trivandrum. As of the end of 2022, these cables' total lit capacity and activated capacity stood at 138.606 Tbps and 111.111 Tbps, respectively, underscoring India's substantial contribution to global connectivity.

Indian telecom operators involved in submarine cable infrastructure include:

- Tata Communications owns five cable landing stations in Mumbai, Chennai, and Cochin.
- Global Cloud eXchange (formerly Reliance Globalcom) owns stations in Mumbai and Trivandrum.
- Reliance Jio has cable landing stations in Chennai and Mumbai, and new projects are underway.

- Bharti Airtel operates stations in Chennai and Mumbai and lands the 2Africa/EMIC-1 and SEA-ME WE 6 cables.
- Sify Technologies and BSNL operate various cable landing stations.
- Vodafone and IOX plan to construct a new cable landing station in Puducherry.

About ICPC

The International Cable Protection Committee (ICPC), founded in 1958, is a global forum for governments and commercial entities involved in the submarine cable industry. Its primary mission is to enhance the security of undersea cables by providing a platform for exchanging technical, legal, and environmental information.

Background on Submarine Cable Resilience

Submarine cables form the foundation of global communications, linking continents and connecting markets. As of 2024, more than 500 active and planned submarine cable systems are operating, efficiently transmitting vast amounts of data.

These modern cables are designed to efficiently transmit vast amounts of data over long distances. The outer protective layer shields against environmental hazards such as deep-sea pressure, corrosion, and marine activity, while the core fiber strands are optimized for high-speed data transmission with minimal signal loss. This infrastructure is indispensable

for real-time financial trading, video conferencing, and live-streaming applications.

A submarine cable can take over two years to become operational from design to deployment. This timeline is influenced by a combination of factors, including securing funding, navigating permitting and regulatory requirements, and addressing environmental and operational requirements.

However, this infrastructure faces increasing challenges due to environmental hazards, aging systems, and complex regulatory environments.

In 2023, over 200 submarine cable repairs were reported globally, highlighting the vulnerabilities of this critical infrastructure. Disruptions to submarine cable systems can have far-reaching consequences for millions, including economic instability, security concerns, and internet access disruptions.

ITU's Contribution to Global Resilience

The International Telecommunication Union (ITU), as the UN agency for digital technologies, recognizes the vital role submarine cables play in global communications. ITU is at the forefront of efforts to enhance the resilience of these cables through cooperation, standard-setting, and technical guidance. Through the International Advisory Body on

Submarine Cable Resilience, ITU aims to develop best practices for securing submarine cable infrastructure, addressing cable maintenance, damage prevention, rapid recovery after disruptions, and adopting sustainable industry practices.

Ref: PIB

Kindness is more than deeds. It is an attitude, an expression, a look, a touch. It is anything that lifts another person.

Plato

49. Advancement of Supercomputing: Status in India



The Department of Science and Technology (DST) jointly with the Ministry of Electronics and Information Technology is implementing a National Supercomputing Mission (NSM) to create supercomputing infrastructure and related human resource development (HRD) in the country. Through NSM, the government has created 33 supercomputing systems with a total capacity of 32 Peta Flop across the nation at 24 locations. Five training centres at Pune, Kharagpur, Chennai, Palakkad, and Goa are steering the

HRD activities in this area. It will expand the awareness and familiarization of supercomputing with college students and researchers.

So far more than 20,000 people are trained through the supercomputing training programs. DST is implementing a National Quantum Mission (NQM) wherein four Thematic Hubs (T-Hubs) have been established in the country including one in the area of quantum computing. The major mandates of the T-Hubs include technology development, human resource development, entrepreneurship development and international collaborations in their respective technology verticals. The National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) has established 25 Technology Innovation Hubs (TIHs) in various institutes across the country in advanced technology verticals including in the areas of quantum computing and related areas.

NQM objectives include developing intermediate-scale quantum computers with 50-1000 physical qubits in eight years in various platforms like superconducting and photonic technology.

Various institutions house supercomputers. These institutions are: such as Indian Institute of Technology (IIT) (Gandhinagar, Goa, Guwahati, Hyderabad, Kanpur, Kharagpur, Madras, Mandi, Palakkad, Roorkee, Varanasi), National Institute of Technology, Trichy, Indian Institute of Science, Indian Institutes of Science Education and Research, Pune, Jawaharlal Nehru Centre for Advanced Scientific Research(JNCASR),

Bengaluru, S. N. Bose National Centre for Basic Sciences, Kolkata, National Agri-Food Biotechnology Institute, Mohali(NABI), Mohali, Inter-University Accelerator Centre(IUAC), Delhi, National Centre for Radio Astrophysics, (NCRA), Pune, Society for Electronic Transactions and Security, (SETS), Chennai, National Informatics Centre, Delhi and various centres of C-DAC at Pune, Bengaluru, Delhi. These supercomputing systems offer a total computing power of 32 PetaFlop.

NSM has planned to expand the number of supercomputers to select institutions including IITs with more compute power including 20 PetaFlop systems.

The government has allocated/utilized Rs. 1874 crore to develop and provide the supercomputing facility for research and other allied areas. This includes funds for infrastructure creation, undertaking R&D in applied areas, applications, HRD and for mission management.

Ref: PIB

Image: [Pixabay](#)

You are not replaceable, nor are you able to be duplicated, you are a treasure that is one of a kind.

49. A Move Towards Self-Reliance: Copper Quality Control

To strengthen the quality control eco-system for the non-ferrous metals sector (including Copper) in the country, the Ministry of Mines notified the Copper (Quality Control) Order on 31 August 2023. This order, along with Quality Control Orders (QCOs) for Aluminium, Aluminium Alloys, and Nickel, was designed to regulate the quality of these metals in the market. Initially, the QCOs, including the Copper QCO, were to come into force three months from the date of their notification, i.e., 30.11.2023.

After that, the industry stakeholders, including the user sector industry, requested to extend this order. Considering the supply situation, the authorities provided the extension via a notification dated 3 November 2023 for six months (i.e.1.6.2024). Subsequently, they extended it by another six months via a notification dated 3 May 2024, i.e., 1.12.2024. The Ministry has regularly held several interactions with concerned stakeholders through a series of meeting(s) with industry bodies and user sector industries during October 2023, January 2024, May 2024, September 2024, and October 2024.

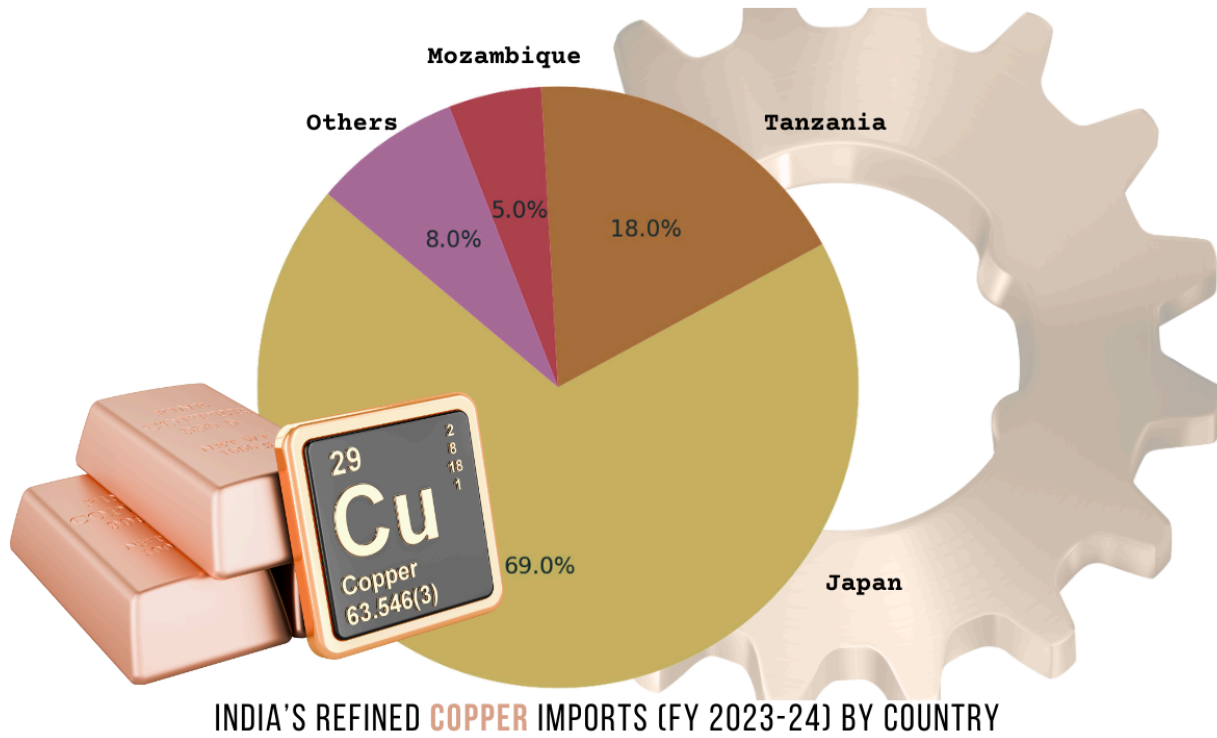
Secretary (Mines) held a meeting with DG BIS on 17.1.2024, which, besides BIS & Ministry officials, industry representatives also attended. Thus, a sufficient period of 15 months, from 31 August 2023 onwards, allowed the domestic and foreign suppliers of Copper cathodes to obtain the Bureau of

Indian Standards (BIS) certification, a crucial step in ensuring the quality of copper in the market.

In FY 2023-24, India imported about 363 Thousand Tonnes (THT) of refined copper cathode (HS Code: 740311), valued at Rs. 24,552 crore. Japan accounts for about 2/3rd (67%) of the refined copper imports. In quantity terms, about 69% of India's refined copper imports come from Japan. Tanzania is India's second most important source of refined Copper, contributing about 18% of the imports, followed by Mozambique, which shares about 5%.

M/s Adani's Kutch Copper Refinery has since come into production, marking a significant step towards India's self-sufficiency in refined Copper. While the ramp-up to full capacity may take some time, with company officials estimating it to be around Feb-March 2025, this development is a cause for optimism. Once achieved, India will no longer be dependent on imports for refined Copper. Until then, some imports of refined Copper will continue, but the prospect of self-sufficiency is on the horizon.

Seven applications from Japanese smelters have been received for BIS certification, one of which (Sumitomo Metal Mining Co. Ltd.) has already been granted a license.



The BIS certification process involves a thorough evaluation of the smelter's production methods, quality control measures, and adherence to international standards. According to information received from BIS, two more licenses will be granted by next week, indicating the progress in ensuring a steady supply of high-quality copper in the market.

Presently, four domestic suppliers, namely, Adani's Kutch Copper Ltd, Hindalco Industries Ltd, Gujarat Victory Forgings Pvt Ltd & Vedanta Ltd,

and four foreign suppliers, one each from Japan and Austria, and two from Malaysia, have been certified by BIS to supply copper cathode to Indian market. Thus, with four domestic BIS-certified suppliers & 4 foreign BIS-certified suppliers, and another two certifications by mid of Dec 2024, no severe supply-side constraint is envisaged.

Source: [Copper Quality Control Order: A step towards Atma Nirbharta](#)

Just make it EXIST first.

You can make it GOOD later.

50. Impact of Climate Change on Agriculture

The National Action Plan on Climate Change (NAPCC), established by the government in 2008, plays a pivotal role in addressing the significant challenge of climate change in the agricultural community. This comprehensive policy framework outlines a national strategy to adapt to climate change and enhance ecological sustainability. One of its key components is the National Mission for Sustainable Agriculture (NMSA), which is dedicated to making agriculture more resilient to the changing climate.

ICAR's NICRA Initiative: Building Climate-Resilient Agriculture for Vulnerable Regions

The Indian Council of Agricultural Research (ICAR) has launched a flagship network project, National Innovations in Climate Resilient Agriculture (NICRA). This successful project conducts studies on the impact of climate change on agriculture, including crops, livestock, horticulture, and fisheries.

Also, it develops and promotes climate-resilient technologies in agriculture for vulnerable areas of the country. The project outputs help the districts and regions prone to extreme weather conditions like droughts, floods, frost, heat waves, etc., to cope with such extremes. During the last 10 years

(2014-2024), ICAR has released 2593 varieties; out of these, 2177 varieties have been found tolerant to one or more biotic and/or abiotic stresses.

At the district level, offices have carried out the risk and vulnerability assessment of agriculture to climate change. It covered 651 predominantly agricultural districts per Intergovernmental Panel on Climate Change (IPCC) protocols. Out of 310 districts identified as vulnerable, authorities have categorized 109 districts as 'very high' and 201 as 'highly' vulnerable.

District Agriculture Contingency Plans (DACPs) for these 651 districts will address weather aberrations and recommend location-specific climate-resilient crops and varieties and management practices for use by the State Departments of Agriculture. NICRA has initiated the concept of "Climate Resilient Villages" (CRVs) to enhance farmers' resilience and adaptive capacity to climate variability.

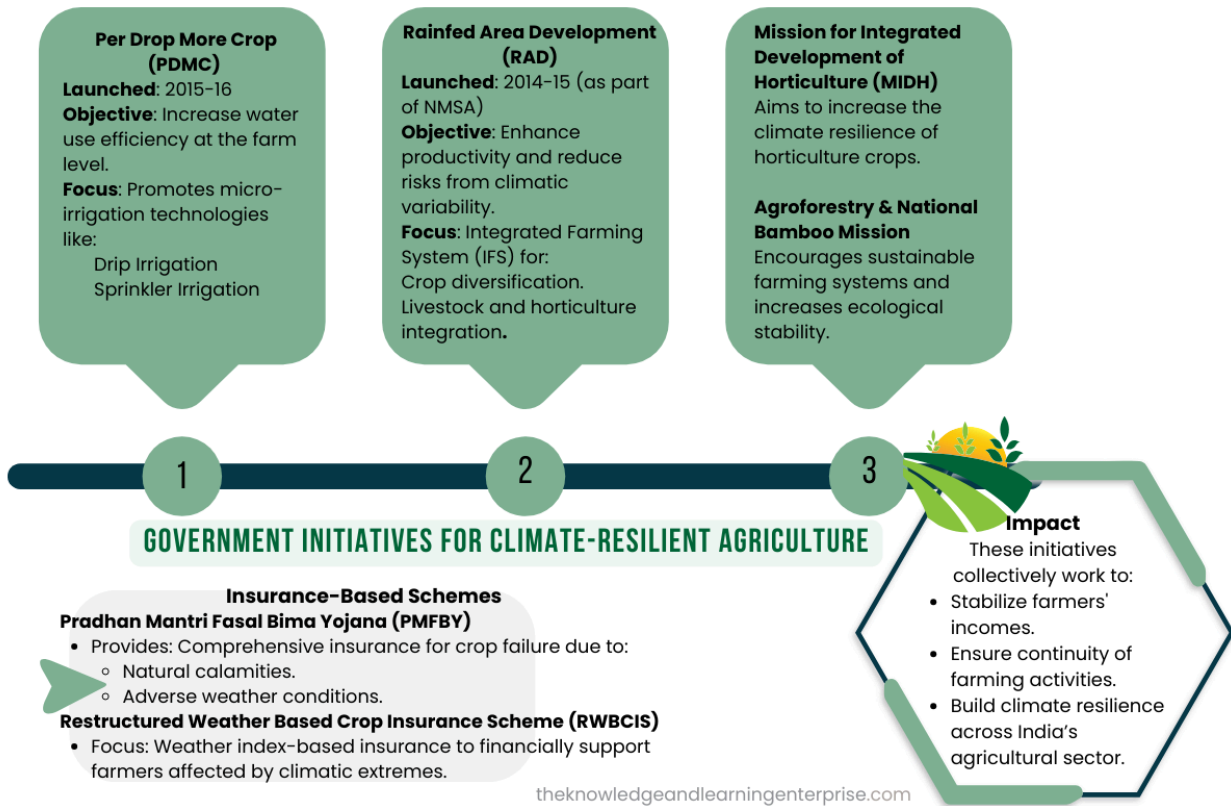
Location-specific climate resilient technologies have been demonstrated in 448 CRVs of 151 climatically vulnerable districts covering 28 states / UTs for adoption by farmers. ICAR, through its NICRA project, creates awareness about the impact of climate change on agriculture among farmers. Capacity-building programs educate farmers on various aspects of climate change for broader adoption of climate-resilient technologies.

Government Schemes

Considering the challenge posed by climate change in agriculture, the government has initiated several schemes under NMSA to deal with the adverse climate situations in the agriculture sector across the country. The government launched the "Per Drop More Crop" (PDMC) scheme during 2015-16 to increase water use efficiency at the farm level through micro-irrigation technologies, such as drip and sprinkler irrigation systems.

The Rainfed Area Development (RAD) scheme is a component under the National Mission for Sustainable Agriculture (NMSA) from 2014-15. RAD focuses on the integrated farming system (IFS) to enhance productivity and minimize risks associated with climatic variability. Mission for Integrated Development of Horticulture (MIDH), Agroforestry & National Bamboo Mission also aims to increase climate resilience in agriculture.

Further, Pradhan Mantri Fasal Bima Yojana (PMFBY), along with the weather index-based Restructured Weather Based Crop Insurance Scheme (RWBCIS), provides a comprehensive insurance cover against failure of the crop by way of providing financial support to farmers suffering crop loss/damage arising out of unforeseen natural calamities, adverse weather incidence and to help stabilize income of farmers and ensure their continuation of farming.



The Minister of State for Agriculture & Farmers' Welfare, Shri Bhagirath Choudhary, played a pivotal role in disseminating this information in a written reply in Rajya Sabha in December 2024, keeping the public informed about the government's initiatives in the agricultural sector.

Ref: PIB

51. Carbon Tariffs: Green Transition of the Steel Sector

In response to the emerging challenges, the government has proactively taken various measures, including decarbonization and the European Union's introduction of the Carbon Border Adjustment Mechanism (CBAM). These measures are not contingent upon a formal review of the National Steel Policy, demonstrating the government's readiness to address the issues at hand.

After extensive consultation with stakeholders, the government has crafted a comprehensive roadmap and action plan for the green transition of the steel sector. This collaborative effort has led to the formulation of other policy initiatives for energy efficiency and process efficiency, including the National Green Hydrogen Mission for green hydrogen production and usage in the steel sector, the notification of the Steel Scrap Recycling Policy 2019, and the Motor Vehicles (Registration and Functions of Vehicles Scrapping Facility) Rules 2021.

These initiatives aim to enhance the availability of domestically generated scrap for steel making, thereby enabling a significant reduction in carbon emissions in the steel making process. The implementation of the Perform, Achieve and Trade (PAT) scheme, under the National Mission for Enhanced Energy Efficiency, is another key step that incentivizes the steel industry to reduce energy consumption.

The Union Minister for Steel and Heavy Industries, Shri H.D. Kumaraswamy, provided this information in the Rajya Sabha in December 2024.

Source: [Press Information Bureau](#)

Related Information:

Green Transition in the Steel Sector: A Path Toward Sustainability

The steel industry, a critical component of global infrastructure and economic development, is undergoing a significant green transition to align with global sustainability goals. As one of the largest industrial contributors to greenhouse gas (GHG) emissions, accounting for around 7-9% of global CO₂ emissions, the sector is embracing innovative technologies and practices to reduce its carbon footprint and promote environmental stewardship.

India's Green Steel Vision

India, as the second-largest steel producer globally, is actively pursuing green initiatives in its steel sector:

- The Production Linked Incentive (PLI) Scheme for Specialty Steel promotes investments in environmentally friendly steel production.

- The focus on renewable energy integration and hydrogen production aligns with India's commitment to achieving net-zero emissions by 2070.

The Way Forward

The green transition of the steel sector is not just an environmental necessity but also an economic opportunity. By investing in sustainable technologies, enhancing resource efficiency, and fostering collaboration, the industry can reduce its ecological impact while meeting the growing global demand for steel. With governments, industries, and research institutions working together, the vision of a low-carbon steel sector is becoming a tangible reality, contributing to a more sustainable future for the planet.

52. Nafithromycin: Country's First Indigenous Antibiotic

The success of Nafithromycin is a testament to India's growing capability to develop homegrown solutions for pressing healthcare challenges.

-Union Minister Dr. Jitendra Singh



Antimicrobial resistance has long been a growing global concern, with pharmaceutical companies striving to develop new medicines to combat it worldwide. Despite years of challenges and relentless effort, a breakthrough has finally emerged. After three decades of research and hard work, India has led the way with the creation of Nafithromycin, the country's

first indigenous Macrolide antibiotic. This remarkable achievement marks a pivotal moment in the fight against antimicrobial resistance, showcasing India's growing capabilities in pharmaceutical innovation.

India's Fight Against Antimicrobial Resistance

Antimicrobial Resistance (AMR) occurs when bacteria, viruses, fungi and parasites no longer respond to antimicrobial medicines. As a result of drug

resistance, antibiotics and other antimicrobial medicines become ineffective and infections become difficult or impossible to treat, increasing the risk of disease spread, severe illness, disability and death. While AMR is a natural process driven by genetic changes in pathogens over time, its spread is significantly accelerated by human activities, particularly the overuse and misuse of antimicrobial drugs in humans, animals, and plants. Antimicrobial resistance (AMR) has become a major global health issue, with around 6 lakh lives lost in India each year due to resistant infections.

However, India is making significant strides in addressing AMR, particularly through the development of new drugs. Nafithromycin, developed with ₹8 crore in funding under the Biotechnology Industry Research Assistance Council (BIRAC) Biotech Industry Program for Phase 3 clinical trials, is a key milestone in this effort. Since India carries a large share of the global pneumonia burden, introducing Nafithromycin is especially important, as there have been no new antibiotics in recent years. Nafithromycin offers improved patient compliance and is a vital step in combating AMR.

Nafithromycin: Milestone for Public Health

Nafithromycin, was officially launched on November 20, 2024, by Union Minister Dr. Jitendra Singh. Developed by Wockhardt with support from the Biotechnology Industry Research Assistance Council (BIRAC), Nafithromycin, marketed as "Miqnaf," targets Community-Acquired

Bacterial Pneumonia (CABP) caused by drug-resistant bacteria, which disproportionately affects vulnerable populations such as children, the elderly, and those with compromised immune systems.



This groundbreaking antibiotic is ten times more effective than current treatments like azithromycin and offers a three-day treatment regimen, significantly shortening the recovery time while improving patient

outcomes. Nafithromycin is designed to treat both typical and atypical drug-resistant bacteria, making it a crucial tool in addressing the global health crisis of AMR (Antimicrobial Resistance). It boasts superior safety, minimal side effects, and no significant drug interactions.

Nafithromycin's development marks a historic milestone as the first new antibiotic in its class to be introduced globally in over 30 years. The drug, which has undergone extensive clinical trials across the U.S., Europe, and India, has been developed with an investment of ₹500 crores and is now awaiting final approval from the Central Drugs Standard Control Organization (CDSCO).

This innovation exemplifies the power of public-private collaboration and underscores India's growing capabilities in biotechnology. Nafithromycin's successful introduction represents a major leap in the fight against AMR, offering hope for treating multidrug-resistant infections and saving lives worldwide.

Government's Other Initiatives to Combat AMR

Other than developing Nafithromycin, the Government of India has taken significant steps to combat Antimicrobial Resistance (AMR) through a series of strategic initiatives aimed at surveillance, awareness, and collaboration. These efforts focus on enhancing AMR containment,

improving infection control, and fostering national and international partnerships.



Surveillance and Reporting: National surveillance networks, including laboratories across the country, have been established to generate annual AMR surveillance reports, with data submitted to the Global AMR Surveillance System (GLASS).

Awareness and Training: Awareness materials on the judicious use of antimicrobials, hand hygiene, and infection prevention have been developed and shared with stakeholders. National Guidelines on infection prevention have been launched, and a "train-the-trainer" program has been conducted across all states and UTs, with ongoing cascading of training at the state level.

Judicious Use of Antimicrobials: To promote responsible usage, surveillance of antimicrobial use has been initiated at tertiary care hospitals.

National Action Plan on AMR (NAP-AMR): Launched in 2017, the NAP-AMR aligns with the Global Action Plan on AMR. The plan has been implemented across multiple ministries and was initially set for five years.

NAP-AMR 2.0 Development: National consultations were held in 2022 across sectors (human health, research, environment, animal husbandry) to develop NAP-AMR 2.0, which includes SWOT analysis and recommendations for AMR research policies.

Red Line Awareness Campaign: The Ministry of Health and Family Welfare (MoHFW) launched the Red Line campaign to raise awareness about the dangers of using antibiotics without a prescription. The campaign advises the public not to use antibiotics marked with a red vertical line unless prescribed by a doctor.

ICMR Guidelines: The Indian Council of Medical Research (ICMR) has issued treatment guidelines to regulate the use of antibiotics, especially for common conditions like viral bronchitis and low-grade fever. These guidelines aim to prevent unnecessary antibiotic use.

Regulation of Antibiotics under Schedule H and H1: Antibiotics are listed under Schedule H and H1 of the Drugs Rules, 1945, ensuring they are only

available with a prescription from a registered medical practitioner. Drugs under Schedule H1 are also subject to strict record-keeping, with supply records maintained for three years.

CDSCO Notification for High-End Antibiotics: The Central Drugs Standard Control Organisation (CDSCO) has included 24 high-end antimicrobials under Schedule H1, mandating strict regulation and oversight to prevent misuse.

Global Cooperation to Fight AMR

National Centre for Disease Control (NCDC) Collaborations: NCDC collaborates with global organizations and countries to address AMR, focusing on AMR surveillance, capacity building, and specialized lab testing. Notable international collaborations include:

- **India-US CDC Partnership:** Focused on AMR surveillance, SOP development, and data management using WHONET (World Health Organization (WHO) Network) software, with support for HAI (Healthcare Associated Infection) surveillance through ICMR-AIIMS.
- **USAID (United States Agency for International Development) Collaboration:** Focused on strengthening AMR containment in six states.

- **Indo-Netherlands Collaboration:** Pilot project in Andhra Pradesh integrating AMR surveillance with a One Health approach.
- **Fleming Fund (UK):** Supported training of trainers on infection prevention and control (IPC), strengthening AMR surveillance networks in three states, and conducting surveys on antibiotic use in tertiary hospitals.
- **India-Denmark Collaboration:** A recent technical collaboration plan to address AMR.

These initiatives aim to address the escalating threat of AMR through collaborative efforts across multiple sectors. Additionally, India's pharmaceutical industry is vital in bolstering the country's healthcare infrastructure, providing further support to these AMR containment strategies.

Conclusion

India's proactive efforts to combat antimicrobial resistance (AMR) through innovative drug development, such as the launch of Nafithromycin, alongside comprehensive national initiatives, underscore the country's leadership in global healthcare. The commitment to surveillance, awareness, and international collaboration highlights India's strategic approach to tackling AMR and improving health outcomes. With

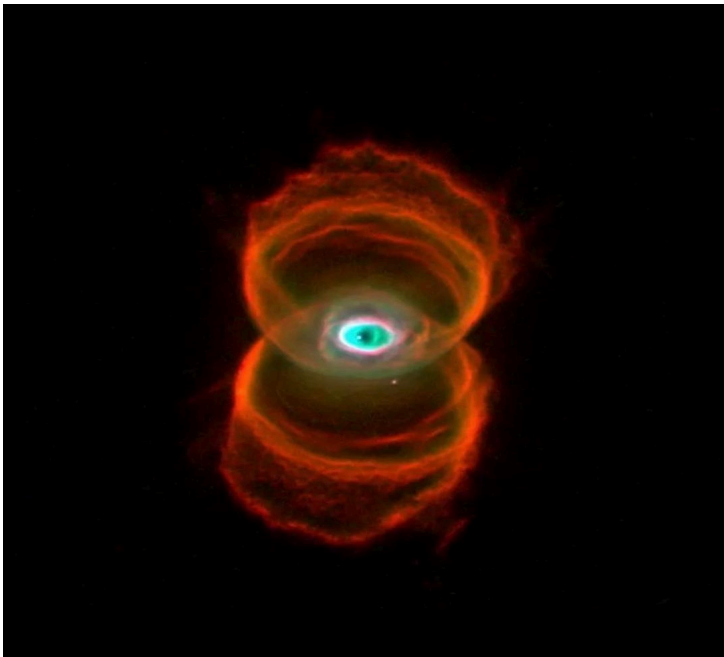
continued investments in research, capacity building, and partnerships, India is well-positioned to drive meaningful change in the global fight against antimicrobial resistance and contribute to better health worldwide.

References

- [*Dr. Jitendra Singh announces soft launch of India's First Indigenous Antibiotic, Nafithromycin, to Combat Drug Resistance*](#)
- [*india: the world's pharmacy*](#)
- [*Steps taken to Combat Antimicrobial Resistance and enhance Disease Surveillance*](#)
- *Press Information Bureau: [Update on Overuse of Anti-Microbial Resistance](#)*

53. The Hourglass Nebula

The Hourglass Nebula, a scientifically significant object that resembles someone peeking through a peephole, is a testament to the wonders of outer space. This unique structure, captured by NASA's Hubble Telescope,



provides valuable insights into the processes at work in the cosmos.

A nebula, an awe-inspiring and enormous cloud of dust and gas, plays a crucial role in the cosmos. It occupies the space between stars and acts as a nursery for new stars, a fact that enlightens us about the birth of celestial bodies.

The word's roots come from the Latin *nebula*, which means “mist, vapor, fog, smoke, exhalation.” Nebulae are made up of dust, basic elements such as hydrogen, and other ionized gases.

Related Information

Stars and Nebulae: The Wonders of the Cosmos

Stars and nebulae are among the most awe-inspiring sights in the universe. Stars, massive spheres of glowing gas powered by nuclear fusion, light up the cosmos and come in various sizes, from small dwarf stars to gigantic supergiants. Nebulae, often called "stellar nurseries," are vast clouds of gas and dust where stars are born. These colorful formations, like the famous Orion Nebula, also mark the remnants of dying stars. Together, stars and nebulae shape the life cycle of the universe, offering a glimpse into the dynamic processes of creation and destruction in the cosmos.

54. From the Pages of Science

The recovery of peregrine falcons (*Falco peregrinus*) in Greenland is a powerful example of how effective environmental policy can be in rescuing species from the brink of extinction.



The peregrine population, severely impacted in the 19th and 20th centuries by hunting and exposure to pesticides such as the now-banned DDT, has

shown significant recovery. DDT¹, known for making their eggshells thin and fragile, and causing nesting birds to crush their unborn offspring, is now rarely used on the island. This has given the birds a chance to 'detox' from the effects of the pesticides they encountered elsewhere during migration.

The DDT ban, combined with the peregrine's ability to adapt to its environment, has paved the way for authorities to implement successful captive breeding programs. This success story underscores the importance of informed environmental policy in protecting our wildlife.

Related Information

[The Fleet-Winged Ghosts of Greenland | Hakai Magazine](#)

Image: Pixabay

¹ DDT, or **dichlorodiphenyltrichloroethane**, is a synthetic chemical compound once widely used as an insecticide. Discovered in 1874 and recognized for its potent insecticidal properties in 1939, DDT gained prominence during World War II for controlling diseases like malaria and typhus by targeting mosquitoes and lice. Its effectiveness in pest control contributed significantly to reducing disease transmission in many parts of the world.

55. Himalayan Heights May Be Ideal for India's 'Quantum Leap' into Space: A Report

Mapping Optimal Locations for Quantum Signal Transmission in India

In a groundbreaking study for the Indian subcontinent, scientists have meticulously mapped out the optimal locations for beaming quantum signals into space, a discovery that promises to revolutionize global-scale quantum communications.

Satellite-based quantum communications, including quantum key distribution (QKD), represent one of the most promising approaches toward global-scale quantum communications. To determine the viability of transmitting quantum signals through the atmosphere, atmospheric simulations for both uplink and downlink quantum communications and the practicality of potential locations for the same need to be conducted.

Hanle in Ladakh: India's Prime Site for Groundbreaking Quantum Communications

Through a rigorous and meticulous research process, Raman Research Institute (RRI) scientists have analyzed existing open-source data available on three of India's most sophisticated observatory sites. Their findings have identified the Indian Astronomical Observatory (IAO) in Hanle, nestled in the pristine heights of Ladakh, as the prime candidate for this revolutionary technology.

While regions like Canada, Europe, and China have conducted similar studies, India's remarkable geographical diversity – from the Himalayas to coastal plains, from deserts to tropical regions – could make this analysis particularly valuable. The analysis considers the interdisciplinary nature of satellite-based quantum communications, where success depends on understanding everything from high-precision telescope operations to complex atmospheric turbulence patterns that can distort quantum signals.

This site in Hanle is a dry and cold desert, with temperatures in winter plummeting to minus 25 to 30 degrees Celsius. It suffers from low atmospheric water vapor levels and oxygen concentrations.

"Hanle offers all required natural settings suitable for setting up a ground station and undertaking quantum communication over long distances," said Professor Urbasi Sinha, head of the Quantum Information and Computing (QuIC) lab at the RRI, an autonomous institute funded by the Department of Science and Technology, Government of India.

Decoding Quantum Communication: Signal Bands and India's Pioneering Research

Other than the quantum nature of the signal, what sets quantum communication apart from well-established satellite-based communication is the signal band that each uses. While satellite communication works in frequencies ranging in megahertz (MHz) or gigahertz (GHz), quantum

communication operates in terahertz (THz), with 100 THz being the most commonly represented wavelength, often represented in nanometres.

In the paper titled 'Estimating the link budget of satellite-based Quantum Key Distribution (QKD) for uplink transmission through the atmosphere,' published in *EPJ Quantum Technology, Springer Nature*, the researchers have mentioned working in the signal band of 370 THz (810 nm). Authors Urbasi Sinha and Satya Ranjan Behera at QuIC lab have used existing open-source data on temperature, humidity, atmospheric pressure, and other vital meteorological parameters from three sites, namely -- IAO Hanle, Mt Abu in Rajasthan and Aryabhata Institute of Observational Sciences (ARIES), Nainital in Uttarakhand.

"India's vast variety of geographical terrains offers a universal template that can be applied anywhere in India or across the globe. This versatility could make the research invaluable for future quantum satellite projects worldwide," said Sinha, inspiring hope for the future of quantum communications.

Establishing Secure Quantum Communications via Low Earth Orbit Satellites

This work considers proposed satellites for establishing secure satellite-based quantum communications orbiting in the Low Earth Orbit(LEO), where the maximum altitude from Earth is 500 km. To establish quantum communication, one has to initially send a beacon signal

from the ground station of a particular site every time the designated satellite hovers close to the location. Once the satellite detects the beacon signal, another beacon signal is sent to the ground station to lock it. It is then ready to facilitate quantum signal transmission.

"Beacon signals track the moving satellite and point it towards the corresponding telescope. Our main signal would be at 810 nm while the uplink and downlink would use 532 nm and 1550 nm of wavelength, respectively," said Satya Ranjan Behera, the paper's lead author.

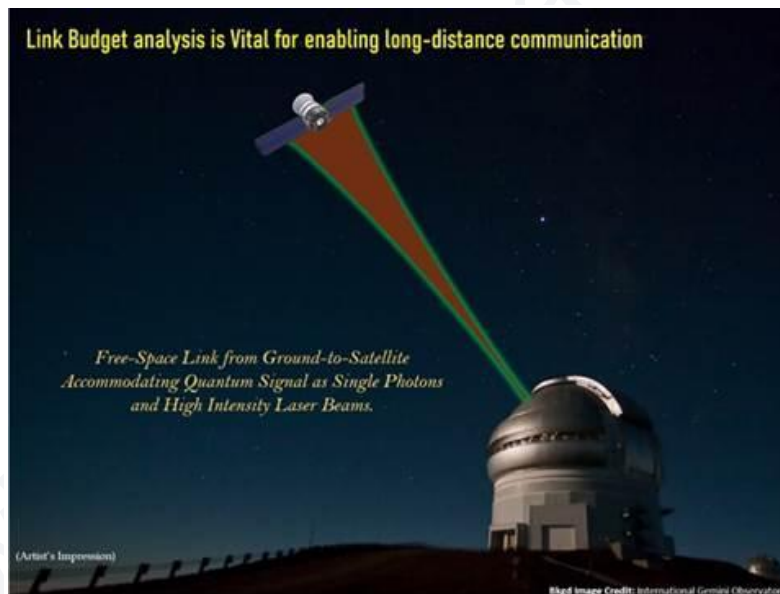


Image: An artist's impression of the working of quantum communication's signal transmission.

The main challenge is identifying a site that will allow them to send quantum signals through the multi-layered and complex Earth's atmosphere while continuing to travel to the receiver satellite.

"To transmit the beam to a distance across 500 km, a telescope will magnify the beam width with minimal divergence. Ideally, small telescopes are best suited. In the same manner, the receiver side of the telescope will collect and de-magnify the beam for detection purposes," explained Behera.

Based on their analysis, the RRI researchers concluded that IAO Hanle (signal loss—44dB) was ideal among the sites in India considered in this study for establishing a potential ground station. They said the best sites were Mt Abu (signal loss—47 dB) and Nainital (signal loss—48dB), where some unavoidable signal losses were likely. This study can form the basis for estimating link budgets before finalizing the Indian ground stations for quantum communication purposes.

Source: [Press Information Bureau](#)

56. Astronomers Spot Far UltraViolet Emissions from Novae in Andromeda Galaxy

Discovery of UV Emissions from Novae

Astronomers have spotted far ultraviolet emissions from novae, a special class of [transient astronomical event](#) that causes the sudden appearance of a bright, apparently new star that slowly fades over weeks or months, during their outburst, for the first time in the neighbouring Andromeda galaxy.

What Are Novae and How Do They Occur?

All observed novae involve [white dwarfs](#) in close [binary systems](#), but causes of the dramatic appearance of a nova vary, depending on the circumstances of the two progenitor stars.

A binary pair of stars comprising a White Dwarf, an earth-sized but very hot star, and a Sun-like (or its puffed-up evolved version) star are sometimes found orbiting each other in close proximity. In such systems, the White Dwarf's intense gravitational force can deform the companion star and pull its matter onto the surface of the White Dwarf. The piling up of matter creates such intense densities that the fusion reaction is enhanced, giving off enormous amounts of light, which is seen as a nova eruption. Novae eruptions contribute towards galactic chemical enrichment, and

hence they are important for study. These also provide laboratories to study extreme conditions of shock mechanisms, thermonuclear processes, and the binary evolution of stars.

The Role of the Accretion Disk

The accretion process is streamlined by a disc-like structure, known as the accretion disk, which forms around the white dwarf.

- These disks are extremely hot, emitting electromagnetic radiation in the ultraviolet (UV) and blue regions of the spectrum.
- Observing these emissions offers valuable insights into the behavior of these binary systems.

Indian Scientists Make a Breakthrough

A team of scientists from the Indian Institute of Astrophysics (IIA), Bengaluru, used data from the Ultraviolet Imaging Telescope (UVIT) aboard the AstroSat mission to study novae in the Andromeda Galaxy.

- They accessed public data archives and stumbled upon FUV(Far UltraViolet) emissions from novae during their eruption phases.
- The study, published in the *Astrophysical Journal*, uncovered ultraviolet emissions from forty two novae, catching four of them mid-outburst.

- The team consisted of Judhajeet Basu (IIA and Pondicherry University), Krishnendu S. (IIA and Amrita University), Sudhanshu Barway (IIA), Shatakshi Chamoli (IIA and Pondicherry University), and G. C. Anupama (IIA).

How This Discovery Helps

The findings provide scientists with opportunities to study these binary star systems at different stages of their evolution.

- Some systems were observed in the process of accumulating matter, while others were seen spewing it into space.
- UVIT's fine spatial resolution and simultaneous observation capability in far and near UV enabled the detection of accretion disks, even in systems 2.5 million light-years away.

Key Observations by the Team

"The brighter the disk, the more rapidly it is consuming its companion matter. We also studied how the flux from these discs changes with time, and as per our expectations, the accretion process was found to be stable in these systems." said Basu, a PhD student at IIA who led the project.

Continuous accumulation of matter onto the White Dwarf leads to extreme temperature, pressure, and density conditions. This layer of material acts like a translucent shell, blocking off some of the radiation from the white

dwarf and the accretion disc. Under these circumstances, the brightness of these systems diminishes, and it is a tell-tale signature of what's going to come.

It's like the calm before the storm, and this is exactly what we found in two of these systems in Andromeda Galaxy by using data from UVIT, a telescope built at our CREST campus and launched into space by ISRO," Basu added.

Once the threshold temperature and densities are reached, all the accumulated hydrogen-rich matter undergoes a thermonuclear runaway reaction. "It is much like what happens in a fusion bomb, but on an "astronomical" scale. This explosion naturally leads to the brightening of the system by several orders of magnitude, hurling large quantities of material into the interstellar medium. We serendipitously found four systems caught in this act," said Barway, a faculty at IIA.

However, it was not easy to detect all of these systems. "The central region of Andromeda is quite bright, encouraging us to use sophisticated image subtraction techniques to uncover more novae. We used two different techniques. Both yielded the same results, confirming what we are seeing are real sources and not bogus," said Barway.

"Tracing these novae was possible only because of the Andromeda survey proposals taken up by AstroSat UVIT operated by ISRO. More such future

missions, especially in UV and X-ray, can discover and follow up these systems, and could answer some of the missing puzzles of novae,” Basu pointed out.

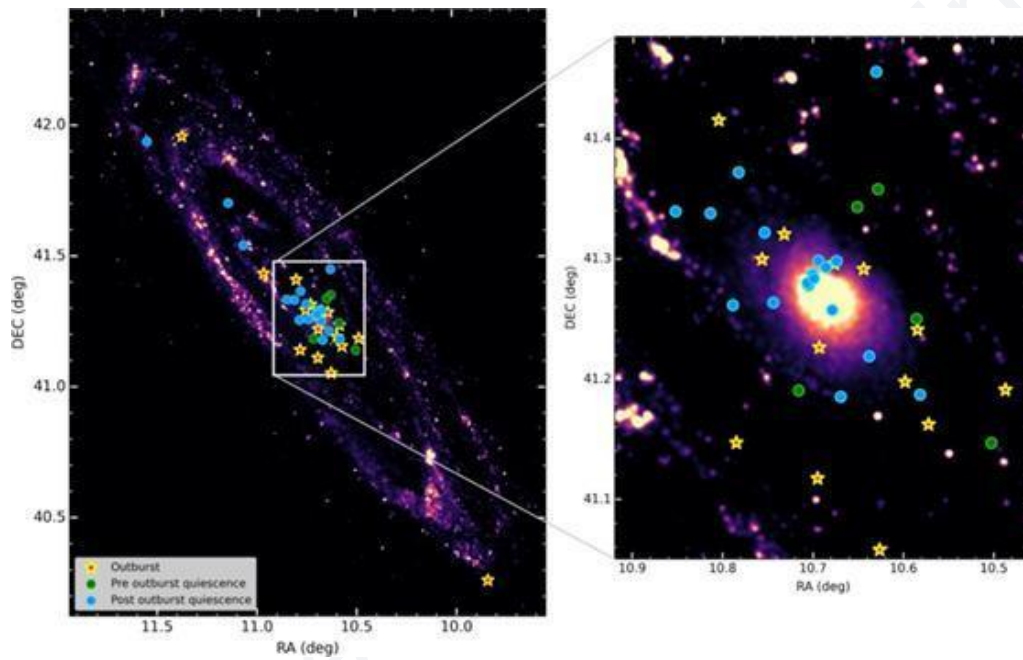


Figure (1): Novae detected in the Andromeda in UVIT's FUV/NUV filter.

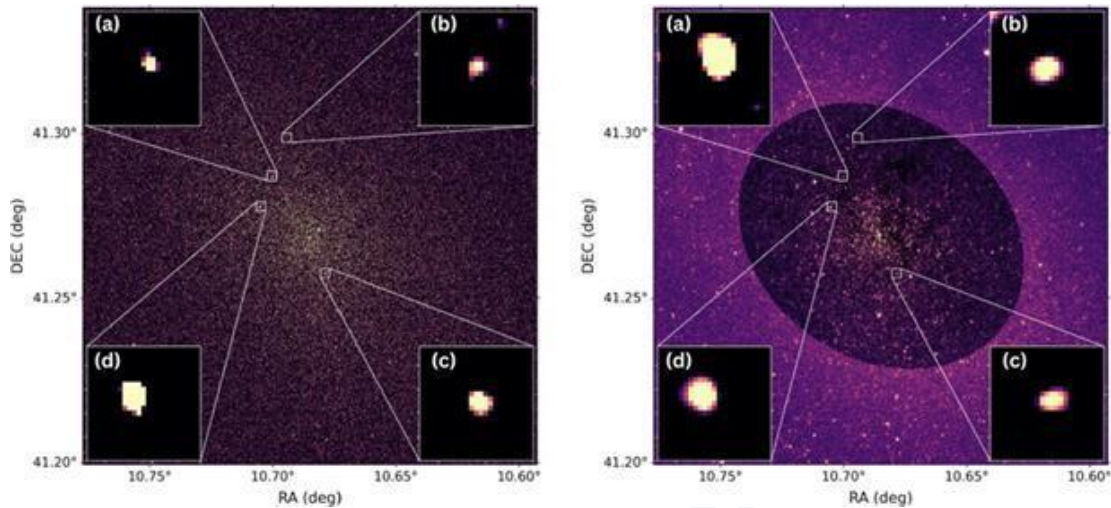


Figure (2): Novae recovered from the bright central bulge of M31 by image subtraction.

Quotes from the Research Team

- Judhajeet Basu (Project Lead, IIA):
"UVIT's spatial resolution allowed us to detect accretion disks 2.5 million light-years away. This data confirmed stable accretion processes and revealed tell-tale signatures of pre-eruption dimming."
- Sudhanshu Barway (IIA Faculty):
"The explosion of accumulated hydrogen-rich matter is like a fusion bomb on an astronomical scale. We were fortunate to catch four systems in this act."
- Basu on Future Missions:
"With more UV and X-ray missions, we could uncover missing pieces of the puzzle and gain a comprehensive understanding of novae."

This discovery marks a significant step forward in understanding novae, their life cycles, and the complex dynamics of binary star systems.

Source: [UVIT on board AstroSat captures cosmic arsenal in Andromeda galaxy](#)

People who introduce you to new ways of thinking and new ways of seeing life are important.

57. How Did Humans Befriend Dogs?



Connections in the Americas began 12,000 years ago. A new study sheds light on how long humans in the Americas have had relationships with the ancestors of today's dogs -- and asks an 'existential question': What is a dog? "Dog is man's best friend" may be an ancient cliché, but when that friendship began is a longstanding question among scientists.

A new study led by a University of Arizona researcher is one step closer to an answer on how Indigenous people in the Americas interacted with early dogs and wolves.

A Significant Discovery!

The study, published in the journal, *Science Advances*, and based on archaeological remains from Alaska, reveals a significant discovery. It shows that people and the ancestors of today's dogs began forming close relationships as early as 12,000 years ago—about 2,000 years earlier than previously recorded in the Americas.

"We now have evidence that canines and people had close relationships earlier than we knew they did in the Americas," said lead study author François Lanoë, an assistant research professor in the U of A School of Anthropology in the College of Social and Behavioral Sciences.

"People like me who are interested in the peoples of the Americas are very interested in knowing if those first Americans came with dogs," Lanoë added. "Until you find those animals in archaeological sites, we can speculate about it, but it's hard to prove one way or another. So, this is a significant contribution."

Lanoë and his colleagues unearthed a tibia, or lower-leg bone, of an adult canine in 2018 at a longstanding archeological site in Alaska called Swan Point, about 70 miles southeast of Fairbanks. Radiocarbon dating showed

that the canine was alive about 12,000 years ago, near the end of the Ice Age.

Another excavation by the researchers in June 2023—of an 8,100-year-old canine jawbone at a nearby site called Hollembaek Hill, south of Delta Junction—also shows signs of possible domestication.

The Smoking Gun? A belly of fish

Chemical analyses of both bones found substantial contributions from salmon proteins, meaning the canine had regularly eaten the fish. It was not typical of canines during that time, as they hunted land animals almost exclusively. The most likely explanation for salmon showing up in the animal's diet?

Dependence on Humans.

This evidence is crucial because it suggests that the canine was not hunting for salmon in the wild, but was likely dependent on humans for its food, a key indicator of domestication. "This is the smoking gun because they're not going after salmon in the wild," said study co-author Ben Potter, an archaeologist with the University of Alaska Fairbanks.

The researchers are confident that the Swan Point canine helps establish the earliest known close relationships between humans and canines in the

Americas. But it's too early to say whether the discovery is the earliest domesticated dog in the Americas.

Potter said that is why the study is valuable: "It asks the existential question, what is a dog? This question delves into the very essence of the human-dog relationship, challenging us to reconsider our understanding of these animals."



The Swan Point and Hollembaek Hill specimens may be too old to be genetically related to other known, more recent dog populations, Lanoë said.

"Behaviorally, they seem to be like dogs, as they ate salmon provided by people," Lanoë said, "but genetically, they're not related to anything we know." He noted that they could have been tamed wolves rather than fully domesticated dogs.

'We still had our companions'

According to study co-author Josh Reuther, an archaeologist with the University of Alaska Museum of the North, the study represents another chapter in a longstanding partnership with tribal communities in Alaska's Tanana Valley, where archaeologists have worked since the 1930s. This collaborative approach ensures that the research is respectful and inclusive.

Researchers regularly present their plans to the Healy Lake Village Council, representing the Mendes Cha'ag people indigenous to the area, before undertaking studies, including this one. The council also authorized the genetic testing of the study's new specimens.

Evelynn Combs, a Healy Lake member, grew up in the Tanana Valley, exploring dig sites as a kid and taking in what she learned from archaeologists. She's known Lanoë, Potter, and Reuther since she was a

teenager. Now an archaeologist herself, Combs works for the tribe's cultural preservation office.

"It is little -- but it is profound -- to get the proper permission and to respect those who live on that land," Combs said.

Combs said Healy Lake members have long considered their dogs to be mystic companions. Today, nearly every resident in her village is closely bonded to one dog. Combs spent her childhood exploring her village alongside Rosebud, a Labrador retriever mix.

"I really like the idea that, in the record, however long ago, it is a repeatable cultural experience that I have this relationship and this level of love with my dog," she said. "I know that throughout history, these relationships have always been present. I love that we can look at the record and see that we still had our companions thousands of years ago." This study not only provides scientific insights but also resonates with our shared cultural experiences.

Check out these fascinating stories we've curated for you! Want more details? Simply click on the source link at the end of this post. Here's a quick preview to spark your curiosity!

Story Source: Materials provided by the University of Arizona. Original written by Kyle Mittan.

Note: One may have edited the content for style and length.

Mammoth as Key Food Source for Ancient Americans

Dec. 4, 2024 — Scientists have uncovered the first direct evidence that ancient Americans relied primarily on mammoths and other large animals for food. Their research sheds new light on both the rapid expansion of ...

Researchers, Coast Salish People Analyze 160-Year-Old Indigenous Dog Pelt in the Smithsonian's Collection

Dec. 15, 2023 — A new analysis sheds light on the ancestry and genetics of woolly dogs, a now-extinct breed of dog that was a fixture of Indigenous Coast Salish communities in the Pacific Northwest for millennia. ...

What Is Your Dog's Lifespan? You Might Be Surprised

Feb. 2, 2022 — The Dog Aging Project, founded in 2018, is by far the most ambitious project tackling the question of canine longevity, enrolling and studying tens of thousands of dogs of all sizes, breeds, and ...

Sled Dogs Are Closely Related to 9,500-Year-Old 'Ancient Dog'

June 25, 2020 — Sled dogs are much older and have adapted to Arctic conditions much earlier than previously thought. Researchers show that the ancestors of modern sled dogs have worked and lived with humans for a long time.

Source: <https://www.sciencedaily.com/releases/2024/12/241204145004.htm>

Images: [Pixabay](#), [Adriana Morales on Pixabay](#)

58. India Secures Nationwide Access to 13,000 Journals

The deal allows scholars to read paywalled articles for free and will cover open-access fees



Students at Ramjas College of the University of Delhi, shown in a chemistry lab, and their peers across India will have access to more scientific journal articles under a new deal. Frédéric Soltan/Corbis via Getty Images

India was the third largest producer of research papers globally last year, yet thousands of Indian students and researchers cannot read many of them because their institutions can't afford subscriptions to the journals where they appear. But this is about to change. Last week, the Indian

government announced a major deal with multiple publishers that will allow an estimated 18 million students, faculty, and researchers free access to nearly 13,000 journals, including some top-tier ones, through a single portal.

Under the One Nation One Subscription scheme, effective from January 1, 2025, India will pay a total of about \$715 million over 3 years to 30 global publishers, including some of the largest, such as Elsevier, Springer Nature, and Wiley and AAAS (the publisher of *Science*.) The average annual amount exceeds what government-funded institutions have been paying for separate subscriptions—about \$200 million in total in 2018, by one estimate. Since it covers more journals and readers, “India got a good deal,” says Devika Madalli, director of the Information and Library Network Centre, the agency coordinating the initiative.

The product of 2 years of negotiations between India and the publishers, the deal is the largest of its kind globally, surpassing agreements in Germany and the United Kingdom, which were negotiated with only a single publisher at a time and involved far fewer institutions.

India is expected to encompass some 6300 government-funded institutions, which produce almost half the country’s research papers. Currently, only about 2300 of these institutions have subscriptions to 8000 journals. Under the new arrangement, “universities that aren’t so well funded, and can’t afford many journals, will gain,” said Aniket Sule of the Homi Bhabha

Centre for Science Education. Specialist institutes that currently subscribe only to journals relevant to their field will benefit from accessing work outside their silos, he added. Colleges seeking subscriptions to journals outside this initiative can use their funds. Some of the \$715 million will cover the fees some journals charge for publishing papers as open access, making them immediately free to read by anyone worldwide when published, Madalli told *Science*. Details of that component are yet to be finalized, but the amount will be calculated based on the country's current spending on these fees, known as article-processing charges (APCs), which are paid by authors or their institutions, Madalli says.

Rahul Siddharthan of the Institute of Mathematical Sciences, who chaired an open science group, is pleased the agreement will reportedly cover APCs. At a global average of about \$2000 per article, they are unaffordable for many scholars in India, he says.

Some scholars criticized the deal for allocating public money to journal subscriptions at a time when many countries have been shifting to other business models that provide articles open access, including some that do not charge author fees. "At best, this is a short-term measure" as those alternatives expand, says Sridhar Gutam, a scientist at the ICAR-Indian Institute of Horticultural Research and founder of Open Access India, which advocates for them. Already, an estimated 50% of all new articles worldwide appear open access. That growing prevalence makes the price tag for India's deal too high, says Muthu Madhan, director of the Global

Library at O.P. Jindal Global University, adding that the money would be better spent on research stipends and laboratories.

Gutam says India should embrace the “diamond open-access” business model, in which the government or other funders cover costs and authors, and scholars and their institutions do not pay to publish or read articles. Although government institutions—including his own—have tried to promote free-to-access repositories for scientific papers, comparatively few researchers use them. Gutam says many prefer to boost their chances for career advancement by publishing in prestigious journals from European and U.S. publishers, which some reformers have criticized as unreliable and overly restrictive gatekeepers of quality papers. “The current plan fills a short-term goal,” he says, “but the larger system needs reform.”

Source: [India takes out giant nationwide subscription to 13,000 journals | Science | AAAS](#)

59. India's Digital Revolution: Transforming Infrastructure, Governance, and Public Services



India's digital infrastructure has undergone a transformative evolution in recent years, positioning the country as a global leader in digital adoption. With a rapidly expanding digital economy, driven by innovations in cloud computing, artificial intelligence (AI), machine learning (ML), and digital governance, India's infrastructure is continuously evolving to meet the growing demands of the public and

private sectors. Key initiatives and projects have been launched to strengthen the country's digital backbone, ensuring accessibility, scalability, and security in delivering government services, fostering economic growth, and enhancing citizens' lives.

India's Digital Infrastructure Landscape

One of the central pillars of India's digital infrastructure is the expansion and development of data centers. These centers are crucial for supporting the increasing demand for cloud computing, data storage, and AI/ML applications. India's data center industry is poised for substantial growth, with expectations for a significant increase in IT load capacity, which is approximately at 1000 MW currently.

The National Informatics Centre (NIC) has established state-of-the-art National Data Centres (NDC) in cities like Delhi, Pune, Bhubaneswar, and Hyderabad, providing robust cloud services to government ministries, state governments, and public sector undertakings (PSUs). These data centers also offer essential disaster recovery and hosting services, ensuring continuity in government operations.

At NDC, storage capacity has been expanded to approximately 100PB, including All Flash Enterprise Class Storage, Object Storage, and Unified Storage. Additionally, around 5,000 odd servers are deployed to support various cloud workloads. Another state-of-the-art NDC (Tier-III) of 200 Racks expandable to 400 Racks is being established at Guwahati, Assam.

To address the unique challenges faced by India's Northeastern region, the National Data Centre - North East Region (NDC-NER) was launched in

September 2020. This facility aims to bridge the digital divide, foster socio-economic development, and improve public services in the region by providing a reliable, high-performance data storage and cloud service infrastructure.

Enhancing Cloud Services: The Role of NIC and MeghRaj

India's growing cloud service ecosystem has been crucial in supporting its digital transformation. The Enhancement of National Informatics Centre (NIC) National Cloud Services project, launched in 2022, seeks to further upgrade the national cloud infrastructure, enabling faster and more efficient delivery of e-Governance services. Over 300 government departments are now utilizing cloud services, contributing to the rapid growth of India's digital public infrastructure.

The GI Cloud (MeghRaj) initiative aims to provide ICT services via Cloud to all Government Departments at the Centre and States/UTs, promoting the Cloud ecosystem nationwide. It ensures optimal use of IT infrastructure and accelerates the development and deployment of e-Gov applications such as digital payments, identity verification, and consent-based data sharing. MeitY has initiated the empanelment of Cloud Service Providers (CSPs) to address the evolving Cloud needs of Government Departments.

Digital Public Infrastructure (DPI): A Game-Changer

Digital Public Infrastructure (DPI) refers to foundational digital systems that are accessible, secure, and interoperable, supporting essential public services. In India, DPI has been instrumental in transforming the digital economy, much like traditional infrastructure for industrial growth. Key

achievements include Aadhaar, Unified Payment Interface (UPI), etc. **Aadhaar**, the world's largest digital identity program, offers a unique digital identity based on biometric and demographic data. It enables authentication anytime, anywhere, while eliminating duplicate and fake identities. So far, 138.34 crore Aadhaar numbers have been generated. Unified Payment Interface (UPI) facilitates digital payments and enhances financial inclusion. As of 30 June 2024, it has facilitated 24,100 crore financial transactions.

DigiLocker, a platform for digital document verification. It has facilitated more than 37.046 crore users and made available 776 crore issued documents. Digital Infrastructure for Knowledge Sharing (DIKSHA), the world's largest education platform. As of 22nd July 2024, 556.37 crore learning sessions have been imparted using DIKSHA. It has achieved 17.95 crore course enrolments and 14.37 crore course completions.

Other significant platforms include **Government e-Marketplace (GeM)** for government procurement, **UMANG** (providing access to government services), and **API SETU** (for open APIs).

Co-WIN and *Aarogya Setu* have been pivotal in health services, including vaccination tracking and contact tracing. Further, India's digital health infrastructure includes eSanjeevani (telemedicine service), e-Hospital (hospital management system), and e-Courts (for judicial processes), transforming healthcare and justice delivery. The Poshan Tracker monitors nutritional services for women and children, while e-Office digitizes government workflows.

The NCD (National Non-communicable Diseases) platform aids in managing non-communicable diseases and is integrated with the *Ayushman Bharat Digital Mission* and 67 million Ayushman Bharat Health Account (ABHA) numbers have been created.

Skill development is supported by SIDH (Skill India Digital Hub), a platform for skilling and livelihood. Additionally, India Stack Local showcases digital solutions developed by state governments and UTs, with 493 solutions listed. These initiatives, part of India's Techade, have positioned India as a leader in digital services, benefiting both citizens and other nations, especially in the global south.

The National Knowledge Network (NKN), approved in March 2010, is a high-speed data communication network designed to connect National and State Data Centres, State-Wide Area Networks, and various Digital India initiatives. It supports Government-to-Government (G2G) and Government-to-Citizen (G2C) services, district connectivity, and interconnects knowledge institutions across India to promote resource sharing and collaborative research.

NKN serves both the National Government Network (NGN) and the Research & Education Network (REN). The network has successfully established 1,803 links with institutions and 637 links with district centers, enabling digital governance and the efficient delivery of e-government services.



Common Services Centres (CSCs): Reaching Rural India

The Common Services Centres (CSCs) initiative, managed by the Ministry of Electronics and Information Technology (MeitY), has played a vital role in bringing e-services to rural India. As of October 2024, over 5.84 lakh CSCs are operational across the country, including 4.63 lakh at the *Gram Panchayat* level, the initiative has facilitated the delivery of more than 800 services ranging from government schemes to education, telemedicine, and financial services.

Citizen-Centric Digital Services

Unified Mobile Application for New-Age Governance (UMANG) is another key initiative aimed at simplifying access to government services. This mobile app integrates services from various sectors, including agriculture, health, education, and pensions. With over 7.12 crore users, UMANG has streamlined the way citizens engage with government services, providing them with a unified platform for easy access and transactions. UMANG is available in 23 multilingual languages (for top 100 services), including English and Hindi. As of now, UMANG offers about 2,077 services from 207 departments of the Central and State Governments across 32 States/UTs, including 738 Direct Benefit Transfer (DBT) services.

The *MeriPehchaan* platform, a National Single Sign-On (SSO) service, provides citizens with a seamless way to authenticate and access various government services using a single set



of credentials. Over 132 crore transactions have been processed on this platform, improving service delivery and reducing the complexities of managing multiple accounts and credentials. The *e-Hastakshar* (e-Sign) service enables citizens to digitally sign documents, providing a legally accepted alternative to physical signatures. A total of 81.97 crore e-Signs have been issued by all ESPs, of which 19.35 crore were issued by CDAC under the e-Hastakshar project.

Another important project, *API Setu*, facilitates the implementation of the government's Open API Policy, enabling seamless data exchange and service delivery across government systems. Over 6,000 APIs have been published, facilitating more than 312.01 crore transactions. With 1,700+ publishers, including key entities such as PAN, Driving License, Vehicle Registration, COVID Vaccination Certificate, and CBSE, the platform also serves more than 634 consumers.

The MyGov platform is the Government of India's citizen engagement initiative, allowing citizens to share ideas, opinions, and feedback on various government policies and programs. With over 4.89 crore registered users, MyGov fosters transparency and encourages active citizen participation in governance.

Revolutionizing Government Operations



In line with the government's vision of paperless governance, DigiLocker has become a revolutionary platform for the issuance and verification of documents. With over 37 crore registered users, DigiLocker has transformed the way citizens access and authenticate their documents. The Entity Locker, an extension of this service, is designed to empower organizations by providing a secure cloud-based platform to store, share, and verify digital documents, promoting further adoption of digital document management.

CollabFiles is a centralized platform for government officials to create, manage, and share office documents such as spreadsheets and text files. It integrates with platforms like e-Office and NIC email ensures secure access via government-issued email IDs, and maintains records of document sharing. GovDrive is a cloud-based, multi-tenant platform offering storage as a service for Government of India officials. It enables secure storage, sharing, synchronization, and management of documents across devices, allowing officials to store, access, modify, or delete files and folders online through the GovDrive application.

The Gov Intranet Platform is a modern, secure portal for government officials, streamlining workflow management with Single Sign-On (SSO) via Parichay. It provides access to applications like email, eOffice, and the Ministry Performance Dashboard while enabling efficient calendar management, task assignment, event planning, and secure document sharing. With advanced UI/UX, multi-platform support, and features like Swagatam integration for visitor passes and BharatVC for virtual meetings, it ensures seamless communication and coordination.



Conclusion

India's transformative journey in digital infrastructure underscores its commitment to innovation, inclusivity, and efficiency. By leveraging cutting-edge technologies like cloud computing, and AI and through initiatives like Aadhaar, UPI, and DigiLocker, India has emerged as a global leader in digital adoption.

The collaborative efforts of government platforms and seamless citizen engagement are paving the way for a digital future that empowers every citizen, fosters socio-economic growth, and strengthens governance. This digital revolution not only enhances India's domestic capabilities but also positions the nation as a pioneer in providing scalable digital solutions for the global south. As India continues to build on this momentum, it is set to redefine possibilities in governance, public service delivery, and economic development.

References

[Digital Infrastructure - Digital India | Leading the transformation in India for ease of living and digital economy | MeitY, Government of India](#)

Press Information Bureau: [India's Digital Revolution](#)

Image: [Pixabay](#)

60. The Heart's Independent 'Brain'

New research shows that the heart has a mini-brain -- its own nervous system that controls the heartbeat. A better understanding of this system, which is much more diverse and complex than many believe, could lead to new treatments for heart diseases.

New research from Karolinska Institutet and Columbia University shows that the heart has a mini-brain -- its own nervous system that controls the heartbeat. A better understanding of this system, which is much more diverse and complex than previously thought, could lead to new treatments for heart diseases. The study, conducted on zebrafish, is published in Nature Communications.



Zebra Fish

The heart has long been thought to be controlled solely by the autonomic nervous system, which transmits signals from the brain. The heart's neural

network, which is embedded in the superficial layers of the heart wall, is a simple structure that relays the signals from the brain. However, recent research suggests that it has a more advanced function than that.

Controlling the Heartbeat

Scientists have now discovered that the heart has its own complex nervous system that is crucial to controlling its rhythm.

"This 'little brain' has a key role in maintaining and controlling the heartbeat, similar to how the brain regulates rhythmic functions such as locomotion and breathing," explains Konstantinos Ampatzis, principal researcher and docent at the Department of Neuroscience, Karolinska Institutet, Sweden, who led the study.

The researchers identified several types of neurons in the heart that have different functions, including a small group of neurons with pacemaker properties. The finding challenges the current view on how the heartbeat is controlled, which may have clinical implications.

Similar to the Human Heart

"We were surprised to see how complex the nervous system within the heart is," says Konstantinos Ampatzis. *"Understanding this system better could lead to new insights into heart diseases and help develop new treatments for diseases such as arrhythmias."*

Researchers conducted this study on zebrafish, an animal model that exhibits strong similarities to human heart rate and overall cardiac function. They were able to map out the composition, organisation and function of neurons within the heart using a combination of methods such as single-cell RNA sequencing, anatomical studies and electrophysiological techniques.

New Therapeutic Targets

"We will now continue to investigate how the heart's brain interacts with the actual brain to regulate heart functions under different conditions such as exercise, stress, or disease," says Konstantinos Ampatzis. "We aim to identify new therapeutic targets by examining how disruptions in the heart's neuronal network contribute to different heart disorders."

Researchers at Columbia University, USA, collaborated for this study. Dr. Margaretha Nilsson Foundation, Erik and Edith Fernström Foundation, StratNeuro along with Karolinska Institutet funded this study. There are no reported conflicts of interest.

Source: [The heart has its own 'brain' | ScienceDaily](#)

Image: [Pixabay](#)

61. Revolutionizing Waste Heat to Electricity: The Breakthrough of 'Twisting Layers' in Solid State

Researchers have developed a new material capable of highly efficient waste heat-to-energy conversion by introducing twisted layers in ferecystals, a unique class of misfit-layered compounds. This material, with an exceptionally high thermoelectric figure of merit (a measure of the thermoelectric performance of a material) exceeding two, acts as a powerful heat blocker and holds significant potential for thermoelectric energy conversion. This process captures waste heat from sources such as industrial operations in chemical and thermal plants, steel manufacturing, petroleum refineries, and vehicle exhaust, transforming it into electricity.

Exploring 2D Superlattice Materials and Misfit Layered Compounds

Two-dimensional (2D) superlattice materials, composed of alternating layers of two or more different structures, are engineered at the atomic level, with each layer typically only a few atoms thick. The periodic stacking of distinct 2D materials produces a new material with unique electronic properties absent in the individual layers.

Misfit Layered Compounds (MLCs), a fascinating example of 2D natural superlattice materials, consist of two or more periodically stacked independent layers. The misalignment caused by differences in the

repeating patterns of these layers along one direction gives MLCs their distinctive structure and properties.

This misalignment creates a 'misfit' between the layers. In a unique class of MLCs known as ferecrystals, the rotational disorder (twisting between layers) significantly disrupts heat transport, effectively blocking heat waves in the material. This property makes ferecrystals particularly valuable for thermoelectric energy conversion, enabling the transformation of waste heat into electricity.

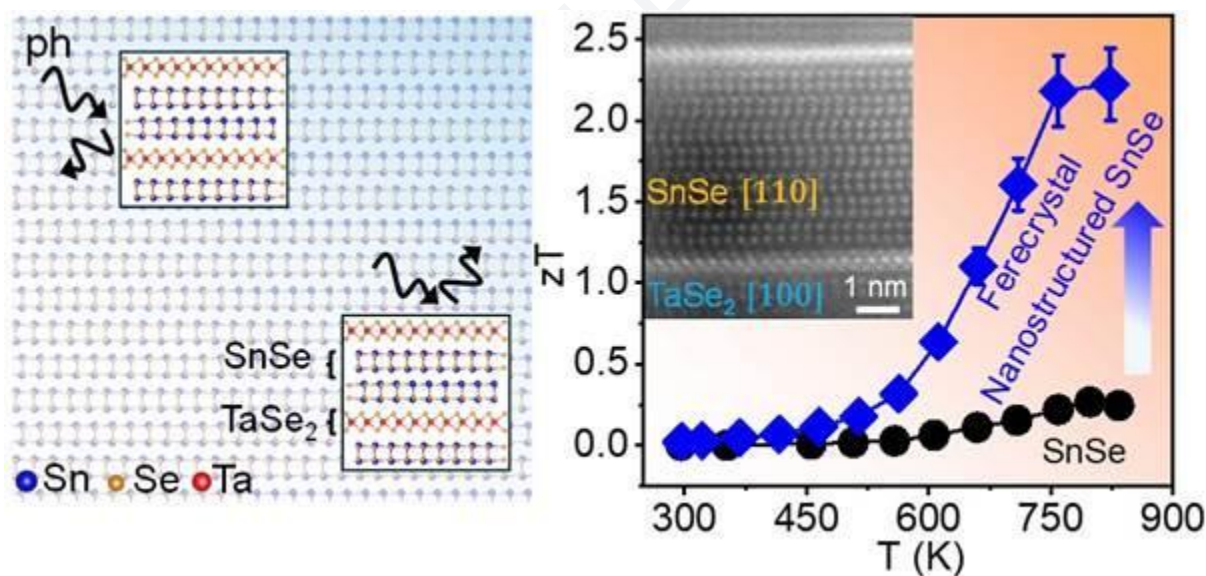
However, incorporating ferecrystals as nanostructures within a solid-state matrix remains a significant challenge in synthetic chemistry and materials science. Successfully overcoming this challenge could drive substantial advancements in thermoelectric technology and expand the possibilities of current material synthesis techniques.

Advancing Thermoelectric Materials: Breakthrough in SnSe-TaSe₂ Ferecrystals for Energy Efficiency

In a recent study, Professor Kanishka Biswas, along with his Ph.D. student Ms. Vaishali Taneja from the New Chemistry Unit at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru—an autonomous institution under the Department of Science & Technology, Government of India—and other team members, synthesized ferecrystalline intergrowths as nanoscale regions within bulk SnSe combined with n-type halide doping. This effort led to the stabilization of

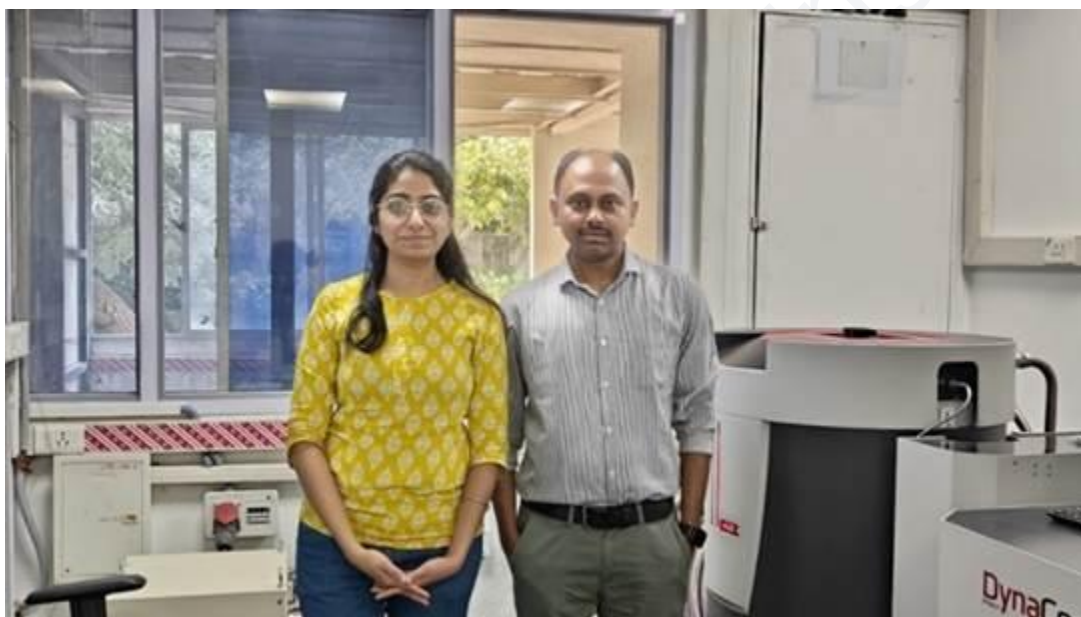
SnSe-TaSe₂ ferecrystals as nanostructures within a solid-state SnSe matrix, which function as highly effective heat blockers. The thermoelectric figure of merit achieved in this work is 2.3.

Published in the *Journal of the American Chemical Society*, this study represents a significant step toward achieving high-performance n-type SnSe polycrystals. To confirm the formation of the intended intergrowth nanostructures, the team collaborated with Professor N. Ravishankar from IISc, Bengaluru, using high-resolution transmission electron microscopy (HRTEM) and high-angle annular dark-field scanning transmission electron microscopy (HAADF-STEM) analysis.



A schematic and HAADF-STEM image illustrating the ferecrystalline intergrowths that result in ultrahigh thermoelectric performance in Ta and Br co-doped SnSe.

These techniques revealed the presence of TaSe₂ layers after every seven bilayers of SnSe. The researchers also identified extensive rotational disorder in the ferecrystals, where SnSe and TaSe₂ sublattices are twisted around the stacking direction (c-axis) and translated perpendicularly to it. These findings have the potential to significantly enhance energy efficiency and contribute to greater sustainability.



Vaishali Taneja (left) and Kanishka Biswas (right), JNCASR, Bangalore

Reference: ["Twisting Layers" in Solid State: A Breakthrough in conversion of waste heat to electricity](#)

62. Emperor Ming of Han (China)

Emperor Ming of Han (15 June 28 – 5 September 75 AD), born Liu Yang and known as Liu Zhuang and Han Mingdi, was the second Emperor of the Eastern Han dynasty. His reign was a pivotal period in Chinese history, as it marked the beginning of Buddhism's spread into China.

Emperor Ming was a hard-working, competent administrator of the empire who showed integrity and demanded the same from his officials. He also extended Chinese control over the Tarim Basin and eradicated the Xiongnu influence there through the conquests of his general Ban Chao. The reigns of Emperor Ming and his son Emperor Zhang were typically considered the golden age of the Eastern Han Empire and known as the Rule of Ming and Zhang.

Emperor Ming's connection to Buddhism was not a mere historical fact, but a fascinating story. In AD 62, he had a dream in which he saw Buddha. This dream sparked his curiosity, leading him to send ambassadors to India to learn more about Buddha's doctrines. The Chinese ambassadors returned to China in about AD 67, bringing back Buddhist holy texts, statues, and two Indian Buddhist monks named Kasyapa Matanga and Dharma Raksha. These monks settled in China, translated Buddhist books into Chinese, and converted some Chinese to Buddhism. This intriguing dream of Emperor Ming-ti was the catalyst that introduced Buddhism to China for the first time.

Reference: A DICTIONARY OF INDIAN HISTORY, SACHCHIDANANDA BHATTACHARYYA, UNIVERSITY OF CALCUTTA

Related Information

1. The White Horse Temple:

- The ambassadors Emperor Ming sent to India returned with Buddhist scriptures, statues, and two monks. To house these treasures, Emperor Ming built the [White Horse Temple](#) in Luoyang in 68 AD, considered the first Buddhist temple in China. Its name honors the white horses that carried the Buddhist texts.



White Horse Temple

Guo Qi (CC BY-NC-ND)

2. Dreams in Chinese History:

- Emperor Ming's dream of Buddha is one of several dreams in Chinese history linked to transformative events. Dreams were often regarded as divine or prophetic, influencing major decisions in governance and religion.

3. **The Lotus Sutra:**

- Some of the earliest Buddhist texts brought to China during Emperor Ming's reign included parts of the [Lotus Sutra](#), which would later become one of the most influential Buddhist scriptures in East Asia.

4. **Legacy of Emperor Ming's Dream:**

- Emperor Ming's dream and subsequent actions not only shaped the religious landscape of China but also inspired historical and literary references, symbolizing the openness of the Han dynasty to new ideas and cultural exchanges.

Image: [WorldHistory.Org](#)

63. From Spices to Sustainability

The Geographical Indication (GI) tag, which protects and celebrates these treasures, empowers local communities and ensures that North East India's cultural heritage thrives globally. This recognition not only preserves these products but also enables them to shape the region's future, fostering growth and prosperity.



Arunachal Pradesh

In Arunachal Pradesh, the Adi Kekir ginger, cultivated in the Dibang Valley, reflects traditional knowledge passed down through generations. Grown by the Adi tribe, this aromatic ginger is famed for its medicinal properties, addressing issues ranging from digestive ailments to menstrual pain. Its unique

aroma and healing qualities make it highly valued in both culinary and medicinal circles. The Adi tribe's strong connection to the land ensures each harvest is handled with care, preserving age-old organic farming practices. Alongside this revered ginger, products such as *Wakro Orange* and *Monpa Maize* have also earned the prestigious GI tag, bringing

recognition to these agricultural treasures both within India and on the global stage.

Sikkim

Across the border in Sikkim, the agricultural landscape is equally remarkable. Renowned for its organic farming practices, the state is home to the Dalle Khursani, a vibrant red pepper celebrated far beyond India's borders. Cultivated under strictly organic conditions, this pepper is prized for its intense pungency, widely used in local pickles and pastes, and valued for its medicinal properties. What sets this chili apart is not only its fiery heat but also its contribution to the local economy, supporting the livelihoods of over 5,000 families. Alongside it, products such as Sikkim Large Cardamom, Temi Tea, Sikkim Orchids, and Sikkim Orange are emerging as more than just commodities—they represent a sustainable future. These GI-tagged products reflect the vision articulated by PM Modi, connecting tradition with global markets and driving sustainable economic growth.





Nagaland

Nagaland, renowned for the Naga King Chili or Raja Mircha, is home to one of the hottest chilies in the world, symbolizing the Naga people's deep connection to their land and cultural heritage. Cultivated with care by approximately 100 families, this fiery chili thrives in Nagaland's high-altitude, humid climate, yielding fruit rich in both heat and flavor. A cornerstone of Naga cuisine, it enhances traditional dishes with its spice and depth. Alongside Raja Mircha, other GI-tagged products from Nagaland, such as Naga Tree Tomato, Chak Hao rice, and Naga Cucumber, underscore the region's agricultural potential and growing significance.

Assam

In the fertile lands of Assam, the Kaji Nimu, a distinctive lemon variety renowned for its size, aroma, and sharp tang, showcases the state's rich agricultural heritage. Larger and more flavorful than most other lemon varieties, the Kaji Nimu is a staple in Assamese cuisine and traditional remedies. Assam's agricultural wealth extends further, with GI-tagged products like Tezpur Litchi, Joha Rice, Bodo Keradapini spices, and Boka Chaul rice. These products not only reflect the state's cultural history but also serve as vital economic drivers, supporting local farmers and artisans. The GI tag enhances their value, ensuring recognition both locally and internationally.



Ashtalakshmi 2024 celebrated the North East's vibrant natural and cultural heritage. Supported by the GI tag, the region's agricultural and handloom traditions are being preserved and honored globally. Each GI product tells a unique story of sustainable farming, skilled craftsmanship, and

community empowerment. As PM Modi aptly stated, the North East is key to India's vision for a healthier and more sustainable future. For the region's farmers and artisans, the GI tag represents more than recognition—it is a lifeline, creating new opportunities and promising prosperity.

Reference: [Prime Minister Shri Narendra Modi inaugurates the Ashtalakshmi Mahotsav](#)

*Be yourself,
so the people looking for you,
can find you.*

64. Indian Carbon Market

As per the Third National Communication (TNC) submitted to the United Nations Framework Convention for Climate Change (UNFCCC) in December 2023, India has successfully continued to decouple its economic growth from Greenhouse Gas emissions, resulting in the reduction of the emission intensity of its Gross Domestic Product (GDP). The details are given below:

Period	GHG Inventory year	Reduction in Emission Intensity w.r.t. 2005 levels
2005-2010	2010	12%
2005-2014	2014	21%
2005-2016	2016	24%
2005-2019	2019	33%

To develop the carbon market, the necessary amendments were proposed in the Energy Conservation Act, 2001 (52 of 2001) in the year 2022. Thus, the regulatory framework for the Indian Carbon Market is

established under the Energy Conservation Amendment Act, 2022, where clause (w) of section 14 of the EC Act empowers the Central Government, in consultation with the Bureau of Energy Efficiency (Bureau) to specify the carbon credit trading scheme.

Carbon Credit Trading Scheme

Based on the above, the Central Government has notified the Carbon Credit Trading Scheme vide notification S.O. 2825(E), dated 28th June 2023, and amendment notification S.O. 5369(E), dated 19th December 2023. The Carbon Credit Trading Scheme (CCTS) is expected to contribute to achieving India's climate goals in line with the commitments under UNFCCC and its Paris Agreement.

To facilitate the achievement of India's enhanced Nationally Determined Contributions (NDCs) targets, the Government of India intended to develop a robust framework for the Indian Carbon Market (ICM) to decarbonize the Indian economy by pricing the GreenHouse Gas (GHG) emission through trading of the carbon credit certificates.

CCTS defines the two mechanisms namely; compliance mechanism and offset mechanism. Under the compliance mechanism, the obligated entities shall comply with the prescribed GHG emission intensity reduction norms during each compliance cycle of CCTS. Obligated entities that reduce their GHG emission intensity below the prescribed

level will be eligible for issuance of Carbon Credit Certificates. Under the offset mechanism, the non-obligated entities can register their projects for GHG emission reduction, removal, or avoidance to qualify for the issuance of Carbon Credit Certificates. The Carbon Credit Trading Scheme is expected to support India's climate goals, aligning with its commitments under the UNFCCC and the Paris Agreement.

The Perform Achieve and Trade (PAT) Scheme

The Perform Achieve and Trade (PAT) Scheme, launched in 2012, is a market-based mechanism designed to enhance energy efficiency in energy-intensive industries by assigning specific energy consumption reduction targets to these industries (referred to as Designated Consumers or DCs). The Government of India has developed a comprehensive transition plan to facilitate a smooth shift of energy-intensive sectors and designated consumers (DCs) from the Perform, Achieve, and Trade (PAT) scheme to the compliance mechanism under the Carbon Credit Trading Scheme (CCTS). This plan ensures continuity, consistency, and alignment with national climate goals while avoiding target duplication. To commence the transition, the Government has identified nine energy-intensive sectors for inclusion under the CCTS: Aluminium, Cement, Steel, Paper, Chlor-Alkali, Fertiliser, Refinery, Petrochemical, and Textile.

Carbon Credit Trading Scheme (CCTS)

Under the Carbon Credit Trading Scheme (CCTS), the Bureau of Energy Efficiency has developed a Detailed Procedure for Compliance Mechanism incorporating a comprehensive Measurement, Reporting, and Verification (MRV) framework to ensure accurate, transparent, and credible compliance. The MRV framework's key elements include target setting, Monitoring, Reporting & Verification procedures, and the issuance and Trading of Carbon Certificates. The development process of the MRV guidelines has followed a consultative approach, including stakeholder consultations and a draft circulation to the concerned stakeholders, culminating in the finalization of the document. The finalized MRV framework was published by the Government of India in July 2024.

A critical component of the MRV framework is the verification process, which mandates annual verification of GHG emissions data. To uphold the credibility of the CCTS, the BEE will accredit Carbon Verification Agencies based on specific eligibility criteria. The detailed procedures for Accreditation Eligibility Criteria and the Accreditation Process for Carbon Verification Agencies were developed by the Bureau of Energy Efficiency through extensive stakeholder consultations and published in July 2024.

Reference: [Press Information Bureau](#)

65. New National Manuscripts Mission

The Ministry of Culture established the National Mission for Manuscripts (NMM) in 2003 during the 10th Five-Year Plan to document, conserve, and promote access to Indian manuscripts. A committee of experts evaluated the scheme, which recommended its continuation with a broader reach and direct oversight by the Ministry.

The National Mission for Manuscripts presently functions as a unit under the Indira Gandhi National Centre for the Arts, for which funds are provided to the organization. The NMM uses technology, with contributions from IGNCA, to preserve and digitize manuscripts. The digitized manuscripts are uploaded to this [site](#).

To address the challenges of manuscript deterioration, NMM employs different preservation methods, such as lamination, restoration, and deacidification. Training is offered for various aspects of preventive conservation. Manuscript Resource Centres (MRCs) and Manuscript Conservation Centres (MCCs) address regional and thematic collection and conservation gaps.

Reference: [Press Information Bureau](#)

66. AI's Role in Environmental Threats

Google's Flood Hub provides flood forecasts up to seven days in advance across more than 80 countries, helping protect communities in Africa, Europe, South and Central America, and the Asia-Pacific region. By 2023, these forecasts covered areas home to over 460 million people. In October 2023, the service expanded to the US and Canada, covering over 800 riverbanks and benefiting more than 12 million residents.

In California, machine learning algorithms assist firefighters in predicting and tracking wildfire spread. AI-driven precision farming techniques optimize crop yields while reducing water waste in agriculture.

The World Meteorological Organisation estimates that enhancing early warning systems could reduce climate disaster damages by 30%.

AI is already delivering impactful climate solutions. Here are a few examples:

- Global Forest Watch leverages AI and satellite imagery to monitor and combat deforestation in real time.
- Google's Green Light project, powered by AI, collaborates with cities like Manchester, Rio de Janeiro, Jakarta, and Abu Dhabi to reduce stop-and-start traffic events through AI-optimized traffic light management. Early results suggest a potential 30% reduction in stops and a 10% reduction in emissions at intersections.

- In fusion energy research, Google DeepMind's deep reinforcement learning system is improving the control of nuclear fusion plasma, advancing clean energy development.

Artificial Intelligence is a planetary nervous system that senses, predicts, and enables responses to environmental threats.

References

- Springer Open: [Fire Ecology](#)
- Reuters: [Land Use Biodiversity](#)

67. Cybercrime Update



‘Police’ and ‘Public Order’ are State subjects under the seventh schedule of the Constitution of India. Accordingly, States and Union Territories (UTs) are primarily responsible for preventing, detecting, investigating, and prosecuting crimes, including cybercrimes and digital arrest scams, through their Law Enforcement Agencies (LEAs). The central government supports these efforts by issuing advisories and providing financial assistance under various schemes to build the capacity of LEAs.

The National Crime Records Bureau (NCRB) compiles and publishes crime statistics in its annual report, *Crime in India*, with the latest available data for 2022. However, NCRB does not maintain specific data on digital arrest scams separately.

Steps Taken by the Central Government

To strengthen the mechanism to deal with cyber crimes including digital arrest scams in a comprehensive and coordinated manner, the central government has taken steps which, inter-alia, include the following:

- The Ministry of Home Affairs has set up the 'Indian Cyber Crime Coordination Centre' (I4C) as an attached office to deal with all types of cybercrimes in the country, in a coordinated and comprehensive manner.
- The central government has launched a comprehensive awareness program on digital arrest scams which, inter-alia, includes; newspaper advertisements, announcements in Delhi Metros, use of social media influencers to create special posts, campaign through Prasar Bharti and electronic media, a special program on Aakashvani and participate in Raahgiri Function at Connaught Place, New Delhi on 27.11.2024.
- I4C proactively identified and blocked more than 1700 Skype IDs and 59,000 Whatsapp accounts used for digital arrest.

- The central government has published a press release on alert against incidents of 'Blackmail' and 'Digital Arrest' by cyber criminals impersonating State/UT Police, NCB, CBI, RBI, and other law enforcement agencies.
- The central government is collaborating with Telecom Service Providers (TSPs) to block incoming international spoofed calls that display Indian mobile numbers, targeting scams such as fake digital arrests, FedEx frauds, and impersonation of government and police officials.
- Till 15.11.2024, the Government of India has blocked more than 6.69 lakhs SIM cards and 1,32,000 IMEIs as reported by the police authorities.
- Launching the National Cyber Crime Reporting Portal (<https://cybercrime.gov.in>) under I4C to facilitate the public reporting of cybercrimes, with a focus on crimes against women and children. State/UT LEAs address the cases that public report reported on this portal as per the law.
- Introducing the 'Citizen Financial Cyber Fraud Reporting and Management System' in 2021 to enable immediate reporting of financial frauds and prevent fund diversion. To date, over ₹3,431 crore has been recovered from more than 9.94 lakh complaints. The toll-free helpline number '1930' has been operationalized for lodging cyber complaints.

- To spread awareness of cybercrime, the central government has taken steps which, inter-alia, include the following:
 - i. Disseminating messages through SMS, I4C social media accounts i.e. X (formerly Twitter) (@CyberDost), Facebook(CyberDostI4C), Instagram (cyberDostI4C), Telegram(cyberdosti4c)
 - ii. Radio campaign, engaged MyGov for publicity in multiple mediums
 - iii. Organizing Cyber Safety and Security Awareness weeks in association with States/UTs,
 - iv. Publishing a handbook for adolescents/students, digital displays on railway stations and airports and other public spaces.

Reference

- [DIGITAL ARREST SCAM](#)

68. Lithium Batteries in Electric Mobility

The Ministry of Mines has established Khanij Bidesh India Limited (KABIL), a joint venture company with equity contributions from National Aluminium Company (NALCO), Hindustan Copper Limited (HCL), and Mineral Exploration and Consultancy Limited (MECL). KABIL's primary mission is to identify and acquire overseas mineral assets of critical and strategic importance, focusing on minerals like Lithium, Cobalt, and others. KABIL has signed an Exploration and Development Agreement with CAMYEN, a state-owned enterprise of the Catamarca province in Argentina, for the exploration and mining of five lithium blocks in Argentina. Additionally, KABIL is actively engaging with the Critical Mineral Office in Australia to secure critical and strategic mineral assets.

On 12th May 2021, the Government of India approved the Production Linked Incentive (PLI) scheme for the National Programme on Advanced Chemistry Cell (ACC) Battery Storage (PLI ACC scheme). This initiative aims to establish manufacturing facilities for Advanced Chemistry Cell (ACC) Battery Storage in India, reducing dependence on imported ACC by boosting domestic manufacturing capabilities. The scheme seeks to incentivize large domestic and international players to create a competitive ACC battery production ecosystem in India.

Budget

The budgetary outlay for the scheme is ₹18,100 crore, targeting a cumulative capacity of 50 GWh over five years following a two-year gestation period. The scheme offers incentives based on the quoted subsidy per kWh by beneficiary firms and the percentage of value addition achieved in actual sales by manufacturers. Beneficiary firms must achieve at least 25% value addition at the Mother Unit Level within two years from the appointed date (Milestone-1) and increase it to 60% within five years (Milestone-2). Performance evaluations and incentive disbursements will begin once Milestone-1 is achieved. Further details are available at the government [website](#) of Heavy Industries.

The Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme Phase-II (FAME II) was implemented on 1st April 2019 for five years, with a total budgetary allocation of ₹11,500 crore. Under FAME II, the Phased Manufacturing Programme (PMP) was introduced to promote domestic manufacturing of electric vehicles, their assemblies, subassemblies, and parts, thereby increasing domestic value addition. Details of the scheme are available [here](#), at the government website of Heavy Industries.

On 15th September 2021, the Government approved the Production Linked Incentive (PLI) Scheme for the Automobile and Auto Component Industry in India. This scheme, with a budgetary outlay of ₹25,938 crore, aims to

enhance India's manufacturing capabilities for Advanced Automotive Technology (AAT) products, including electric vehicles. It provides financial incentives for domestic manufacturing of AAT products, requiring a minimum of 50% Domestic Value Addition (DVA), and seeks to attract investments in the automotive manufacturing value chain. Further details are available [here](#).

Reference: [Press Information Bureau](#)

Consistency doesn't just build success; it shapes who you are, turning potential into mastery and dreams into reality.

69. New Criminal Laws

The provisions of the Bharatiya Nyaya Sanhita (BNS), 2023, except sub-section (2) of section 106, the Bharatiya Nagarika Suraksha Sanhita (BNSS), 2023, except entry relating to section 106(2) of BNS in the First Schedule to BNSS, and the Bharatiya Sakshya Adhinyam (BSA), 2023, were notified on 25 December 2023 and came into force on 1 July 2024.

BNS places the provisions relating to crime against women and children under one chapter for the first time. It provides for strict punishments up to the death sentence for offenses against women. The punishment for gang rape of a woman below the age of 18 years is life imprisonment till the remainder of the convict's natural life or death. A new offense for having sexual intercourse on the false promise of marriage, employment, promotion, or by concealing identity, etc., has also been incorporated in BNS.

The Annexure provides the main features of these laws, including provisions relating to offenses against women.

Highlights of Provisions

To reduce the overcrowding of jails and help undertrials, the authorities have made the following provisions in the BNS and BNSS:

1. In section 290 of BNSS, plea bargaining is time-bound, and one can apply for plea bargaining within 30 days from the date of framing of the charge. In a plea bargaining case, in working out a mutually satisfactory disposition of a case under section 293 of BNS, where the accused is a first-time offender, and the law has not convicted them of any offense in the past, the Court may sentence such accused person to one-fourth/one-sixth of punishment prescribed for such offense.
2. The maximum period for authorities to detain an undertrial prisoner is in section 479 of BNSS. It has been provided that where a person is a first-time offender (who has never been convicted of any offense in the past), he shall be released on bond by the Court if he has undergone detention for the period extending up to one-third of the maximum period of imprisonment specified for such offense under that law. Further, it shall be the Superintendent of Jail's duty to apply to the Court in this regard.
3. Community Service has been introduced as one of the punishments for the first time.

ANNEXURE

Main features of the new criminal law

The new criminal laws mark a significant step towards creating a citizen-centric, more accessible, and efficient justice system. The following are the main features of the new criminal laws:

(A) Victim Centric Provisions

i. Report Incidents Online: A person may now report incidents by electronic communication without physically visiting a police station. It allows for easier and quicker reporting, facilitating prompt action by the police.

1. File FIR at Any Police Station: With the introduction of Zero FIR, a person can file a First Information Report (FIR) at any police station, regardless of jurisdiction. Indeed, this eliminates delays in initiating legal proceedings and ensures immediate reporting of the offense.
2. Free Copy of FIR: The victim is entitled to receive a free copy of the FIR, which ensures their participation in the legal process.
3. Right to Inform Upon Arrest: In the event of an arrest, the individual has the right to inform a person of his choice about his situation. This will eventually ensure immediate support and assistance to the arrested individual.

ANNEXURE

1. **Display of Arrest Information:** Every police station and district must now have a designated police officer not below the rank of ASI, and it will display the information of all arrested individuals. Undeniably, this will safeguard the rights of the accused persons and mitigate instances of custodial violence and illegal detention by police.
2. **Progress Updates to Victims:** Victims are entitled to get an update on the progress of their case within 90 days. This provision keeps victims informed and involved in the legal process, enhancing transparency and trust and making the audience feel more informed and involved.
Supply of police report and other documents: Within 14 days, the accused and the victim must receive copies of the FIR, police report/chargesheet, statements, confessions, and other documents.
3. **Witness Protection Scheme:** The new laws mandate that all State Governments implement a Witness Protection Scheme to ensure the safety and security of witnesses, enhancing the credibility and effectiveness of legal proceedings.

ANNEXURE

1. Exemption from going to police stations: Women, children under 15, people over 60, and those with disabilities or acute illnesses are exempt from attending police stations.
2. Section 360 of BNSS mandates that the victim be heard before withdrawal from prosecution. This statutory recognition of the victim's right to be heard is a significant example of a *Nyaya-centric* approach to criminal justice. By mandatorily hearing the victim in proceedings regarding case withdrawal, the justice system becomes more responsive to the needs and concerns of those directly affected by crime.

(B) Provisions for the Protection of Women and Children

1. In a new chapter V of BNS, offenses against women and children have been given precedence over all other crimes.
2. Various offenses against women and children have been made gender-neutral in BNS, covering all victims and perpetrators regardless of gender.
3. In BNS, the age differential for minor victims of gang rape has been done away with. Earlier, different punishments were prescribed for gang rape on a girl below the age of 16 years and 12 years. The new

law has modified this provision, and now gangrape on a woman below the age of eighteen years is punishable with imprisonment of life or death.

ANNEXURE

1. The law recognizes women as adult family members who can receive summons on behalf of the person summoned. The earlier reference to 'some adult male member' has been replaced with 'some adult member.'
2. To provide more protection to the victim and enforce transparency in an investigation related to an offense of rape, the police shall record the victim's statement through audio-video means.
3. For certain offenses against women, the victim's statement is to be recorded, as far as practicable, by a woman Magistrate and, in her absence, a male Magistrate in the presence of a woman to ensure sensitivity and fairness and create a supportive environment for victims, making the audience feel respected and valued. Medical practitioners are mandated to send the medical report of a victim of rape to the investigating officer within 7 days.
4. The law provides that no male person under the age of fifteen years or above the age of 60 years (65 years earlier), a woman, a mentally or physically disabled person, or a person with acute illness shall be

required to attend at any place other than the place in which such male person or woman resides. In cases where such a person is willing to attend the police station, they may be allowed to do so.

ANNEXURE

1. The new laws provide free first-aid or medical treatment to victims of crimes against women and children at all hospitals. This provision ensures immediate access to essential medical care, prioritizing the well-being and recovery of victims during challenging times.

(C) Provision relating to use of Technology and Forensics

i. Forensic Evidence Collection and Videography: To strengthen the case and investigations, it has become mandatory for forensic experts to visit crime scenes for serious offenses and collect evidence in offenses that are punishable for 7 years or more. Additionally, the evidence collection process at the crime scene will be mandatorily video graphed to prevent evidence tampering. This dual approach significantly enhances the quality and reliability of investigations and contributes to a fair administration of justice.

1. Electronic Summons: Authorities can now serve summons electronically, expediting legal processes, reducing paperwork, and ensuring efficient communication between all parties.

2. All proceedings in Electronic Mode: The new laws conduct all legal proceedings electronically, offering convenience to victims, witnesses, and accused, thereby streamlining and expediting the entire legal process.

ANNEXURE

(D) Timelines

- i. Faster and Fair Resolution: The new laws promise a faster and fair resolution of cases, instilling confidence in the legal system. Crucial stages of investigation and trial like - preliminary inquiry (to be completed in 14 days), further investigation (to be completed in 90 days), supply of documents to the victim and accused (within 14 days), commitment of a case for trial (within 90 days), filing of discharge applications (within 60 days), framing of charges (within 60 days), pronouncement of judgment (within 45 days) and filing of mercy petitions (30 days before Governor and 60 days before President) - have been streamlined and to be completed within stipulated period.

1. Fast-Track Investigations: The new laws prioritized the investigations for offenses against women and children, ensuring timely completion within two months of recording information.

2. Limited Adjournments: Courts can grant a maximum of two adjournments to avoid unnecessary delays in case hearings and ensure timely justice delivery.

ANNEXURE

(E) Reformative Approach

- i. Community service: The new laws introduce community service for minor offenses. The offenders get the chance to positively contribute to society, learn from their mistakes, and build stronger community bonds.
- ii. Expansion of the ambit of summary trial: The summary trial has now been expanded to include more offenses, ensuring expeditious disposal of cases.

(F) Rights of the Accused

Arbitrary arrests of individuals solely to initiate judicial proceedings have been curtailed. The police now need not arrest an accused person just for the Magistrate to take cognizance of the police report, and no arrest is needed for taking handwriting, signature, fingerprint, or voice samples.

(G) New Offences

New offenses addressing terrorist acts, acts endangering sovereignty, unity, and integrity of India, mob lynching, snatching, organized crime, petty organized crime, etc., have been added.

ANNEXURE

Harsher punishment has been prescribed for repeat theft offenders—a mandatory minimum sentence of 1 year extendable to 5 years with a fine. However, to prevent petty theft from becoming a gateway crime, first-time offenders are punished only with community service, where the value of the stolen property is less than Rs. 5000, and either such value is returned, or such property is restored.

(H) Trial in Absentia

A new provision of trial in absentia for persons declared as proclaimed offenders allows the Court to proceed with the trial and pronounce the verdict in the accused's absence. This provision ensures that justice is neither delayed nor denied.

Source:

- *Press Information Bureau: [New Criminal Laws](#)*

70. Astronomers from India have Made an Intriguing Discovery in a Unique Tristar Solar System

Astronomers from India have made an intriguing discovery in a unique tristar solar system located 489 light years from Earth. The discovery will help astrophysicists get a better understanding of planetary formations.

Astronomers from the National Institute of Science Education and Research or NISER in Odisha have made the discovery using the advanced radio telescope in Chile's Atacama Desert. Their observations, sustained over a period of time, reveal fascinating insights into the complexities of planetary formation.

The three-star system that the scientists were observing was the 'GG Tau A' solar system which is in its nascent stage of planetary formations. Astronomers believe that the system is around 5 million years old. What makes it unique is that there are three 'Suns' with a massive protoplanetary disk - a rotating disk of gas and dust that forms around a young star and provides the materials for new planets to form.

Because the three stars orbit each other, the giant ring of gas and dust, which over time will form planets, get significantly altered due to the gravity of the stars in their orbiting pattern, giving scientists fascinating insights.



What the Indian Astronomers have Discovered

The team of astronomers from NISER was led by scientist Liton Majumdar, who is also a visiting scientist at NASA. His area of specialisation is star and planetary formations, astrochemistry, and exoplanet studies.

His team and he have detected molecular emissions from the protoplanetary disk which are the fundamental building blocks of planets. These emissions were found to originate in the coldest and most dense regions of the star system.

The team carried out their research focusing on the coldest regions of the tri-star system, where temperatures are believed to be as low as 16 Kelvin or minus (-)257.15 degrees Celsius - well below the freezing point of carbon monoxide.

Carbon Monoxide is key for scientists to trace the mass of gas during the formation of planets. The chemical composition of carbon monoxide - CO - carries carbon and oxygen, and reacts with other gases to form compounds like CH₄ (methane). Its bright color helps astronomers model protoplanetary disks.

Insights from the Discovery

While scientists have been studying single star solar systems like our own, and have also carried out research on binary star systems like Alpha Centauri, understanding the complexities of a tristar system is unique. The GG Tau A star system being located in our cosmic neighbourhood also helps answer key questions in astrophysics.

It helps understand the fundamental nature of planetary formation under the complications caused due to the gravitational force of three host stars.

Gravity, temperature, mass (energy), pressure, and frequency are key aspects of physics and studying these in a three-star system gives scientists a challenge as well as an opportunity to make groundbreaking discoveries in such complex conditions.

The Radio Telescope in Atacama Desert, Chile

The astronomers from India used the Atacama Pathfinder Experiment or APEX radio telescope - one of the highest telescopes on Earth - located at a height of 5,064 meters above sea level in the Atacama desert in Chile.

The facility is built and operated by three European research institutes - The European Southern Observatory, The Max Planck Institute for Radio Astronomy, and The Onsala Space Observatory.

The APEX telescope is a modified ALMA (Atacama Large Millimeter Array) prototype antenna and is at the site of the ALMA observatory.

The ALMA telescope, also located in the Atacama Desert in Chile, is an astronomical interferometer of 66 radio telescopes which observe the electromagnetic radiation from space at millimeter and submillimeter wavelengths.

Source: [Scientists From India, A Telescope In Chile, And An Astronomical Discovery](#)

71. Factors that Shape Human Memory

Delving into the intriguing question of why we remember what we do, a recent review paper from the esteemed researchers at Rice University offers profound insights into the factors that shape human memory.

"Tell me why: The missing w in episodic memory's what, where and when" is a comprehensive study that appears in a special issue of *Cognitive, Affective & Behavioral Neuroscience*. Authors Fernanda Morales-Calva and Stephanie Leal meticulously examined existing research to create a thorough analysis of the 'three Ws' of memory, providing a robust answer to the central question of why we remember.

Specifically, the researchers explore how emotional significance, personal relevance, and individual differences shape memory retention. Unlike experimental studies, this review gathers and interprets existing findings to advance understanding episodic memory.

The review categorizes memory research into three primary domains centered on what, where, and when people remember. Morales-Calva and Leal found that emotional content, personal significance, repetition, and attention often shape memory. For example, individuals are more likely to remember events with deep emotional resonance or details on which they actively focus.

However, factors such as where an event took place influence what we remember. Researchers often study spatial memory in animals, and say it is also an essential aspect of what we remember that applies to human experiences. New environments command greater attention and, therefore, foster stronger memories compared to familiar, routine settings.

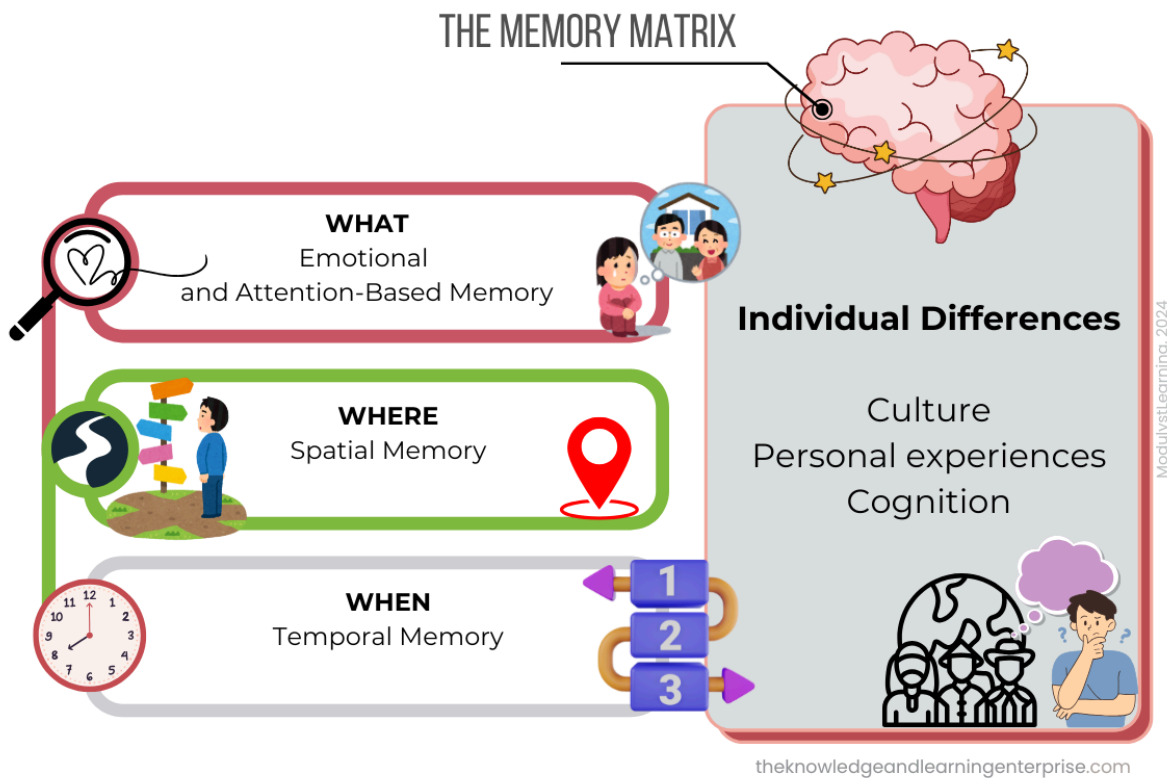
Finally, the researchers said 'when' the event occurs matters in what people remember. How individuals sequence events and recognize transitions between them plays a critical role in memories. Specific events are often compartmentalized into distinct episodes and, therefore, can be easier for individuals to recall.

In addition to the what, where, and when of memory, Morales-Calva said individual circumstances, including cultural, personal, and cognitive differences, can significantly impact how individuals remember.

"Memory is not a one-size-fits-all phenomenon," Morales-Calva said. "What's memorable for one person might be entirely forgettable for another depending on their unique background and cognitive priorities."

The researchers said that examining why we remember specific experiences over others can have significant implications for both clinical and everyday settings. For instance, professional memory assessments often rely on standardized tests developed in specific cultural contexts, which have the potential to overlook critical individual differences, the researchers said.

Such tests may yield skewed results when applied to diverse populations, highlighting the need for more tailored approaches.



As the global population ages and memory impairments become increasingly prevalent, researchers have suggested that understanding the specific factors that shape memory could pave the way for innovative interventions for conditions like dementia and cognitive decline, offering hope for the future.

"This review highlights the importance of considering subjectivity and context in memory research," Leal said. "By accounting for these variables, we can develop more accurate diagnostic tools and effective interventions."

The authors argue that one can better understand the complexity of memory when researchers incorporate individual differences into experimental designs. By doing so, they hope to bridge gaps between laboratory findings and real-world applications to foster a deeper understanding of the human experience.

Source: [Why people remember certain things and not others | ScienceDaily](#)

72. Anusandhan National Research Foundation (ANRF)



The Anusandhan National Research Foundation (ANRF) was established under the Anusandhan National Research Foundation Act, 2023 (25 of 2023), to seed, promote, and foster research and development (R&D) across universities, colleges, research institutions, and R&D laboratories throughout India. ANRF serves as the apex body for providing strategic direction to scientific research in the country. The provisions of the Act came into effect on February 5, 2024, and several programs have been

launched to operationalize ANRF in line with the Government's commitment.

ANRF is empowered to receive funds through grants and loans from the Central Government, as well as donations from public sector enterprises, private sector entities, philanthropic organizations, foundations, or international bodies for R&D. It can also recover amounts previously granted to ANRF, generate income from investments, and access funds transferred from the repealed Science and Engineering Research Board Act, 2008.

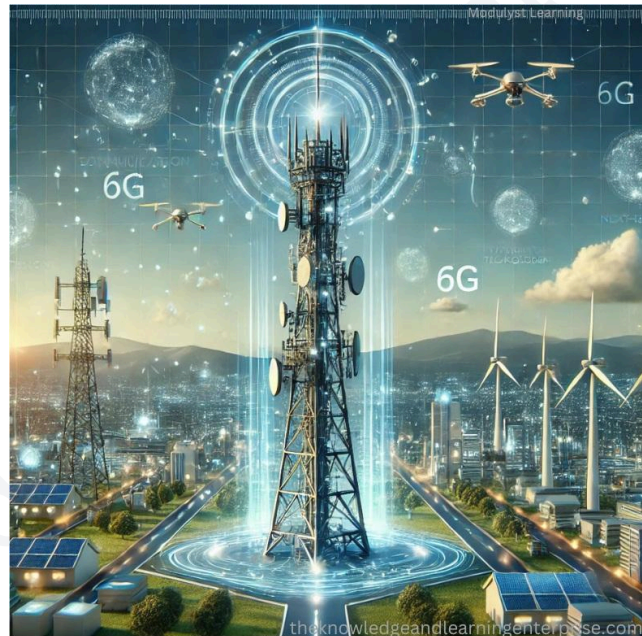
The foundation operates through a Governing Board (GB) and an Executive Council (EC). The GB provides strategic direction and oversees the implementation of ANRF's objectives, while the EC is responsible for executing the Act's provisions. ANRF was recently operationalized, with a budgetary allocation of ₹2,000 crore made for the 2024-25 financial year.

Reference: [PARLIAMENT QUESTION: National Research Foundation Act](#)

Image: [Pixabay](#)

73. Promoting Sustainable and Eco-friendly 6G Development

The Bharat 6G Alliance has established the “Green and Sustainability” working group to promote sustainable and eco-friendly 6G development. The group has proposed a framework specifically designed for India’s telecom sector to integrate sustainability across the industry. This framework focuses on five key drivers: integrated sustainability governance, Green network Infrastructure, circular economy and e-waste management, innovation, and capacity building, and policy advocacy & collaborative governance, ensuring collective efforts toward sustainable practices.



India’s “Bharat 6G Vision” aims to position the country as a leading contributor to the design, development, and deployment of 6G technology by 2030. With 6G currently in the development phase globally, its availability is anticipated by 2030. The Bharat 6G Vision emphasizes affordability, sustainability, and ubiquity. The Department of Telecom has

facilitated the creation of the Bharat 6G Alliance, bringing together domestic industry, academia, national research institutions, and standards organizations to develop actionable plans aligned with the vision.

The International Telecommunication Union (ITU) is studying the frequency bands 4400-4800 MHz, 7125-8400 MHz (or parts thereof), and 14.8-15.35 GHz for potential use in International Mobile Telecommunications (IMT). The decisions regarding these bands will be made at the World Radio Communication Conference in 2027 based on the outcomes of the study.

Ref: [bharat 6g alliance](#)

Image: Bing AI

74. Growth Mindset



In a recent research, the psychometric properties of a new scale aimed at quantifying Growth Mindset are explored. Growth Mindset Scale is a quantitative measure that is context-independent and simple to administer.

A growth mindset has been identified as a crucial factor associated with motivational processes, achievement, and well-being. Additionally, it plays a vital role in the development of expertise and excellence. An intricate

interplay among various factors including deliberate practice, passion for achievement, grit, growth mindset, and follow-up/significant others (teacher, trainer, mentor) appears to be essential prerequisites for individuals to maintain focus, engage in sufficient practice and training, and ultimately become experts.

Carol Dweck has been a pivotal figure in mindset research for decades. In 1973, she published a paper focusing on learned helplessness and reinforcement responsibility in children. Over the course of 50 years, Dweck has evolved her ideas regarding the importance of cultivating a growth mindset i.e., the ability to see opportunities rather than obstacles and to believe in the malleability and development of personal attributes.

Mindset refers to a set of beliefs in our abilities, attributes, and traits such as intelligence and personality (Dweck, 2012). According to Dweck's model of *Implicit Theories of Intelligence*, people may hold different “theories” about the nature of intelligence (Blackwell et al., 2007), which can be divided into two frameworks: fixed and growth mindsets. Individuals with a fixed mindset tend to believe that human attributes and traits are fixed and permanent qualities, while those with a growth mindset assume that qualities are malleable, prone to change and development, rather than fixed, and see them as something that can be enhanced and shaped (Dweck & Leggett, 1988; Dweck & Yeager, 2019; Yeager et al., 2019). When experiencing setbacks or stressors across learning or achievement contexts (such as in sports, work, and educational domains) people with a growth

mindset seem to exhibit more successful patterns of response, including more effective learning- and self-regulatory strategies, relative to those with a fixed mindset (Dweck, 2017). For example, when having a growth mindset, you think that you become more knowledgeable and skilled through effort, focus more on learning goals, and display mastery-oriented strategies (Blackwell et al., 2007).

Measurement of Mindset

Psychological constructs may be challenging to measure, and mindset appears to be no exception. For instance, the type of mindset assessment is found to influence the link between incremental beliefs and achievement. Specifically, the use of specific versus general scales measuring mindset, and original versus adapted versions of the scale, strongly moderated the association between mindset and achievement (Costa & Faria, 2018). The Theory of intelligence scale (TIS) has been widely used to assess individuals' growth and fixed mindset (Dweck, 1999). Typically, the questions in TIS are formulated to reveal whether the belief about intelligence is fixed or can be changed (growth). For example, an entity theory item might be *"You have a certain amount of intelligence and you really can't do much to change it"*, whereas an incremental theory item could be *"You can always substantially change how intelligent you are"*.

The current study reports on the development of a new scale aimed at objectively quantifying the construct of a Growth Mindset. The primary

aim is to examine the applicability of the 8-item scale, its internal consistency and construct validity in a sample of young adults and adults. The overall goal is to contribute to the understanding of the complex construct of Growth Mindset.

The growth mindset questions:

1. I know that with effort I can improve my skills and knowledge
2. I can influence and change my development in general
3. I can change my skills and knowledge through practice
4. I like to take challenges and try new things
5. I see learning as my goal
6. Efforts make me stronger
7. I want to spend more time and work more on an area/theme/skill to develop my skills and knowledge
8. I have faith in my skills and knowledge

Mindset

Dwecks (1999) Theories of Intelligence scale (TIS) was used to assess students' entity (fixed) and incremental (growth) conceptions of intelligence. The self-form for adults of this measure was used to ensure that the participants focused on their ideas about their own intelligence. This scale consists of several subscales with items rated on a 6-point Likert-type scale, from 1 (Strongly Agree) to 6 (Strongly Disagree). The

items differ between those associated with an incremental theory (i.e., growth mindset) and those associated with an entity theory (i.e., fixed mindset).

Passion

For analyzing the participants' passion levels the Passion scale was used (Sigmundsson et al., 2020a). Participants provided ratings for eight items on a scale ranging from 1 (not like me at all) to 5 (very much like me). The scale's maximum score is 5, indicating extreme passion, while the minimum is 1, denoting no passion at all.

Grit

To measure participants' grit levels the Grit S, short grit scale was used (Duckworth & Quinn, 2009). Participants rated eight items on a 5-point Likert scale, indicating the extent to which each statement was “true” for them (1 = not like me at all, 5 = very much like me). The scale comprised two subscales, each consisting of four items: Consistency of Interest (COI) and Perseverance of Effort (POE).



Passion, grit, and mindset are intertwined constructs that are needed for high achievement. Passion is the direction of the arrow to an area/theme/skill, grit is the size and strength of the arrow and mindset is an important underlying factor for both grit and passion (Sigmundsson et al., 2021).

The aim of the study was to examine the psychometric properties of a recently developed measure attempting to quantify Growth Mindset independent from activity specification. The scale was administered to a sample of 723 participants, encompassing both females and males in the age range of 16–85, allowing for the investigation of the feasibility, internal consistency, and construct validity of the scale.

Feasibility

The results show that the Growth mindset scale is applicable across the studied age span (16–85). It can be argued that it is important for the scale to be suitable for different age groups to monitor the life-span development of a growth mindset. Simultaneously, having a new scale with focusing on key issues within the growth mindset construct, such as ‘I can get smarter’, ‘Learning is my goal’, ‘Effort makes me stronger’, ‘I would spend more time and work harder’ (Blackwell et al., 2007, pp. 249–250) is beneficial for exploring aspects of motivation.

It is also noteworthy that males have a significantly higher growth mindset score than females ($M = 4.36$ versus $M = 4.27$). Earlier studies have shown that males tend to score higher than females in relation to passion for achievement (Sigmundsson et al., 2020b). This difference could be related to more dopamine activity associated with selfish reward in males (Soutschek et al., 2017).

Conclusion

A growth mindset is important for both achievement and well-being. The results are encouraging and warrant further development of the Growth Mindset Scale.

Reference: [*Aspects of reliability and validity of a new 8-item scale assessing growth mindset - ScienceDirect*](#)

75. The Antarctic 'Plastisphere'



Antarctica, the world's most remote, harsh, and pristine continent, is not marine pollution-free. Where human activity goes, plastic debris inevitably follows.

What might the early explorers of this icy wilderness think today, upon discovering a continent transformed by permanent fishing activities, research stations, military presence, tourism, and all their environmental

impacts? Plastic pollution stands out, as it has created a unique new ecological niche in the ocean.

Once it gets into the water, plastic debris provides surfaces that microbial communities can quickly colonize, forming a biofilm. This plastic-borne community is known as the plastisphere, and it poses a serious threat to marine ecosystems, particularly in the cold, understudied waters of the Southern Ocean.

The plastisphere: an emerging threat

As plastic debris drifts through the ocean, the plastisphere develops through typical ecological succession, eventually becoming a complex and specialized microbial community. Plastics not only provide shelter for these microorganisms but also act as a vector, allowing potentially harmful pathogens like *Vibrio* spp., *Escherichia coli*, and bacteria carrying antibiotic resistance genes, to spread across marine environments, even reaching remote, untouched areas.

Beyond being a home for microbes, the plastisphere can disrupt the natural balance of ocean life at the microscopic level. These changes don't stay in the water, as they can spread outward, potentially affecting how the ocean absorbs carbon and produces greenhouse gases. This has consequences for the air we breathe around the world.

However, it's not all bad news, as bacteria are known for their potential to degrade plastics or hydrocarbons

– such as *Alcanivorax* sp., *Aestuariicella* sp., *Marinobacter* sp., and *Alteromonas* sp. – are frequently identified on plastics.

Currently very little is known about the plastisphere, especially in the Southern Ocean, where uncovering its dynamics is key to understanding its impacts on one of the planet's most remote and vulnerable marine environments.

Studying bacteria means making the invisible visible, so we combined several techniques to get a better picture of the plastisphere. Scanning electron microscopy was used to obtain biofilm images; combined with flow cytometry and bacterial culture to count total cells and colonies, and sequencing the 16S rRNA gene to identify the succession of bacterial settlers.

This meticulous approach revealed that time was the key driver of change. Microbes quickly colonized the plastic, and within less than two days, bacteria like genus *Colwellia* were already fixed in the surface, showing a clear progression from initial settlers to a mature diverse biofilm including other genera like *Sulfitobacter*, *Glaciecola*, or *Lewinella*.

These species, although also detected in water, show a clear preference for the social life of a biofilm community.

One key discovery was the presence of *Oleispira sp.* on polypropylene. This bacteria is hydrocarbon-degrading, meaning it belongs to a group of microorganisms that can break down oil and other pollutants. Their role within the Antarctic plastisphere raises important questions, like whether these kinds of bacteria could mitigate the impacts of plastic pollution. If so, they could be key to the future of Antarctica and our oceans.

However, there is still much to be discovered, particularly regarding their potential for bioremediation in extreme environments. Understanding these processes could pave the way for innovative strategies to address the growing challenge of plastic waste in marine ecosystems.

Reference: [Unveiling the Antarctic 'plastisphere', a unique and potentially hazardous new ecosystem – new research](#)

'A gem cannot be polished without friction, nor a man perfected without trials.'

SENECA

76. Smart Cities Mission: An Ongoing Project

As of 15.11.2024, under the Smart Cities Mission (SCM), work orders have been issued in 8,066 projects amounting to ₹1,64,669 crore, of which 7,352 projects (i.e. 91% of total projects) amounting to ₹1,47,366 crore have been completed, as per the data provided by 100 smart cities.

Some of the key achievements of SCM observed in improving urban living standards, safety, and public services include, *inter-alia*, Integrated Command and Control Centres (ICCC) at all 100 smart cities, 84,000 CCTV surveillance cameras, 1,884 emergency call boxes, more than 3,000 public address systems, more than 1,740 km of smart roads, 713 km of cycle tracks, 17,026 km of water supply system being monitored through Supervisory Control and Data Acquisition (SCADA) system, more than 66 cities are managing Solid Waste Management with increased usage of technology, around 9,194 vehicles have been Radio Frequency Identification (RFID) enabled for Automatic Vehicle Location (AVL), more than 9,433 smart classrooms and 41 Digital Libraries have been developed, 172 e-health centers and clinics developed and 152 health ATMs have been installed.

The government of India's policy and strategy for Indian Urban Development follows the provisions as laid down in the Constitution of India. It is pertinent to mention here that 'Land' and 'Colonization' are State subjects. Further, as per the 12th Schedule of the Indian Constitution

(Article 243W), Urban Planning including Town Planning is the responsibility of Urban Local Bodies (ULBs)/ Urban Development Authorities. However, the Government of India views high urbanization as an opportunity for aspirations of faster economic development. The government of India supplements the efforts of the States through schematic interventions/ advisories.

As appraised by the Smart Cities, the challenges encountered in implementing smart city projects include, *inter alia*, legal issues, delays in obtaining clearances from different departments, land acquisition, construction in hilly areas, challenges in vendor and resource availability in small & medium cities, centralization of decision making in few cities, utilization of the full capacity of ICCCs with the integration of all municipal departments and agencies, frequent changing and dropping of projects.

The Ministry of Housing and Urban Affairs (MoHUA) has a multi-level review structure to expedite the progress of projects under the SCM. At the State level, Mission implementation is monitored by the State level High Powered Steering Committee (HPSC) chaired by the Chief Secretary. At the National level, implementation is monitored by an Apex Committee headed by the Secretary, MoHUA.

Nominee Directors of MoHUA on the Boards of SPVs monitor progress in respective cities regularly. MoHUA also regularly interacts with the States

/Smart Cities through video conferences, review meetings, field visits, regional workshops, Chief Executive Officer's (CEO's) Conference, etc. at various levels to assess the performance of the 100 smart cities / ULBs and handhold them for improving the same, wherever required.

SCM has created replicable models/projects in the 100 Smart Cities which can act as 'lighthouses' for other aspiring cities of the country including 'area-based development' smart cities solution (Pan city features) projects.

Based on the learning of more than 7,000 completed projects under SCM, the mission has created multiple knowledge products to document the learnings from scalable and replicable projects. These publications are available on the SCM [website](#).

Reference: [Achievements Of Smart Cities Mission](#)

77. Prayagraj: Blending Tradition with Modernity

2025 Maha Kumbh Mela to Set New Global Standards for Spiritual Events

The Kumbh Mela is the world's largest peaceful gathering, drawing millions of pilgrims for a ritual bath in holy rivers. This bath symbolizes spiritual cleansing and renewal. It takes place four times every 12 years, rotating between Haridwar on the Ganges, Ujjain on the Shipra, Nashik on the Godavari, and Prayagraj, where the Ganges, Yamuna, and Sarasvati meet. The *Ardha Kumbh Mela* happens every six years at Haridwar and Prayagraj, while the Maha Kumbh Mela, a rare and grand event, occurs every 144 years.

The Kumbh Mela is more than a spiritual gathering. It is a vibrant blend of cultures, traditions, and languages, showcasing a "mini-India" where millions come together without formal invitations. The event brings ascetics, sadhus, kalpavasis, and seekers from diverse backgrounds, embodying devotion, asceticism, and unity. Recognized by UNESCO in 2017 as an intangible cultural heritage, the Kumbh Mela holds immense historical and cultural value. Prayagraj will host this grand event again in 2025, from January 13 to February 26, offering a blend of rituals, culture, and astronomy.



Maha Kumbh Mela 2025: A New Era of Spirituality and Innovation

The Maha Kumbh Mela in 2025 promises a unique blend of spirituality, culture, and history in Prayagraj. From January 13 to February 26, pilgrims will not only engage in a series of spiritual rituals but also embark on an odyssey that transcends physical, cultural, and even spiritual boundaries. The city's vibrant streets, bustling markets, and local cuisine add a rich cultural layer to the experience. The Akhara camps provide an additional spiritual dimension, where sadhus and ascetics come together for discussions, meditation, and sharing wisdom. Together, these elements

make the Maha Kumbh Mela 2025 an extraordinary celebration of faith, culture, and history, offering an enriching journey for all attendees.



The upcoming 2025 Maha Kumbh Mela is also poised to enhance the experience of devotees with advanced facilities and infrastructure, ensuring a seamless, safer, and more immersive journey for all participants. Improved sanitation systems, expanded transportation networks, and upgraded security measures are expected to provide a smoother, safer, and more enriching experience. Incorporating innovative solutions, the 2025

Maha Kumbh Mela is set to redefine global standards for hosting spiritual and cultural events of this magnitude.

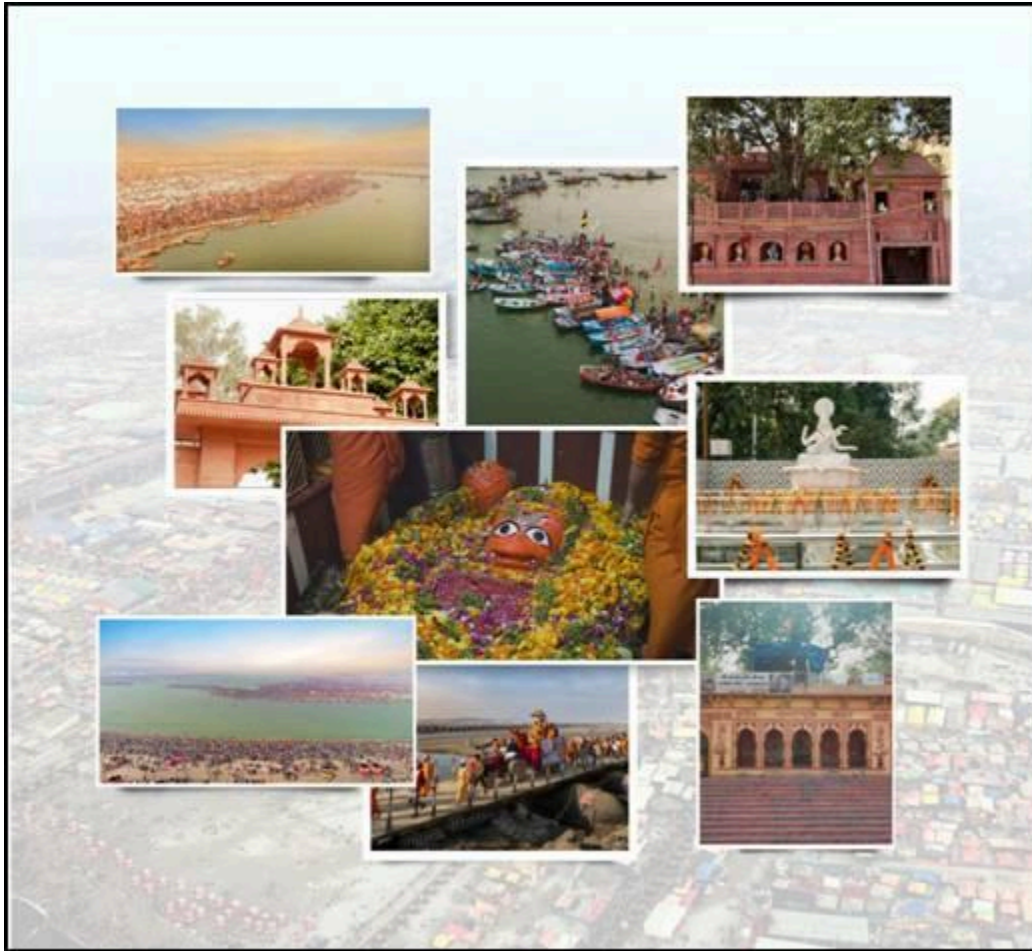
Prayagraj: A Journey Through Time

Prayagraj, with a rich history, dates back to 600 BC when the Vatsa kingdom thrived, and Kaushambi served as its capital. Gautama Buddha visited Kaushambi. Later, emperor Ashoka made it a provincial center during the Mauryan era, marked by his monolithic pillars. Rulers like the Sungas, Kushans, and Guptas also left artifacts and inscriptions in the region.

In the 7th century, Chinese traveler Huiyen Tsang described Prayagraj as a "great city of idolaters," reflecting its strong Brahminical traditions. Its importance grew under Sher Shah, who built the Grand Trunk Road through the area. In the 16th century, Akbar renamed it 'Ilahabas,' turning it into a fortified imperial center and key pilgrimage site, setting the stage for its modern relevance.

Key Landmarks and Spiritual Sites of Prayagraj

Triveni Sangam is where the Ganga, Yamuna, and the mystical Saraswati meet. The Saraswati, unseen, is believed to appear during the Kumbh Mela, symbolizing knowledge and wisdom. Devotees visit to cleanse their sins, making it the heart of the Kumbh Mela, a grand celebration of India's cultural heritage.



Pilgrims visiting Triveni Sangam also explore many revered temples in Prayagraj. The Shri Lete Hue Hanuman Ji Temple in Daraganj, established by Saint Samarth Guru Ramdasji, features idols of Shiva-Parvati, Ganesh, Bhairav, Durga, Kali, and Navgrah. Nearby, the Shri Ram-Janki and Harit Madhava temples add to the spiritual atmosphere. The Alop Shankari Temple, dedicated to Shri Alopshankari Devi, and the Nagvasuki Temple,

honoring the serpent deity, are also popular, with the latter being restored for the Maha Kumbh Mela 2025.

The Shankar Viman Mandapam, a 130-foot-high South Indian-style temple, houses idols of Adi Shankaracharya, Kamakshi Devi, and Tirupati Balaji. The Shri Veni Madhav Temple, the most important of Prayagraj's twelve Madhava temples, is essential for completing the Prayag pilgrimage. The Akshayvat Tree and Patalpuri Temple near Allahabad Fort hold deep mythological significance, with the Akshayvat being a sacred fig tree mentioned in Hindu texts. Other notable temples include the Mankameshwar Temple, Dashashwamedha Temple, and Takshakeshwar Nath Temple. The Saraswati Koop is being refurbished for the Maha Kumbh Mela 2025 to preserve its historical and cultural value. The evening Ganga Aarti at Ram Ghat is a captivating ritual honoring the river goddess, performed daily with chants, lamps, and devotion, symbolizing the five elements of nature.

Prayagraj is also home to Allahabad University, India's fourth-oldest university, established on September 23, 1887. Its origins trace back to Muir Central College, founded by Sir William Muir on December 9, 1873. The Public Library of Prayagraj set up in 1864 and relocated to its current building in 1878, houses rare manuscripts and books. It also hosted the first Legislative Council meeting of the state in 1887, adding to its historical importance.

Milestones of Kumbh Mela 2019: A Landmark Event

The Kumbh Mela 2019 in Prayagraj was a historic event, drawing 24 crore pilgrims. It earned global praise for its organization. Leaders from 182 countries, including 70 Heads of Missions and 3,200 Pravasi Bharatiya participants, applauded the arrangements. The event set three Guinness World Records: the largest bus parade, the biggest public painting drive under the "Paint My City" campaign, and the largest sanitation system.



Spread across 3,200 hectares near the Sangam, the Mela created the world's largest temporary city with meticulous planning. Extensive beautification efforts included planting 2 lakh plants, building thematic gates, and

improving roads within a 10 km radius of Prayagraj. Security was strengthened with over 1,000 cameras, 62 police outposts, and ration systems for 10 lakh Kalpavasis. Overall, Kumbh Mela 2019 seamlessly integrated tradition with modernity, showcasing Prayagraj as a model of large-scale event management.

The Maha Kumbh Mela in 2025 promises to be a landmark event, building upon the success of previous editions while embracing innovative advancements. Prayagraj's rich historical, cultural, and spiritual fabric, combined with state-of-the-art facilities, will offer pilgrims an unparalleled experience of faith, unity, and devotion. The event's meticulous planning and the integration of modern technology with tradition will elevate the Kumbh Mela to new heights, setting a global benchmark for hosting large-scale spiritual and cultural gatherings. As millions gather once again at the Sangam, the 2025 Maha Kumbh Mela will continue to be a powerful symbol of India's enduring spiritual heritage and its commitment to celebrating diversity and harmony.

References

- [*Kumbh Mela | INDIAN CULTURE*](#)
- [*Maha Kumbh Mela 2025*](#)
- [*Prayagraj Kumbh Mela 2019 makes it to the Guinness World Records*](#)
- [*Maha Kumbh Mela 2025*](#)
- [*2025 Maha Kumbh Mela to Set New Global Standards for Spiritual Events*](#)

78. Public-Private Partnership to Conserve Heritage Sites

The government established the National Culture Fund (NCF) in 1996 as a Trust under the Charitable Endowment Act of 1890 to mobilize additional resources through Public-Private Partnerships (PPP) for the conservation of heritage sites and the promotion of India's cultural heritage.

The progress of all projects approved by the NCF under the PPP model is regularly monitored by the Project Implementation Committee.

Donors or sponsors contributing to the NCF can specify a project for conservation or the development of amenities around a monument, including its location or specific aspects. Conservation of protected monuments is undertaken by the Archaeological Survey of India (ASI), which is also responsible for their maintenance. All donor agencies adhere to the norms established by the NCF and ASI.

Reference: [Conservation Of Heritage Sites Through PPP Mode](#)

79. La Nina: Its Impact on Indian Monsoon

La Niña, a climate phenomenon marked by cooler sea surface temperatures (SST) in the central and eastern Pacific Ocean, significantly influences the Indian monsoon. During a La Niña event, India generally experiences normal to above-normal rainfall during the southwest monsoon season. Most parts of the country receive above-average rainfall, except for



extreme northern India and some areas of Northeast India, where below-normal rainfall is more likely. Additionally, below-normal temperatures are typically observed during the winter season in La Niña.

While excessive rainfall during La Niña can cause flooding, crop damage, and livestock loss, it can also benefit rainfed agriculture and improve groundwater levels. However, increased rainfall and lower temperatures may affect the growth and development of certain Kharif crops.

The Ministry conducts regular studies on monsoon patterns and associated rainfall and temperature changes, including those during La Niña. The India Meteorological Department (IMD) monitors global SST variations,

particularly in the Pacific and Indian Oceans, and provides monthly forecasts and updates through the El Niño–Southern Oscillation(ENSO/IOD) [bulletin](#).

IMD also issues agriculture-specific advisories to assist farmers in preparing for extreme weather events linked to La Niña, such as heavy rains or droughts. These advisories offer guidance on crop selection, irrigation practices, and flood preparedness

Reference: [PARLIAMENT QUESTION: Effect of La Nina](#)

80. Forest Survey of India Tables its Latest Report

The Forest Survey of India (FSI), Dehradun, an organization under the Ministry, has conducted a biennial assessment of forest cover since 1987, with findings published in the *India State of Forest Report* (ISFR). The delay in the publication of the *India State of Forest Report 2023* is attributed to the inclusion of data from 751 districts, compared to 638 districts in previous reports.

The diversion of forest land for non-forestry purposes requires prior approval from the Central Government under the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980. Between 01.04.2019 and 31.03.2024, the Ministry approved the diversion of 95,724.99 hectares of forest land for various non-forestry purposes.

Under the provisions of the Compensatory Afforestation Fund Act, 2016, the National Authority approved 252,000.44 hectares for compensatory afforestation (CA) under the Annual Plan of Operations (APOs) submitted by States and Union Territories from 2019 to 2024.

According to the ISFR, forest cover includes all lands exceeding one hectare with a tree canopy density of more than 10%, regardless of ownership or legal status. This definition also encompasses orchards, bamboo, and palm plantations.

Reference: [India State of Forest Report](#)

81. Advancing Quantum Technology Hubs

The National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) has established 25 Technology Innovation Hubs (TIHs) at leading academic institutions, focusing on advanced domains such as AI, machine learning, robotics, cybersecurity, autonomous navigation, and quantum technologies.

One such hub, the I-Hub Quantum Technology Foundation (QTF) at IISER Pune, is dedicated to advancing quantum technologies. The hub fosters start-ups, translational research, and commercialization efforts in the quantum technology sector. To support this vision, I-Hub QTF is assisting 14 start-ups across various domains of quantum technologies, including Quantum Computing, Quantum Communications, Quantum Sensing, and Quantum Materials. These start-ups are supported under comprehensive guidelines developed as part of the National Quantum Mission (NQM) and officially adopted by I-Hub QTF.

The list of supported start-ups is as under:

1. QuNu Labs Private Limited, Bengaluru, Karnataka
2. QPIAI India Pvt. Ltd, Bengaluru, Karnataka
3. Dimira Technologies Pvt. Ltd, Bengaluru, Karnataka
4. PRENISHQ Pvt. Ltd, Bengaluru, Karnataka

5. QuPrayogPvt. Ltd, Mumbai, Maharashtra
6. Pristine Diamonds Pvt. Ltd, Surat, Gujarat
7. QuanastraPvt. Ltd, Hyderabad, Telangana
8. Quan2D Technologies Private Limited, Chennai, Tamil Nadu
9. amPICQ Pvt Ltd, Pune, Maharashtra
10. Quantum Dynamics Corporate Solutions Pvt Ltd, Noida, Uttar Pradesh
11. Atom Jig Pvt Ltd, Bengaluru, Karnataka
12. Sciamo Research & Instruments Pvt Ltd, Bengaluru, Karnataka
13. Brahmasens Technologies, Chennai, Tamil Nadu
14. GDQ Labs Pvt Ltd, Hyderabad, Telangana

As part of the National Quantum Mission (NQM), four thematic hubs (T-Hubs) are being established to drive advancements in quantum technologies across key verticals: Quantum Computing, Quantum Communication, Quantum Sensing & Metrology, and Quantum Materials & Devices. A key mandate of these T-Hubs is to promote entrepreneurship development within their respective technology domains.

Reference: [National Mission On Interdisciplinary Cyberphysical Systems](#)

82. Supply Chain Council (SCC) under the India-Pacific Economic Framework (IPEF) Meets

India is set to play a pivotal role in building resilient supply chains in the Indo-Pacific region. Today, India participated as Vice Chair in the 2nd meeting of the Supply Chain Council (SCC), represented by Shri Rajesh Agrawal, Additional Secretary, Department of Commerce.

The Chair (United States) highlighted significant progress since the last meeting in September 2024 and provided updates on the Action Plan Team (APT) for Chemicals, focusing on promoting chemical trade, diversifying sources, advancing various work streams, and enhancing international business matchmaking.

Updates were also shared on the Critical Minerals, Semiconductors, and Pharma/Healthcare Action Plan Teams, emphasizing collaboration and the development of actionable work plans to address supply chain challenges in these critical sectors.

The lead of the Sub-Committee on Logistics and Movement of Goods discussed progress in establishing technical standards for cold chain logistics, emphasizing the importance of regulatory transparency and stakeholder engagement. Meanwhile, the lead of the Sub-Committee on Data and Analytics expressed satisfaction with ongoing consultations and

alignment of goals among partners, focusing on developing monitoring systems and enhancing data analysis capabilities.

As Vice Chair, India commended the initiatives and noted the potential for tangible outcomes in the coming months. India also proposed hosting the next in-person SCC meeting early next year.

The meeting concluded with updates on the Crisis Response Network and the Labor Rights Advisory Board, established under the Pillar II Agreement, reaffirming the commitment to strengthening supply chain resilience through collaborative efforts.

The first SCC meeting, held in Washington in September 2024, led to the formation of six Action Plan Teams (APT) focusing on key areas: Semiconductors (led by the US), Critical Minerals (led by Australia), Chemicals (led by the US), and Pharma/Healthcare (led by India), along with two Sub-Committees on Logistics and Movement of Goods (led by New Zealand) and Data and Analytics (led by Singapore).

Among the six key areas identified by the Supply Chain Council, India considers the healthcare and pharmaceutical sectors critical for achieving resilient supply chains, given their importance. Collaborative initiatives like the Action Plan Team (APT) can play a vital role in reducing dependence on imports for Active Pharmaceutical Ingredients (APIs) and medical devices. These efforts are expected to bolster domestic manufacturing by facilitating the sharing of best practices, technical

expertise, technology transfer, and up-skilling or re-skilling, ensuring the resilience of pharmaceutical and healthcare supplies.

India's leadership in global health is evident through its development of the world's first DNA vaccine for COVID-19. The country's emergence as a global hub for affordable, high-quality medicines is remarkable, ranking 3rd globally in pharmaceutical production by volume and 14th by value.

Under the Indo-Pacific Economic Framework for Prosperity (IPEF), India has been elected as Chair of the Action Plan Team on Pharma/Healthcare. Thailand, Singapore, and New Zealand have joined India in this effort, furthering collaborative work in this critical sector.

Background

The Supply Chain Council was established under the Supply Chain Resilience Agreement of IPEF to undertake targeted, action-oriented initiatives aimed at strengthening supply chains for sectors and goods critical to national security, public health, and economic stability in the Indo-Pacific region. This region accounts for approximately 40% of global GDP and 28% of global trade in goods and services.

India signed the Supply Chain Resilience Agreement (Pillar II) in November 2023 under IPEF, a 14-member plurilateral grouping in the region. The agreement, which focuses on enhancing supply chains vital to national security and economic stability, came into effect on February 24, 2024. As part of this initiative, the Supply Chain Council (SCC) was

established, with India serving as Vice Chair and the United States as Chair.

Reference: [India participates in the 2nd meeting of the Supply Chain Council \(SCC\) as Vice-Chair, under India-Pacific Economic Framework \(IPEF\)](#)

"When you forgive, you heal. When you let go, you grow."

Louise Hay

83. Mission Mausam

Following Artificial intelligence (AI) algorithms and models will be used to improve the forecast accuracy:

- Random Forest Model to predict extreme rainfall events
- Neural Network based models (e.g., Convolutional Neural Network-CNN, super-resolution CNN-srCNN, generative adversarial network-GAN, etc.) to downscale the model output to higher resolutions
- The above-mentioned Neural Network algorithms will also be used for improving various parameterizations, such as cumulus, radiation, land-surface, etc., in Numerical Weather Prediction Models
- AI/ML methods will be also used to efficiently manage the vast amount of varied meteorological data and enhance the data assimilation capabilities

Apart from the above-mentioned hybrid AI/ML techniques, fully AI-based forecast models such as Fourcastnet, Graphcast, and Pangu Weather are also being trained to improve forecast accuracy over the Indian region.

The data from Mission Mausam will also be made available to the research community.

The India Meteorological Department (IMD) provides agrometeorological advisories twice a week in collaboration with the Indian Council for Agricultural Research (ICAR), and it will be continued.

Reference: [Press Information Bureau](#)

"An ounce of action is worth a ton of theory"

84. Plastic Waste Management in India

Several reports have published data or information on plastic production and plastic waste generation. These reports vary in their country-wise projections on account of data sources and assumptions along with methodologies for making projections. All in all, plastic waste generated in the country, based upon information provided by State Pollution Control Boards (SPCBs) / Pollution Control Committees (PCCs) to Central Pollution Control Board, the quantity of plastic waste generation during the period 2018-19 to 2022-23 is given below:

Financial Year	Plastic waste Generation (TPA)
2018-19	3360043.45
2019-20	3469781.73
2020-21	4126808.44
2021-22	3901802.06
2022-23	4136188.83

As amended, the Plastic Waste Management Rules, 2016, provide a statutory framework for environmentally sound plastic waste management in India. These rules not only mandate but also empower urban local bodies and gram panchayats to take charge of managing plastic waste, including its collection, and prohibit the open burning of plastic waste.

Revolutionizing Waste Management: India's Pioneering Extended Producer Responsibility for Plastic Packaging

The Extended Producer Responsibility (EPR) for plastic packaging, a monumental initiative notified in 2022 under the Plastic Waste Management Rules, aims to revolutionize the waste management sector, encompassing the collection, segregation, and processing of plastic waste nationwide. The scale of this initiative is evident in the registration of 2,614 Plastic Waste Processors (PWPs) under the EPR Guidelines and the processing of approximately 103 lakh tonnes of plastic packaging waste reported on the Centralized EPR portal for plastic packaging.

The Government of India, demonstrating its unwavering commitment to waste management, provides additional central assistance to States and Union Territories for solid and plastic waste management under the Swachh Bharat Mission (SBM). Under Swachh Bharat Mission Phase II (Grameen) [SBM (G)], the establishment of Plastic Waste Management Units (PWMUs) is a testament to the government's proactive role, with

financial assistance of up to ₹16 lakh per block for construction. PWMUs can also be set up in cluster mode for multiple blocks within the funding limits for those blocks.

Swachh Bharat Mission Urban 2.0 (SBM-U 2.0)

Under Swachh Bharat Mission Urban 2.0 (SBM-U 2.0), additional central assistance is provided for solid waste management, including plastic waste management. The Ministry of Housing and Urban Affairs funds initiatives such as Material Recovery Facilities (MRFs), as outlined in the SBM-U 2.0 Operational Guidelines. The Central Pollution Control Board (CPCB) plays a crucial role in this process, overseeing the 4,446 MRFs in the country, with a total processing capacity of 31,427.2 TPD.

The ban on identified single-use plastic items, effective from 1st July 2022, is a significant step towards reducing pollution caused by littered and unmanaged plastic waste. Along with the EPR for plastic packaging, this ban is expected to have a profound impact on reducing plastic pollution.

Reference: [Plastic waste in the country](#)

When we are passionate about improving our own lives, we will be less likely to judge, criticize, or gossip about others, because we will be too busy working on ourselves. Let's mind our own business.

85. Scientists Develop Flexible Near-Infrared Plasmonic Devices for Wearable Sensors and Medical Imaging Tools

In a significant advancement in nanophotonics, researchers have introduced a new approach to achieving flexible near-infrared plasmonic devices using affordable scandium nitride (ScN) films. This approach, with its potential for scalability, could revolutionize the design of future optoelectronic devices, flexible sensors, and medical imaging tools that rely on NIR light by introducing scalable and cost-effective plasmonic materials.

Plasmonics is a field that leverages the interaction between light and free electrons in metals to create highly confined electromagnetic fields. Traditionally, plasmonic materials have been rigid and possess limited design possibilities. Most of them, like gold or silver, are costly and need more versatility.

Prof. Bivas Saha at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, an autonomous institute under the Department of Science and Technology (DST), demonstrated a method to grow flexible plasmonic structures. They produced ScN layers with exceptional quality and flexibility by pairing scandium nitride with van der Waals layer substrates, materials with weak interlayer interactions, thus introducing a new pathway in plasmonic materials research.

The team used epitaxial growth, in which single-crystal layers are deposited onto a substrate. The technique used stacks of layers of materials with weak interlayer bonding to enable new device architecture (van der Waals heteroepitaxy).

The study, recently published in *Nano Letters*, highlights scandium nitride's potential as a promising plasmonic material for a wide range of applications that require flexibility and precision in near-infrared (NIR) optics, spanning from telecommunications to biomedicine.

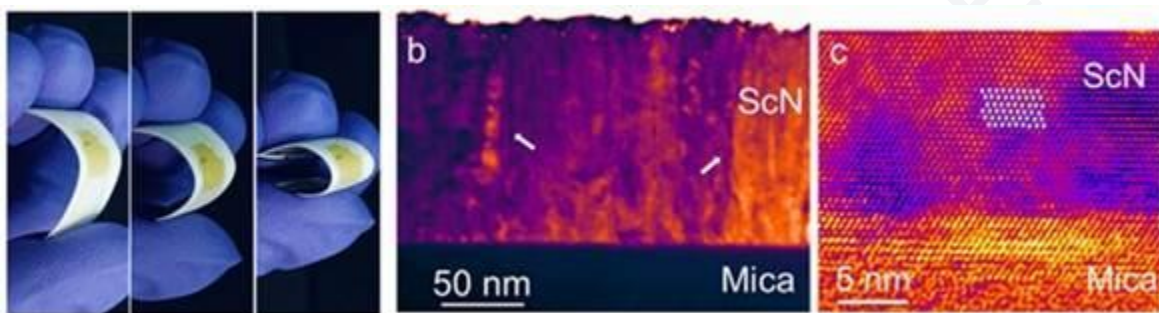
Through precise engineering, the team successfully developed high-quality epitaxial ScN layers on flexible substrates, enabling the propagation of plasmon-polaritons—quasiparticles formed by coupling plasmons with photons—in the near-infrared (NIR) range.

Prof. Saha's team demonstrated that scandium nitride (ScN) is a stable material capable of supporting NIR plasmonics while maintaining performance under bending and flexing, positioning it as a leading candidate for flexible device applications.

"Scandium nitride's stability and compatibility with van der Waals substrates make it an exciting candidate for next-generation flexible electronics. Our findings are a step towards realizing advanced plasmonic devices that are high-performing and adaptable to unconventional applications."

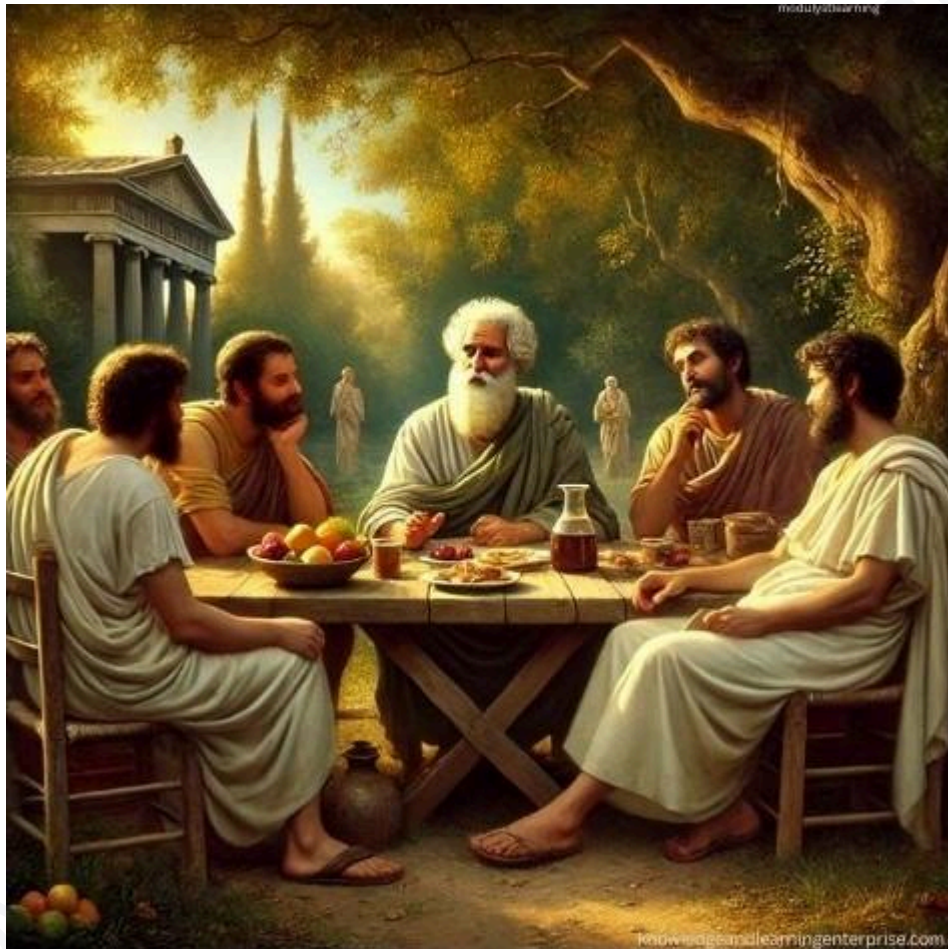
This research holds promise for various industries, from telecommunications to biomedicine, offering a new material foundation for developing next-generation flexible and wearable plasmonic devices. "The results mark a critical step in merging plasmonics with flexible electronics, potentially setting the stage for innovations that leverage the unique properties of near-infrared plasmon-polaritons,"-commented Mr. Debmalya Mukhopadhyaya, the first author of this work.

As plasmonics advances, the innovative application of scandium nitride in Prof. Saha's research highlights the transformative potential of materials science in redefining technological frontiers.



Reference: [Press Information Bureau](#)

86. Epicurus the Greek Philosopher



Epicurus (341–270 BC) was an ancient Greek philosopher and founder of Epicureanism, a highly influential school of philosophy. Known for promoting simple living, Epicurus and his followers would gather to share

modest meals while engaging in discussions on a wide range of philosophical topics. His school was notably inclusive, allowing women and slaves to join.

Although Epicurus reportedly wrote over 300 works, most of them have been lost. The surviving texts include three letters—to Menoecus, Pythocles, and Herodotus—along with two collections of quotes, *Principal Doctrines* and *Vatican Sayings*, and fragments of other writings. Much of what is known about his philosophy comes from later authors such as Diogenes Laërtius, the Roman poet Lucretius, and the philosopher Philodemus, as well as critical but generally accurate accounts by Sextus Empiricus and Cicero.

Epicurus taught that philosophy's goal is to help people achieve happy, tranquil lives characterized by *ataraxia* (freedom from fear) and *aponia* (absence of pain). He believed in living self-sufficiently with friends and emphasized that the root of human anxiety is the fear of death. He argued that death marks the end of both body and soul, making it unnecessary to fear. Epicurus advocated ethical behavior not out of fear of divine punishment but because immoral actions lead to guilt and prevent the attainment of *ataraxia*.

Much of Epicurus' physics and cosmology drew from Democritus (c. 460–c. 370 BC). He taught that the universe is infinite, eternal, and composed of atoms—tiny, invisible particles moving through space and interacting to

form all natural occurrences. Epicurean teachings, while popular, were controversial and faced hostility, particularly from early Christianity.

Epicureanism reached its peak during the Roman Republic but declined in late antiquity. In the fifteenth century, important texts were rediscovered, leading to renewed interest in his ideas. However, they gained wider acceptance only in the seventeenth century when Pierre Gassendi, a French Catholic priest, revived a modified version of them, which was later championed by writers like Walter Charleton and Robert Boyle. During and after the Enlightenment, Epicurus' ideas profoundly influenced major thinkers, including John Locke, Thomas Jefferson, Jeremy Bentham, and Karl Marx.

"When you forgive, you heal. When you let go, you grow."

Louise Hay

87. Alternative Dispute Resolution Mechanisms

Over the past decade, the Government of India has implemented several initiatives to promote Alternative Dispute Resolution (ADR) mechanisms and remains committed to introducing further policy and legislative measures to strengthen these mechanisms for greater efficiency and expediency.

Key initiatives and measures taken by the Central Government include:

1. **Arbitration and Conciliation Act, 1996**: This Act has been progressively amended in 2015, 2019, and 2020 to ensure the timely conclusion of arbitration proceedings, promote arbitrator neutrality, minimize judicial intervention, and facilitate the effective enforcement of arbitral awards. The amendments aim to enhance institutional arbitration, align the law with global best practices, resolve ambiguities, and establish a robust arbitration ecosystem to support both domestic and international arbitration.
2. **India International Arbitration Centre Act, 2019**: Enacted to establish the India International Arbitration Centre (IIAC), this Act created an independent, autonomous, and world-class institution for facilitating institutional arbitration. Recognized as an institution of national importance, the Centre offers a neutral platform for resolving commercial disputes through arbitration. It has notified the India International Arbitration Centre (Conduct of Arbitration)

Regulations, 2023 to ensure efficient, time-bound arbitration processes. The Centre's Chamber of Arbitration impanels reputed arbitrators for domestic and international arbitrations, positioning IIAC as a model arbitral institution to enhance the quality of institutional arbitration in India.

3. **Commercial Courts Act, 2015:** Amended in 2018, the Act introduced the Pre-Institution Mediation and Settlement (PIMS) mechanism. Under this mechanism, parties in commercial disputes of specified value that do not require urgent interim relief must first attempt resolution through mandatory mediation before approaching the court. This process offers an opportunity to resolve disputes amicably.
4. **Mediation Act, 2023:** This Act establishes a statutory framework for mediation, with a focus on institutional mediation and identifying various stakeholders to develop a robust mediation ecosystem in the country.
5. **Training and Capacity Building:** The India International Arbitration Centre regularly organizes conferences, seminars, and training programs for stakeholders, including professionals and entities in the public and private sectors, to build capacity in ADR mechanisms like arbitration and mediation.

The Arbitration & Conciliation Act 1996 and Mediation Act 2023 provide *inter-alia* for the conduct of international commercial arbitration and international mediation respectively.

The Government's legislative and policy interventions, along with ongoing reforms in ADR, are designed to meet the evolving needs of stakeholders. These efforts have contributed to strengthening the ADR landscape, enhancing the ease of doing business, and positioning India as an attractive destination for investments and economic growth

Reference: [International Arbitration and Mediation](#)

88. Addressing Mental Health Problems: Steps Taken by the Government in India



Under the tertiary care component of the National Mental Health Programme, 25 Centres of Excellence have been sanctioned to increase the intake of students in PG departments in mental health specialties.

The impactful 'National Tele Mental Health Programme', launched on October 10, 2022, has significantly improved the country's access to quality mental health counseling and care services, marking a significant step forward in our mental health initiatives. The 'Tele MANAS Mobile App', a crucial tool launched to provide comprehensive support for mental health issues, is a significant step towards addressing mental health challenges.

As of November 22, 2024, 53 Tele MANAS Cells were set up across 36 States/ UTs; more than 15.95 lakh calls were handled on the helpline number.

To address the mental health problems in the country, the Government of India has been making continuous efforts to increase the number of mental healthcare professionals.

National Mental Health Programme (NMHP)

The government of India is implementing the National Mental Health Programme (NMHP). Under the tertiary care component of NMHP, 25 Centres of Excellence have been sanctioned to increase the intake of students in PG departments in mental health specialties and provide tertiary-level treatment facilities. Further, the government has supported 19 medical colleges/institutions to strengthen 47 PG Departments in mental health specialties.

District Mental Health Programme (DMHP)

The District Mental Health Programme (DMHP) component of the NMHP has been sanctioned for implementation in 767 districts, for which support is provided to States/UTs through the National Health Mission. One component of DMHP is to provide training to specialist and non-specialist cadres such as Medical Officers, Psychologists, Social Workers, and Nurses.

Strengthening mental healthcare services at the primary healthcare level

The government is also strengthening mental healthcare services at the primary healthcare level. The government has upgraded more than 1.73 lakh Sub Health Centres (SHCs) and Primary Health Centres (PHCs) to Ayushman Arogya Mandirs. Mental health services have been added to the packages of services under Comprehensive Primary Health Care provided at these Ayushman Arogya Mandirs. Operational guidelines and training manuals for various cadres on Mental, Neurological, and Substance Use Disorders (MNS) at Ayushman Arogya Mandirs have been released under the ambit of Ayushman Bharat.

Workforce availability

The government is also augmenting the availability of workforce to deliver mental healthcare services in the underserved areas of the country by providing online training courses to various categories of general healthcare medical and para-medical professionals through the Digital Academies, established in 2018, at the three Central Mental Health Institutes namely National Institute of Mental Health and Neuro Sciences, Bengaluru, Lokopriya Gopinath Bordoloi Regional Institute of Mental Health, Tezpur, Assam, and Central Institute of Psychiatry, Ranchi. The total number of professionals trained under Digital Academies is 42,488.

Also, 66 institutions/universities are offering M.Phil Clinical Psychology courses. The Council launched the B.Sc. Clinical Psychology (Hons.) course from the academic session 2024- 25 and granted approval to 19 universities to offer this course to develop more clinical psychology professionals.

National Tele Mental Health Programme

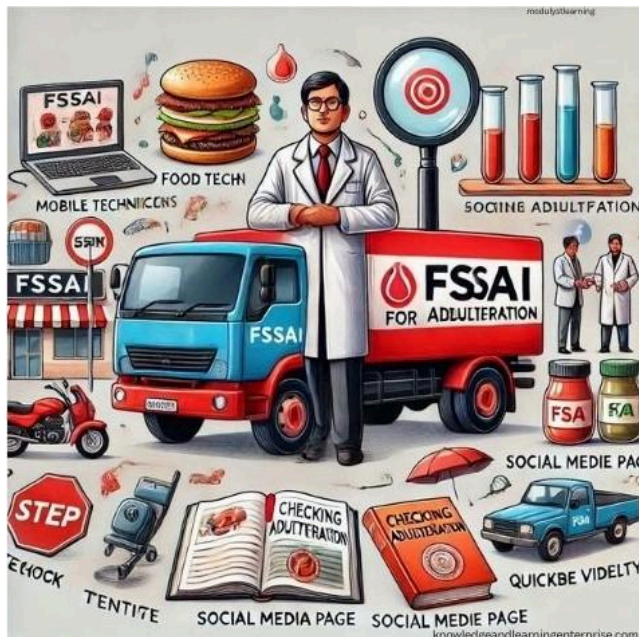
Besides the above, the government launched a "National Tele Mental Health Programme" on October 10, 2022, to further improve the country's access to quality mental health counseling and care services. As of November 22, 2024, 36 States/ UTs have set up 53 Tele MANAS Cells and started telemental health services. More than 15,95,000 calls have been handled on the helpline number.

Tele MANAS Mobile Application

The government has also launched the Tele MANAS Mobile Application on October 10, 2024, World Mental Health Day. Tele-MANAS Mobile Application is a comprehensive mobile platform developed to provide support for mental health issues, from well-being to mental disorders.

Reference: [Steps taken by the Government to address mental health problems in the country](#)

89. FSSAI's Special Drives to Combat Food Adulteration



The Food Safety and Standards Authority of India (FSSAI) is dedicated to ensuring the availability of safe food products for consumers nationwide. To bolster this commitment, FSSAI has launched special festive drives aimed at combating adulteration in milk, sweets, and other food products during the holiday season.

Enhanced Food Testing

Ecosystem

FSSAI actively conducts regular surveillance, monitoring, inspection, and random sampling of food items to ensure compliance with safety and quality standards as mandated by the Food Safety and Standards (FSS) Act, 2006. When non-compliance is detected, FSSAI takes penal action against the offending Food Business Operators, maintaining strict adherence to food safety regulations.

Special Festive Drives

Before and during festive seasons, FSSAI initiates special drives focusing on high-risk food products commonly subject to adulteration. These drives specifically target milk and milk products—including ghee, khoya, paneer, and sweets. The sampling occurs in identified adulteration hotspots based on intelligence inputs, historical data, and consumer complaints reported through local media.

Supporting State/UTs for Improved Quality Monitoring

To enhance the food testing ecosystem, FSSAI provides financial and technical support to States and Union Territories (UTs). This includes funding for high-end equipment procurement, establishing microbiological laboratories, and mobile food testing facilities, and ensuring laboratories receive National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation.

FSSAI's Initiatives for Food Safety Awareness

FSSAI implements various initiatives to raise awareness about food safety among consumers and the food industry:

1. **Website and Social Media:** Accessible information on food safety standards and detecting adulteration is available on FSSAI's website and social media platforms, providing practical tips for consumers.

2. **Adulteration Videos:** A series of informative videos demonstrating how to identify adulteration in everyday foods can be found on FSSAI's YouTube channel and shared across social media platforms like Instagram, Twitter, and Facebook.
3. **DART Book:** This resource offers simple tests for consumers to detect food adulteration at home.
4. **Food Safety Magic Box:** An educational toolkit designed for students, teachers, and parents, this box includes interactive tests for learning about food safety and detecting adulteration.
5. **Food Safety on Wheels (FSWs):** Mobile food testing laboratories reach remote areas, conducting tests and raising awareness.
6. **Food Safety Guidebook for Teachers/Students:** This detailed resource provides lesson plans and tests for food adulteration, aligning educational content with curriculum requirements.

With these initiatives, FSSAI emphasizes its commitment to protecting consumer health and ensuring food safety, especially during the festive season when the demand for food products surges. By enhancing food testing capabilities and promoting awareness, FSSAI aims to create a safer food environment for all.

Reference: [Press Information Bureau](#)

90. Why is the Steel Inventory Rising in India?

Steel is a deregulated sector, and the government acts as a facilitator by creating a conducive policy environment for its development in the country. Steel companies make decisions regarding import and export based on techno-commercial considerations and market dynamics.



The data on the stock of finished steel with Indian steel companies for the last five financial years and the current year is as follows:

As on	Finished Steel Stock (in MnT)
31.03.2020	13.69
31.03.2021	8.97
31.03.2022	7.99
31.03.2023	10.59

31.03.2024	14.29
30.11.2024*	14.23

Source: Joint Plant Committee(JPC); *provisional

The details of tariffs, safeguards, or anti-dumping measures implemented to protect the domestic steel sector in the past five years are as follows:

(i) Currently, steel products are subject to basic customs duties ranging from 5% to 15%, while certain steel products imported from the USA attract customs duties in the range of 20% to 27.5%

(ii) Anti Dumping Duty (ADD) measures are currently in place for products such as seamless tubes, pipes, and hollow profiles of iron, alloy, or non-alloy steel (excluding cast iron and stainless steel) from China PR; electro-galvanized steel from Korea RP, Japan, and Singapore; stainless steel seamless tubes and pipes from China PR; and welded stainless steel pipes and tubes from Vietnam and Thailand.

(iii) Countervailing Duty (CVD) is applied to welded stainless steel pipes and tubes from China and Vietnam.

(iv) In the Union Budget 2024-25, the following measures were taken to support domestic manufacturers and boost domestic steel manufacturing:

- a. Basic Customs Duty (BCD) on Ferro-Nickel and Molybdenum ores and concentrates, raw materials for the steel industry, has been reduced from 2.5% to Nil.
- b. The exemption on ferrous scrap has been extended until 31.03.2026.
- c. The exemption on specified raw materials for manufacturing Cold Rolled Grain Oriented (CRGO) steel has been extended until 31.03.2026 and expanded to include additional specified raw materials under tariff item 7226 11.00.

Government Initiatives to Support the Domestic Steel Industry

1. Implementation of the Domestically Manufactured Iron & Steel Products (DMI&SP) policy to promote the use of 'Made in India' steel in Government procurement.
2. Launch of the Production Linked Incentive (PLI) Scheme for Specialty Steel, aimed at boosting domestic production and reducing imports of specialty steel. The scheme anticipates an additional investment of ₹27,106 crores, with downstream capacity creation of approximately 24 million tonnes of specialty steel.
3. Revamping of the Steel Import Monitoring System (SIMS) 2.0 for better import monitoring to address the concerns of the domestic steel industry.

4. Coordination with Ministries, States, and other countries to facilitate the availability of raw materials for steel production on favorable terms.
5. Notification of the Steel Scrap Recycling Policy to increase the availability of domestically generated scrap.
6. Introduction of the Steel Quality Control Order to ensure that only quality steel conforming to relevant BIS standards is available in the domestic market. This order bans substandard or defective steel products in the market and for import. To date, 151 Indian Standards have been notified under the Quality Control Order, covering carbon steel, alloy steel, and stainless steel.

Reference: [unsold inventory of steel due to rising imports](#)

91. Promoting Indian Art and Culture: Schemes and Assistance

The Ministry of Culture implements a Central Sector Scheme titled 'Financial Assistance for Promotion of Art and Culture' to provide financial assistance to cultural organizations engaged in promoting art and culture across the country. This scheme comprises eight sub-components, as summarized in Annexure – I. Under the scheme, there is no provision for State/UT-wise fund allocation, as financial assistance is released directly to approved organizations. Details of the state-wise and year-wise number of organizations supported and the funds disbursed over the last three years are provided in Annexure – II.

- The broad criteria for selecting beneficiaries for the scheme are as under:
- The organization must be registered as a society under the Societies Registration Act, 1860, or as a public trust under the Indian Trust Act, 1882, and must have been functioning for at least three years.
- The organization must be registered on the NGO Darpan Portal of NITI Aayog.
- The organization must have a predominantly cultural profile.
- The organization must submit audit statements for the last three years.
- The organization must have filed Income Tax returns for the last three years.

Applications or proposals complete in all respects are placed before the Expert/Steering Committee, constituted by the Ministry for each scheme component, for evaluation and recommendation on a case-to-case basis based on merit.

It is important to note that the Financial Assistance for Promotion of Art and Culture scheme does not include provisions for financial assistance for medical treatment.

Annexure – I

Financial Assistance for Promotion of Art and Culture

This scheme has the following sub-components:

1. Financial Assistance to Cultural Organizations with National Presence:
 - This grant supports cultural organizations with a national presence that promotes art and culture across the country.
 - Eligible organizations must have a properly constituted managing body, pan-India operations, sufficient working strength, and expenditure of ₹1 crore or more on cultural activities during three of the last five years.
 - Quantum of grant: ₹1 crore, extendable to ₹5 crore in exceptional cases.

2. Cultural Function & Production Grant (CFPG):

- This component provides financial support to NGOs, societies, trusts, and universities for organizing seminars, conferences, research, workshops, festivals, exhibitions, symposia, and productions in dance, drama, theatre, and music.
- Maximum grant: ₹5 lakh, extendable to ₹20 lakh in exceptional cases.

3. Financial Assistance for the Preservation & Development of Cultural Heritage of the Himalayas:

- This grant aims to promote and preserve the cultural heritage of the Himalayan region through research, training, and audio-visual dissemination.
- Eligibility: Organizations in Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.
- Quantum of funding: ₹10 lakh per year, extendable to ₹30 lakh in exceptional cases.

4. Financial Assistance for the Preservation & Development of Buddhist/Tibetan Culture:

- Financial assistance is provided to voluntary Buddhist/Tibetan organizations, including monasteries, for the propagation and

scientific development of Buddhist/Tibetan culture, traditions, and research.

- Quantum of funding: ₹30 lakh per year, extendable to ₹1 crore in exceptional cases.

5. Financial Assistance for Building Grants, including Studio Theatres:

- This component supports NGOs, trusts, societies, universities, and government-sponsored bodies for the creation of cultural infrastructure like studio theatres, auditoriums, rehearsal halls, classrooms, and related facilities such as electrical systems, air conditioning, acoustics, and light and sound systems.
- Quantum of grant: ₹50 lakh in metro cities and ₹25 lakh in non-metro cities.

6. Financial Assistance for Allied Cultural Activities:

- This component provides funding for the creation of assets to enhance the audio-visual experience during allied cultural activities and festivals held in open or closed spaces.
- Quantum of funding:
 - Audio: ₹1 crore.
 - Audio+Video: ₹1.5 crore.

7. Intangible Cultural Heritage:

- Launched in 2013, this component safeguards intangible cultural heritage and diverse cultural traditions. It supports institutions, groups, and NGOs in projects that strengthen, preserve, and promote India's intangible cultural heritage.

8. Domestic Festivals and Fairs:

- This component supports the organization of Rashtriya Sanskriti Mahotsavs (RSMs) by the Ministry of Culture.
- Conducted through Zonal Cultural Centres (ZCCs), RSMs engage a large number of artists from across the country to showcase their talents.
- Since November 2015, 14 RSMs have been organized. Over the last three years, ₹38.67 crore has been released under this scheme.

References: [scheme of financial assistance for the promotion of art and culture](#)

92. Space and Galaxy Fundamentals



Light travels at an extraordinary speed of 186,000 miles per second, covering 5.88 trillion miles in a year. This unit of measurement, the light-year, helps describe the vastness of space. Credit: SciTechDaily.com

What Is a Light-Year?

A light-year is the distance light travels in one year. Light moves incredibly fast—approximately 186,000 miles (300,000 kilometers) per second,

covering about 5.88 trillion miles (9.46 trillion kilometers) in a year. To measure the vastness of space, we use light-time, which represents the distance light travels within a specific time frame. Since nothing moves faster than light, it serves as a reliable standard for astronomical distances.

For instance, in one minute, light travels 11,160,000 miles. Sunlight takes roughly 43.2 minutes to reach Jupiter, located about 484 million miles away. In one hour, light covers 671 million miles. Despite this immense speed, the vast scale of the universe makes even these extraordinary distances appear almost unfathomable.

Light-Speed Journeys in the Solar System

Earth is about eight light minutes from the Sun. Reaching the edge of the solar system, where the distant Oort Cloud lies, would take approximately 1.87 years at light speed. Traveling to Proxima Centauri, our nearest neighboring star, would require a journey of 4.25 years at light speed.

When contemplating the enormity of the universe, we often mention enormous figures, yet truly grasping the vast distances and countless celestial objects remains challenging.

To better understand the distances to exoplanets—[planets around other stars](#)—we can begin with the Milky Way galaxy, the vast cosmic stage where they reside.

The Milky Way and Beyond

The Milky Way is a gravitationally bound spiral galaxy containing hundreds of billions of stars. It is part of a much larger cosmic structure:

the observable universe, which contains about 2 trillion galaxies based on the deepest images captured so far. These galaxies are grouped into clusters and superclusters, forming a web-like structure across the universe, interspersed with immense dark voids.

Our galaxy alone is 100,000 light-years across and contains an estimated 100 to 400 billion stars. While this is vast, neighboring galaxies dwarf it in size. For example, the Andromeda galaxy spans approximately 220,000 light-years, and IC 1101, one of the largest known galaxies, stretches up to 4 million light-years.

Observations from [NASA's Kepler Space Telescope](#), suggest that nearly every star visible in the sky likely hosts at least one planet, with multi-planet systems being far more common. Given the hundreds of billions of stars in the Milky Way, the number of planets could be in the trillions. So far, more than 4,000 exoplanets have been confirmed through detections made by Kepler and other telescopes—both on Earth and in space—by observing small slices of our galaxy. Many of these exoplanets are small, rocky worlds, and some lie at distances where liquid water might exist on their surfaces.

Nearest Exoplanet: Proxima Centauri

The closest known exoplanet orbits Proxima Centauri, the star nearest to Earth, located a little over four light-years away (approximately 24 trillion miles). A flight there by jet, traveling at typical speeds, would take about 5 million years. This planet is likely small and rocky, but its close orbit around a flaring star reduces its chances of habitability.

The TRAPPIST-1 system, located about 40 light-years away, comprises seven Earth-sized planets orbiting a red dwarf star. Four of these planets lie in the habitable zone, where liquid water might exist on their surfaces. Computer models suggest that some of these planets have a high likelihood of being watery or icy worlds. Over the next few years, scientists hope to determine whether these planets possess atmospheres, oceans, or other signs of habitability.

One of the most distant exoplanets known within the Milky Way is Kepler-443 b. Traveling at light speed, reaching this planet would take 3,000 years. At a speed of 60 mph, the journey would take an astounding 28 billion years.

Reference: [Astronomy & Astrophysics 101: What Is a Light-Year?](#)

93. National Centres for the Arts in India

The Government of India established the Indira Gandhi National Centre for the Arts (IGNCA) as an autonomous body under the Ministry of Culture. Its mandate is to document, preserve, conserve, and disseminate Indian arts and cultural heritage. Also, it aims to train competent professionals to work in the specialized field of culture. IGNCA functions through its nine regional centers, each specializing in specific areas of research.

S.No	Location	Areas of specialization
1.	Varanasi (UP)	Agam Darshan
2.	Guwahati (Assam)	Northeast Culture Centre
3.	Bengaluru (Karnataka)	Civilisation and Performing Arts
4.	Ranchi (Jharkhand)	Tribal Heritage Studies
5.	Vadodara (Gujarat)	Modern Art

6.	Goa	Inter-Cultural Relationship
7.	Thrissur (Kerala)	Vaidik Parampara and Performing Studies
8.	Puducherry	Archaeological and Epigraphy Studies
9.	J & K	Shiva Darshan

The details of the grant provided to the IGNCA during the last 5 years is given below:

1. 2019-20: 46.40 Crores
2. 2020-21: 40.00 Crores
3. 2021-22: 53.30 Crores
4. 2022-23: 55.05 Crores
5. 2023-24: 109.10 Crores

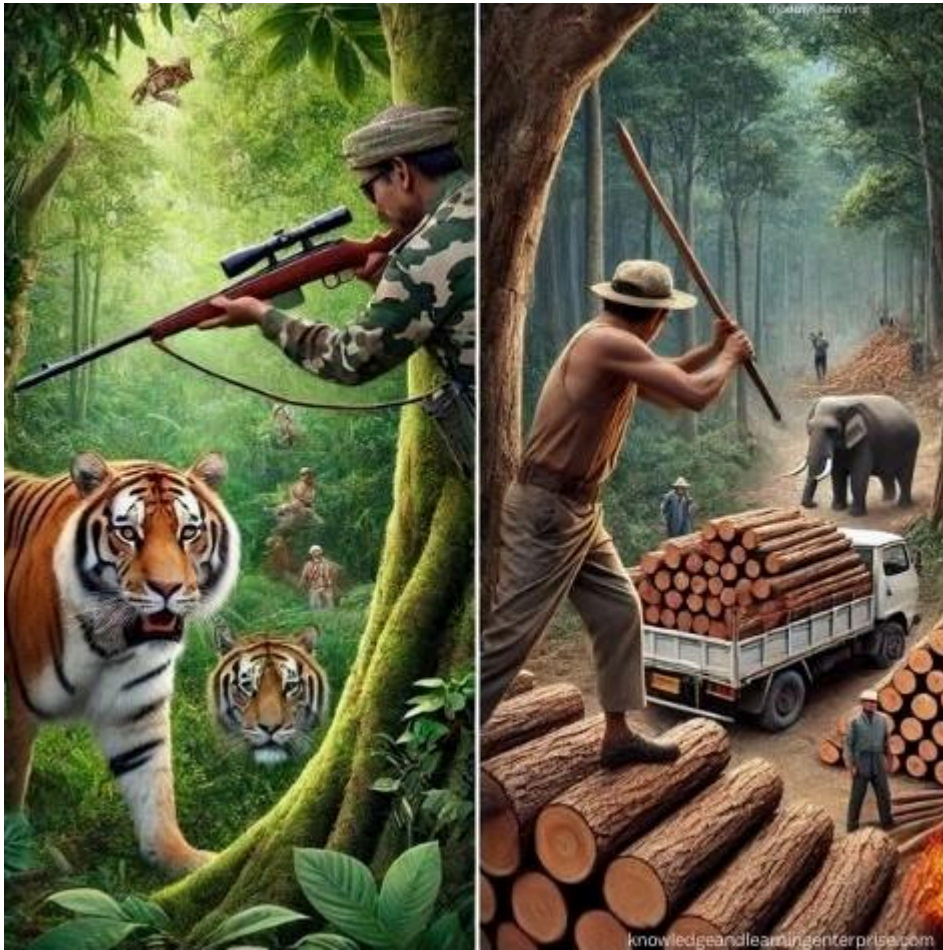
The Indira Gandhi National Centre for the Arts (IGNCA) received funds under grants that it has utilized fully as per the MoU signed between IGNCA and the Ministry of Culture. These funds support the functioning

of the Cultural Informatics Lab, Media Centre, Publication Unit, Academic Unit, and its nine Regional Centres across the country.

IGNCA has an adequate workforce, and its performance has been satisfactory. Over the years, IGNCA has successfully undertaken several projects and programs, including the installation of artworks in the new Parliament building, the installation of the Nataraja statue at Bharat Mandapam, the creation of the tribal wall in the President's Secretariat, the development of Prerna School in Vadnagar, Gujarat, cultural activities for the G-20 Summit at ITPO, New Delhi, and the digitization of Sampurnanand Sanskrit Vishwavidyalaya in Varanasi. IGNCA remains consistently engaged in research and publication related to India's art and cultural heritage.

Reference: [indira gandhi national centres for the arts \(ignca\)](#)

94. Controlling Illegal Wildlife Trade Cases



As per the records of the Wildlife Crime Control Bureau and based on cases reported by State Law Enforcement Agencies, there has been no increase in illegal wildlife trade cases during the last three years.

The following are the important steps taken by the Government to control of illegal wildlife trade:

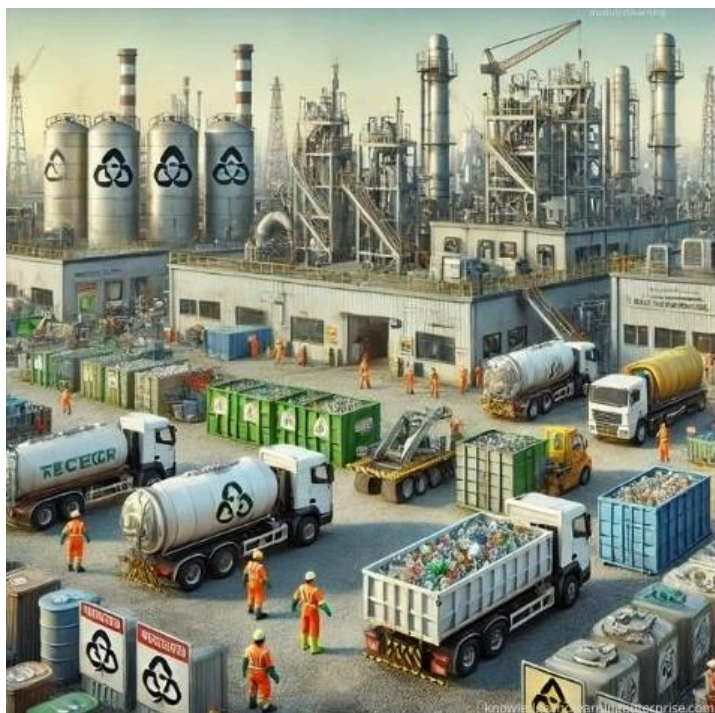
- i. The Wild Life (Protection) Act, of 1972 has been amended periodically to ensure better protection of wildlife.
- ii. The Wild Life Crime Control Bureau has been established to combat illegal trade in wildlife and its products.
- iii. The Wild Life Crime Control Bureau participates in global operations in coordination with INTERPOL.
- iv. Sensitization and capacity-building programs are conducted by the Wildlife Crime Control Bureau for enforcement agencies, including State Police and Forest Department officials, to strengthen efforts against wildlife crime.
- v. India is a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which regulates international trade in wildlife and its derivatives.
- vi. The provisions of CITES have been incorporated into the Wildlife (Protection) Act, of 1972.
- vii. Financial and technical assistance is provided to States and Union Territories under the Centrally Sponsored Scheme of Integrated Development of Wildlife Habitats to improve the conservation and management of wildlife and its habitats.

- viii. The National Tiger Conservation Authority (NTCA) has been established for the conservation of tigers and their habitats.

Reference: [Parliament Question:- Illegal Trading of Flora and Fauna](#)

*It's remarkable,
how far you can go,
when you don't give up.*

95. Import of Hazardous Waste



The Ministry of Environment, Forest and Climate Change (MoEF&CC) has notified the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 (HOWM Rules, 2016) under the Environment (Protection) Act, 1986, to ensure the safe storage, treatment, and disposal of hazardous wastes in an environmentally sound

manner without adverse effects on the environment and human health.

The HOWM Rules, 2016 allow the import of hazardous wastes listed in Part A of Schedule III for recycling, recovery, reuse, and utilization including co-processing. Import of hazardous waste is not permitted for disposal in India. The import of hazardous waste listed in Part A of Schedule III is

allowed only to actual users with permission from the MoEF&CC and the Directorate General of Foreign Trade license, if applicable.

Any import of hazardous waste without permission of the MoEF&CC by HOWM Rules, 2016 is treated as illegal, and under Schedule VII of the HOWM Rules, 2016, Ports and Customs Authority are entrusted with the responsibility of taking action against the importer for violations under the Indian Ports Act, 1908 or Customs Act, 1962.

As per the Annual inventory submitted by the State Pollution Control Boards (SPCBs)/ Pollution Control Committees (PCCs), about 5.47 lakhs MT of hazardous wastes was imported by entities located in 10 States namely Andhra Pradesh, Bihar, Gujarat, Jammu & Kashmir, Karnataka, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu and West Bengal. Under Schedule VII of the HOWM Rules, 2016, the SPCBs/PCCs are entrusted with the duties of granting & renewing Authorization, Monitoring compliance with various provisions of these rules, and taking action against the violation of these rules amongst other duties.

Reference: [Parliament Question:- Import of Hazardous Waste](#)

"Every word has consequences. Every silence, too."

Jean-Paul Sartre

96. Advancing Renewable Energy in India: Key Initiatives and Progress

India is taking significant strides to boost renewable energy capacity, aiming for a 500 GW non-fossil energy capacity by 2030. Here's a look at the recent developments and government initiatives driving this transformation:

Renewable Energy Capacity Expansion

- **Bidding Trajectory for Renewable Energy:** The Ministry of New & Renewable Energy (MNRE) has set a target for Renewable Energy Implementing Agencies to issue bids of 50 GW annually from FY 2023-24 to FY 2027-28.
- **100% FDI in Renewable Energy:** Up to 100% Foreign Direct Investment (FDI) is permitted under the automatic route, facilitating increased foreign participation in the renewable sector.
- **Inter State Transmission System (ISTS) Waiver:** ISTS charges have been waived for inter-state solar and wind power sales until June 2025, Green Hydrogen Projects until December 2030, and offshore wind projects until December 2032.

Policies and Regulations

- **Renewable Purchase and Consumption Obligations:** A trajectory for Renewable Purchase Obligation (RPO) and Renewable Consumption Obligation (RCO) has been set until 2029-30. Non-compliance by designated consumers will result in penalties under the Energy Conservation Act 2001.
- **Standard Bidding Guidelines:** Guidelines have been issued for tariff-based competitive bidding to procure power from grid-connected solar, wind, wind-solar hybrid, and firm & dispatchable renewable energy projects.

Government Schemes and Support

- **Key Schemes:** Initiatives like PM-KUSUM, PM Surya Ghar Muft Bijli Yojana, National High-Efficiency Solar PV Modules Programme, and National Green Hydrogen Mission have been launched to promote renewable energy.
- **Ultra Mega Renewable Energy Parks:** This scheme provides land and transmission infrastructure for large-scale installation of renewable energy projects.
- **Green Energy Corridor Scheme:** Funded for developing new transmission lines and sub-station capacity for renewable power evacuation.

- **Offshore Wind Energy Strategy:** A strategy outlines a bidding trajectory of 37 GW by 2030 and different business models for project development.

Infrastructure and Market Development

- **Transmission Infrastructure Plan:** A comprehensive transmission plan has been prepared to support the growing renewable energy trajectory till 2030.
- **Green Energy Open Access and GTAM:** The Electricity Rules, 2022, facilitate green energy access for consumers with a contract demand of 100 kW or more. The Green Term Ahead Market (GTAM) has been launched to support renewable energy trading.
- **Production Linked Incentive (PLI) Scheme:** With a budget of Rs. 24,000 crore, the PLI scheme aims to boost domestic manufacturing of High-Efficiency Solar PV Modules on a GW scale.

Grid Integration and Stability

- **Grid Integration Measures:** Plans for intra-state transmission networks and strong interconnections with ISTS schemes are underway to maintain grid reliability and stability.

- **Technical Standards and Compliance:** The CEA regulations ensure safe and secure grid operations, with verification by CTUIL and Grid-India/RLDCs before connecting new renewable plants.
- **Role of Renewable Plants in Grid Stability:** The Indian Electricity Grid Code mandates participation in frequency control, promoting hybrid renewable power plants and energy storage systems to mitigate variability.

These initiatives and measures, as stated by the Minister of State, Shri Shripad Naik, in the Rajya Sabha, underline India's commitment to renewable energy and its integration into the national grid, supporting sustainability and energy security.

Ref: [Per Capita Consumption of Energy](#)

Life is never easy; We have to make it easy, sometimes by ignoring something and sometimes by accepting something.

ANNEXURE-I

Details of energy supplied in the country during the last three years and current year (till October, 2024)

Year	Energy Supplied
	(MU)
2021-22	1,374,024
2022-23	1,505,914
2023-24	1,622,020
2024-25 (till October, 2024)	1,025,379

ANNEXURE-II

The details of source wise generation indicating the quantum and percentage of energy generated from renewable sources for the last three years and the current year (till October, 2024)

Fuel		2021-22		2022-23		2023-24		2024-25(Upto Oct,2024)	
		Generation (in Million Units)	% of Total Generation	Generation (in Million Units)	% of Total Generation	Generation (in Million Units)	% of Total Generation	Generation (in Million Units)	% of Total Generation
THERMAL	COAL	104148 7.43	69.81	114590 7.58	70.54	126090 2.62	72.50	760676. 37	68.87
	DIESEL/ HSD	117.24	0.01	229.71	0.01	400.58	0.02	256.98	0.02
	LIGNITE	37094.0 4	2.49	36188.3 4	2.23	33949.7 9	1.95	19839.2 7	1.80
	MULTI FUEL		0.00		0.00		0.00	0	0.00

	NAPTH A	0	0.00	0.83	0.00	0.03	0.00	0	0.00
	NATUR AL GAS	36015.7 7	2.41	23884.2 1	1.47	31295.9 1	1.80	23503.1 3	2.13
THERMAL Total		111471 4.48	74.72	120621 0.67	74.25	132654 8.93	76.28	804275. 75	72.82
NUCLEAR		47112.0 6	3.16	45861.0 9	2.82	47937.4 1	2.76	33095.5 4	3.00
HYDRO		151627. 33	10.16	162098. 77	9.98	134053. 92	7.71	109037. 18	9.87
Bhutan Import		7493.2	0.50	6742.4	0.42	4716.1	0.27	5087.2	0.46
Conventional Total		132094 7.07	88.54	142091 2.93	87.47	151325 6.36	87.01	951495. 67	86.15
Renewable Total		170912. 30	11.46	203552. 68	12.53	225834. 83	12.99	152960. 81	13.85

Grand Total	149185 9.37	100.00	162446 5.61	100.00	173909 1.19	100.00	110445 6.48	100.00
-------------	----------------	--------	----------------	--------	----------------	--------	----------------	--------

97. Enhancing Ethanol Blending in Petrol: Government Initiatives and Impact

Since 2014, the Indian Government has implemented numerous measures to boost ethanol blending in petrol. These initiatives aim to promote sustainable energy, reduce carbon emissions, and support agricultural communities. Here's an overview of the key steps taken:

Key Government Measures

1. **Expanded Feedstock Options:** The government has broadened the range of feedstock used for ethanol production, supporting diverse agricultural inputs.
2. **Administered Price Mechanism:** A regulated pricing system for the procurement of sugarcane-based ethanol under the Ethanol Blended Petrol (EBP) Programme ensures fair compensation for producers.
3. **GST Reduction:** The Goods and Services Tax (GST) rate on ethanol for the EBP Programme has been lowered to 5%, making the production process more cost-effective.
4. **Ethanol Interest Subvention Schemes (EISS):** Between 2018-22, these schemes supported ethanol production from molasses and grains, encouraging investment in ethanol infrastructure.

5. Long Term Offtake Agreements (LTOAs): Oil Marketing Companies (OMCs) have established agreements with Dedicated Ethanol Plants (DEPs), securing consistent supply chains.
6. Pradhan Mantri JI-VAN Yojana: Launched in 2019 and amended in 2024, this program provides financial support for integrated bio-ethanol projects using advanced biofuels and renewable feedstocks.
7. Biodiesel Blending Initiatives: Guidelines were issued for biodiesel blending with high-speed diesel, and the GST rate on biodiesel for blending was reduced from 12% to 5%.
8. National Policy on Biofuels: The 2018 amendment mandates a 5% blending of biodiesel in diesel, promoting greener fuel alternatives.

Promoting Compressed Biogas (CBG)

The government supports CBG production with financial aid for biomass procurement and pipeline infrastructure development. CBG sales are mandated in Compressed Natural Gas (Transport) and Piped Natural Gas (Domestic) segments to enhance its adoption.

Impact of Ethanol Blended Petrol (EBP) Programme

During the Ethanol Supply Year 2023-24 (as of 30.09.2024), the EBP Programme has led to significant achievements:

- Financial Benefits: Approximately Rs 23,100 crore were paid to farmers, aiding rural economies.
- Foreign Exchange Savings: The program saved over Rs 28,400 crore in foreign exchange.
- Crude Oil Substitution: More than 43 lakh metric tonnes of crude oil were substituted with ethanol.
- CO2 Emission Reduction: The program resulted in a net reduction of about 29 lakh metric tonnes of CO2 emissions.

These measures highlight the government's commitment to promoting ethanol blending, enhancing energy security, and fostering environmental sustainability.

Reference: [Government Initiatives for the Promotion of Biofuels](#)

98. Combating Urban Heat in Indian Cities: Initiatives and Developments

Urbanization significantly contributes to the warming of Indian cities, primarily due to reduced vegetation, the use of heat-retaining construction materials, and increased energy demands. As per the 12th Schedule of the Constitution of India, urban planning and development fall under the jurisdiction of Urban Local Bodies (ULBs) and Urban Development Authorities. The Government of India supports these efforts through various interventions and advisories.

Key Initiatives to Mitigate Urban Heat

- To combat Urban heat island effect, under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2,429 park projects worth ₹5,044.28 crore adding 5,044-acre of green spaces has been developed. Under AMRUT 2.0 so far, 1,729 Park projects worth ₹1,027.62 crore have been approved by the Ministry of Housing and Urban Affairs (MoHUA). Under AMRUT 2.0 so far, MoHUA has approved 3,078 water body rejuvenation projects worth ₹6,159.29 crore.
- MoHUA has issued the addendum to Model Building Bye-Laws (MBBL) -2016 on "[India Cooling Action Plan 2019](#)" as an Advisory to State.

- Further, [Urban Green Guidelines](#), 2014 have been released by MoHUA as a guidance document to the states.
- MoHUA has issued Urban and Regional Development Plans Formulation and Implementation ([URDPFI Guidelines](#)) through Chapter 5 - Urban Planning Approach. It advocates promotion of compact and green city approach to release more land for open spaces/green spaces and recreation purposes. Consequently, it will reduce the creation of urban heat islands.

MoHUA launched the Climate Smart Cities Assessment Framework (CSCAF) in 2019 after extensive consultations with all relevant stakeholders. The CSCAF provides a comprehensive assessment of a city's preparedness and response to climate change, focusing on aspects such as energy efficiency, water management, waste management, green cover, and climate adaptation strategies.

Cities Readiness and Climate Action

As per Cities Readiness Report 3.0 based on CSCAF assessment data ([CLIMATESMART CITIES ASSESSMENT FRAMEWORK \(CSCAF\) | NIUA](#))

- 95 cities have prepared disaster management plan including ward-level Hazard Risk, Vulnerability and Capacity Assessment based on NDMA guideline

- 85 Cities are meeting the prescribed URDPFI norm of more than 12% green cover within their municipal boundaries
- 76 cities have allocated a budget for rejuvenation & conservation of water bodies and open areas
- 41 indicated to have either developed or developing their Climate Action Plan

Climate Change Context and NATCOM Findings

National Communication (NATCOM) Cell, Ministry of Environment, Forest and Climate Change of India (MoEFCC) has informed that as per the 'Synthesis report: Climate Change 2023' of the Assessment Report 6 (AR6) of Intergovernmental Panel on Climate Change (IPCC), human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850-1900 in 2011-2020.

NATCOM Cell has further informed that according to the Third National Communication (TNC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2023, the country's average annual mean temperature during 1901-2022 shows an increasing trend of 0.64°C/ 100 years.

These initiatives and insights highlight ongoing efforts to mitigate urban heat and adapt to climate change, ensuring sustainable urban environments across India.

Reference: [Urban Heat Island Effect on Top Cities](#)

99. Impact of CBAM on Indian Steel Industry

The steel sector in India is deregulated, with the Government acting as a facilitator.

Steel exports are influenced by factors such as global market conditions, demand and supply dynamics, and the cost of raw materials like iron ore and coking coal, which are market-linked.

Data on the value of finished steel export to the European Union during the last five financial years is given next:



Finished Steel Export	
Year	Value (Rs Crores)
2019-20	10,692

2020-21	14,144
2021-22	32,149
2022-23	22,482
2023-24	29,534

Source: Joint Plant Committee (JPC)

The Government regularly monitors the steel industry, including exports, imports, and prices, and has implemented the following measures to support the Indian steel industry.

- i) In the Union Budget 2024-25, the Basic Customs Duty (BCD) on ferro-nickel and molybdenum ores and concentrates, key raw materials for the steel industry, was reduced from 2.5% to nil.
- ii) The BCD exemption on ferrous scrap and specified raw materials for the manufacture of Cold Rolled Grain-Oriented (CRGO) steel has been extended until 31.03.2026.
- iii) The Production Linked Incentive (PLI) Scheme for Specialty Steel has been introduced to encourage domestic manufacturing of specialty steel

and reduce imports by attracting capital investments. The scheme is expected to generate an additional investment of ₹27,106 crores and create a downstream capacity of approximately 24 million tonnes (MT) for specialty steel.

iv) The Domestically Manufactured Iron & Steel Products (DMI&SP) Policy has been implemented to promote the use of 'Made in India' steel for government procurement.

Reference: [impact of cbam on indian steel industry](#)

100. The Value of India's Pharmaceutical Market for FY 2023-24



The Department of Pharmaceuticals has established seven National Institutes of Pharmaceutical Education & Research (NIPERs), recognized as institutes of national importance, to provide postgraduate and doctorate education and conduct high-end research in various pharmaceutical specializations.

To foster Research & Development (R&D) and innovation, the Department has introduced the “National Policy on Research & Development and Innovation in the Pharma-MedTech Sector in India”, aimed at creating an ecosystem for innovation in pharmaceuticals and medical devices.

India's pharmaceutical market for FY 2023-24 is valued at USD 50 billion, with USD 23.5 billion attributed to domestic consumption and USD 26.5

billion to exports. The Indian pharma industry is the third largest globally by volume and 14th by value of production, offering a diversified product range, including generic drugs, bulk drugs, vaccines, biosimilars, and biologics.

According to National Accounts Statistics 2024 (Ministry of Statistics and Programme Implementation), the total output of the pharmaceuticals, medicinal, and botanical products industry was valued at ₹4,56,246 crore for FY 2022-23, with a value addition of ₹1,75,583 crore. The industry engaged 9,25,811 people during this period.

Research & Development (R&D) and innovation in the Pharma Sector is done by several institutions and organizations under various scientific Ministries/Departments. The Department of Pharmaceuticals has set up seven National Institutes of Pharmaceutical Education & Research (NIPERs) as institutes of national importance, which besides imparting postgraduate and doctorate education, conduct high-end research in various pharma specializations. Further, the Department has framed a “National Policy on Research & Development and Innovation in Pharma-MedTech Sector in India” to encourage R&D in pharmaceuticals and medical devices and to create an ecosystem for innovation in the sector for India to become a leader in drug discovery and innovative medical devices through incubating an entrepreneurial environment to build a robust ecosystem to ensure the holistic development of R&D and Innovation. The policy was notified on 18.08.2023.

Key Focus Areas of the Policy:

1. **Regulatory Environment:** Establishing a regulatory framework that facilitates innovation and product development while maintaining safety and quality standards.
2. **Incentives for Investment:** Encouraging private and public investments in innovation through fiscal and non-fiscal measures.
3. **Enabling Ecosystem:** Developing a strong institutional foundation to support cross-sectoral research and sustainable growth in the pharma and MedTech sectors.

The [full policy document](#) is available in the Gazette notification dated 18.08.2023.

Additionally, the Department has launched the Scheme for Promotion of Research & Innovation in the Pharma Sector (PRIP) with a financial outlay of ₹5,000 crore for the period 2023-24 to 2027-28, notified on 17.08.2023. The scheme aims to transform India's pharma and MedTech sector from a cost-based model to an innovation-driven model by enhancing research infrastructure.

Components of the PRIP Scheme:

Component A: Strengthening Research Infrastructure

- Establishing Centres of Excellence (CoEs) within the seven NIPERs to boost advanced research capabilities.

Component B: Promoting Research in the Pharma-MedTech Sector

- Providing financial assistance to companies and projects for in-house and academic R&D in six specified priority areas.

Further details of the scheme are available in the Gazette notification dated 17.08.2023 at: <https://pharmaceuticals.gov.in/schemes>.

The New Drugs and Clinical Trials Rules, 2019, notified on 19/03/2019, include provisions to encourage research, development, and innovation of new drugs in the country.

Key Features of the Rules

- Disposal of clinical trials and new drug applications, including approval, rejection, or requests for additional information, within 90 days.
- For applications to conduct clinical trials of new drugs or investigational new drugs as part of drug discovery and manufacture in India, disposal is required within 30 days.
- In cases where no communication is received from CDSCO within the prescribed timelines, the application is deemed approved.

- Provisions for accelerated or expedited approval processes for unmet medical needs, orphan drugs for rare diseases, and similar situations.
- Provisions for pre-submission and post-submission meetings with CDSCO for formal discussions and case-specific regulatory pathways.

For export, drugs must be manufactured under a valid manufacturing license as per the Drugs and Cosmetics Act and its rules, while also meeting the importing country's regulatory requirements.

The Department for Promotion of Industry & Internal Trade (DPIIT) has informed that no specific initiative has been taken exclusively for the pharmaceutical industry to strengthen its intellectual property (IP) regime. However, several broad-based initiatives have been undertaken to enhance the overall IP framework.

Key Initiatives

- Amendments to IP Rules:
 - Patent Rules: Since 2014, patent rules have been amended multiple times to streamline the filing and processing of patent applications, eliminate irregularities, address procedural delays, and simplify the patent-granting process. Key changes include:

- Fee rebates of at least 80% for filing and maintaining patent applications for startups, small entities (MSMEs), and educational institutions.
 - Expedited examination facilities for startups, small entities, applicants electing India as the international search authority, female applicants, and government institutions/departments.
 - Mandatory electronic submission of documents by patent agents and streamlined timelines for procedural steps.
 - Simplification of requirements for filing priority documents and Form 27 (regarding the working of patents).
 - Reduction of the timeline for submitting a request for examination from 48 months to 31 months to fast-track the examination process.
 - A 10% reduction in patent renewal fees if fees for at least four years are paid in advance electronically.
- Start-Ups Intellectual Property Protection (SIPP) Scheme:
 - Launched in 2016 and extended until 31.03.2026, this scheme supports the protection of patents, trademarks, and designs for

startups, Indian innovators, and educational institutions using services from Technology and Innovation Support Centers (TISCs) in India.

- Over 2,700 impaneled facilitators assist startups with filing applications.
- Recently revised, the scheme increased facilitation fees by at least 100%, making it more beneficial for applicants.

These initiatives collectively aim to enhance the IP ecosystem, promote innovation, and support startups and small businesses in protecting their intellectual property.

The revised applicable fee structure is as under:

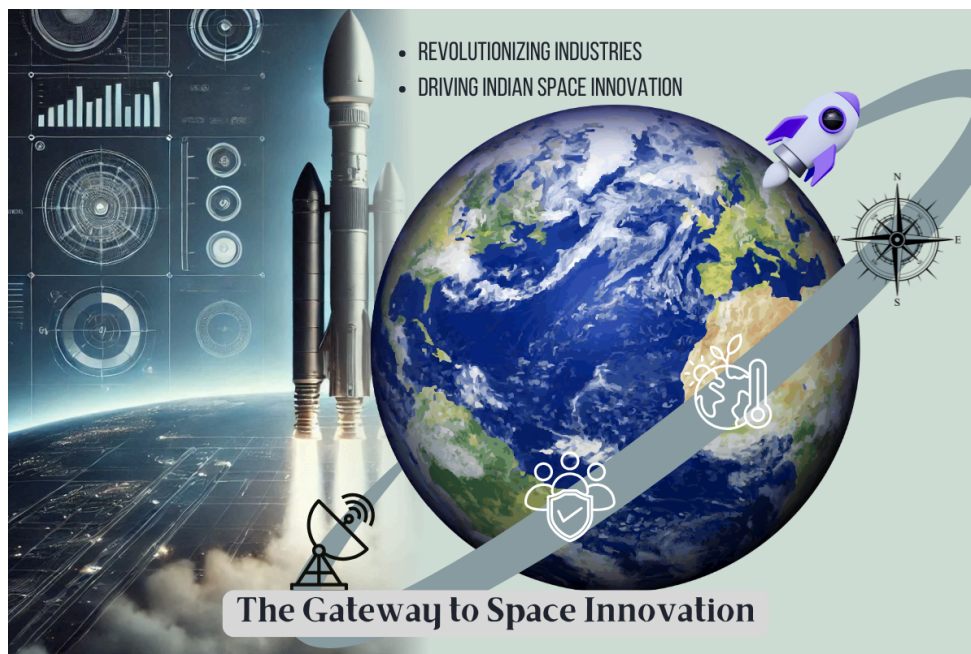
Stage of Payment		Patent Rupees	Trade Mark Rupees	Design Rupees
At the time of filing of applications		15000	3000	3000
At the time of final disposal of Applications	Without opposition	25000	5000	5000

	With opposition	35000	10000	10000
--	--------------------	-------	-------	-------

Reference: [India's pharmaceutical market for FY 2023-24 is valued at USD 50 billion with domestic consumption valued at USD 23.5 billion and export valued at USD 26.5 billion](#)

101. Revolutionizing Space Launch: Agnikul's Agnibaan and the Private Sector in India

Space technologies are revolutionizing industries like telecommunications, navigation, climate monitoring, and defense. Recognizing this potential, the Indian government has opened the space sector to private players, driving innovation, attracting investments, and boosting global competitiveness.



In a groundbreaking move, the Ministry of Science & Technology is backing Agnikul Cosmos Pvt. Ltd., Chennai, in developing and

commercializing the "Agnibaan" launch vehicle. This highly customizable two-stage rocket can deliver payloads of up to 300 kg to orbits 700 km high.

Government Support and Innovation

Supported by the Technology Development Board (TDB), under the Department of Science & Technology (DST), significant financial assistance has been provided for the development of a modular launch vehicle for 100 kg payloads. This initiative aims to make satellite launches more accessible, efficient, and affordable.

Agnikul Cosmos: Pioneers of Indian Space Tech

Agnikul Cosmos, based in Chennai and incubated at IIT-Madras, is an innovative Indian space technology start-up. Driven by 45 former ISRO scientists and over 200 engineers, the company made history with the maiden launch of Agnibaan SOrTeD, featuring the world's first single-piece 3D-printed rocket engine.

Agnibaan's Unique Offerings

Agnibaan aims to transform the satellite launch ecosystem with:

- Dedicated launches for payloads between 30 and 300 kg.
- Reduced lead times for launches to just two weeks.

- Global operational flexibility with mobile launch systems.
- Customizable missions for small satellites, eliminating inefficiencies of traditional rideshares.

Technological Advancements

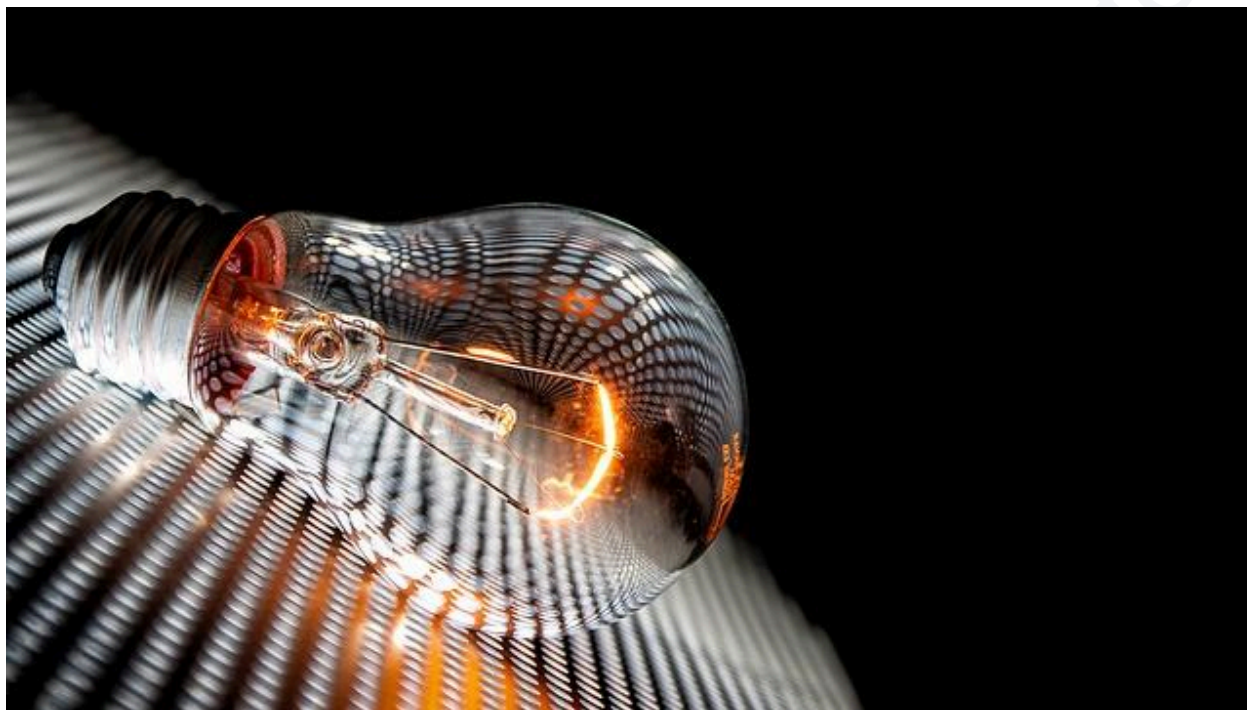
The Agnibaan project includes:

- India's first single-piece 3D-printed rocket engine.
- Mobile launch platforms for global deployment.
- Development of key subsystems like engines and launchpad infrastructure.
- Comprehensive testing facilities for quality assurance and subsystem evaluations.

Agnikul's Agnibaan represents a leap forward in space technology, offering tailored solutions and demonstrating India's potential in the international space industry. Through strategic support and cutting-edge innovation, Agnikul Cosmos is paving the way for a new era of accessible space missions.

Reference: [TDB-DST Supports Agnikul Cosmos in Revolutionizing India's Space Ecosystem](#)

102. Sustainable Energy Production With High-Performance Photocatalysts



A new study offers a roadmap for designing high-performance photocatalysts that can bring benefits ranging from sustainable energy production to environmental remediation.

2D materials have a high absorption coefficient, implying that they can efficiently absorb light and generate electron-hole pairs. This makes them promising candidates for photocatalytic applications. They also have tunable bandgap, reduced path length that charge carriers need to travel,

large surface area, and can be easily integrated into various device architectures allowing flexibility and scalability. However, they possess strongly bound excitons (bound state of an electron and an electron hole) and are thus ineffective in driving catalytic reactions that require free charge carriers.

Scientists from the Institute of Nano Science and Technology (INST), Mohali, an autonomous institute of Department of Science and Technology, theoretically studying the ground- and excited-state dynamics of bound electrons-hole pairs (excitons) in a heterostructure of a 2D material called metal-telluric-halide demonstrated that engineering of 2D materials that have high electrical resistivity (dielectric materials) is an efficient strategy to regulate their exciton binding energy (EBE) and could make them efficient catalysts.

In a paper published in the Journal of Physical Chemistry C, they elucidated how the application of a magnetic field accelerates charge separation of such materials by exerting opposing forces on photogenerated electrons and holes. They also enhanced EBE through an exciton diamagnetic shift, which could potentially hinder charge separation.

The highly delocalized exciton cloud extending over a few hundred unit cells reduces the EBE to kBT (25 meV—mili electron volts), promoting spontaneous exciton dissociation into free carriers.

The Scope

Prof. Abir De Sarkar and his PhD Scholars Mr. Amal Kishore and Ms Harshita Seksaria used the PARAM-Smriti supercomputing facility. This facility at NABI is supported by CDAC, Pune under the National Supercomputing Mission, Government of India. They showed that the GaTeCl/InTeBr vdW heterostructure efficiently splits water into hydrogen, providing a clean energy source. The same method can also enable the production of solar fuels like methanol. Additionally, its photocatalytic properties help degrade pollutants, contributing to cleaner air and water.

Reference: [New roadmap for high performance photocatalysts can help sustainable energy production](#)

Image: [Pixabay](#)

103. One Nation, One Election

Introduction



India's democratic framework thrives on the vibrancy of its electoral process, enabling citizens to actively shape governance at every level. Since independence, over 400 elections to the Lok Sabha and State Legislative Assemblies have showcased the Election Commission of India's commitment to fairness and transparency.

However, the fragmented and frequent nature of elections has sparked discussions on the need for a more efficient system. This has led to the resurgence of interest in the concept of "One Nation, One Election."

The idea, also known as simultaneous elections, proposes aligning the election cycles of the Lok Sabha and state assemblies. This would allow voters to cast their ballots for both tiers of government on the same day in their constituencies, though voting could still occur in phases across the country. By synchronising these electoral timelines, the approach aims to

address logistical challenges, reduce costs, and minimise disruptions caused by frequent elections.

The high-level committee report on simultaneous elections in India, released in 2024, provided a comprehensive roadmap for implementing this vision. Its recommendations were accepted by the Union Cabinet on 18th September 2024, marking a significant step towards electoral reform. Proponents argue that such a system could enhance administrative efficiency, reduce election-related expenditures, and promote policy continuity. As India aspires to streamline governance and optimize its democratic processes, the concept of "One Nation, One Election" has emerged as a key reform requiring thoughtful deliberation and consensus.

Historical Background

The concept of simultaneous elections is not a new idea in India. Following the adoption of the Constitution, elections to the Lok Sabha and all State Legislative Assemblies were conducted simultaneously from 1951 to 1967. The first general elections to the Lok Sabha and State Assemblies were held together in 1951-52, a practice that continued for three subsequent general elections in 1957, 1962, and 1967.

However, this cycle of synchronised elections was disrupted in 1968 and 1969 due to the premature dissolution of some State Legislative Assemblies. The Fourth Lok Sabha was also dissolved prematurely in 1970, with fresh elections held in 1971. Unlike the First, Second, and Third Lok

Sabha, which completed their full five-year terms, the Fifth Lok Sabha's term was extended until 1977 under Article 352 because of the declaration of Emergency. Since then, only a few Lok Sabha terms have lasted the full five years, such as the Eighth, Tenth, Fourteenth, and Fifteenth. Others, including the Sixth, Seventh, Ninth, Eleventh, Twelfth, and Thirteenth, were dissolved early.

Timelines of key milestones of various Lok Sabhas

Lok Sabha	Last date of poll	Date of constitution of Lok Sabha	Date of first sitting	Date of expiration of term (Article 83(2) of Constitution)	Date of dissolution of Lok Sabha	Overall Term (in days) (Col 6 - Col 4)	Overall Term (approx)
1	2	3	4	5	6	7	8
First	21-Feb-52	2-Apr-52	13-May-52	12-May-57	4-Apr-57	1787	5 years
Second	15-Mar-57	5-Apr-57	10-May-57	9-May-62	31-Mar-62	1786	5 years
Third	25-Feb-62	2-Apr-62	16-Apr-62	15-Apr-67	3-Mar-67	1782	5 years
Fourth	21-Feb-67	4-Mar-67	16-Mar-67	15-Mar-72	27-Dec-70	1382*	3 years & 10 months
Fifth	10-Mar-71	15-Mar-71	19-Mar-71	18-Mar-77	18-Jan-77	2132**	5 years & 10 months
Sixth	20-Mar-77	23-Mar-77	25-Mar-77	24-Mar-82	22-Aug-79	880*	2 years & 5 months
Seventh	6-Jan-80	10-Jan-80	21-Jan-80	20-Jan-85	31-Dec-84	1806	5 years
Eighth	28-Dec-84	31-Dec-84	15-Jan-85	14-Jan-90	27-Nov-89	1777	5 years
Ninth	26-Nov-89	2-Dec-89	18-Dec-89	17-Dec-94	13-Mar-91	450*	1 year & 3 months
Tenth	15-Jun-91	20-Jun-91	9-Jul-91	8-Jul-96	10-May-96	1767	5 years
Eleventh	7-May-96	15-May-96	22-May-96	21-May-01	4-Dec-97	561*	1 year & 6 months
Twelfth	7-Mar-98	10-Mar-98	23-Mar-98	22-Mar-03	26-Apr-99	399*	1 year & 1 month
Thirteenth	4-Oct-99	10-Oct-99	20-Oct-99	19-Oct-04	6-Feb-04	1570*	4 years & 4 months

*Mid-term polls were held. Dissolution took place before the elections.

**Extension due to proclamation of Emergency.

State Assemblies have faced similar disruptions over the years. Premature dissolutions and term extensions have become a recurring challenge. These developments have firmly disrupted the cycle of simultaneous elections, leading to the current pattern of staggered electoral schedules across the country.

High-Level Committee on Simultaneous Elections

The High-Level Committee on Simultaneous Elections, headed by former President Ram Nath Kovind, was constituted by the Government of India on 2nd September 2023. Its primary objective was to explore the feasibility of conducting simultaneous elections for the Lok Sabha and State Legislative Assemblies. The committee solicited extensive public and political feedback, and consulted with experts to analyse the potential benefits and challenges associated with this proposed electoral reform. This report presents a detailed overview of the committee's findings, its recommendations for constitutional amendments, and the anticipated impact of simultaneous elections on governance, resources, and public sentiment.

Key Takeaways

1. **Public Response:** The Committee received over 21,500 responses, with 80% in favour of simultaneous elections. The responses came from all corners of the country, including Lakshadweep, Andaman

and Nicobar, Nagaland, Dadra, and Nagar Haveli. The highest responses were received from Tamil Nadu, Maharashtra, Karnataka, Kerala, West Bengal, Gujarat, and Uttar Pradesh.

2. Responses from Political Parties: 47 political parties submitted their views. Of these, 32 parties supported simultaneous elections, citing benefits like resource optimization and social harmony. 15 parties raised concerns about potential anti-democratic effects and marginalization of regional parties.
3. Expert Consultations: The Committee consulted Former Chief Justices of India, Former Election Commissioners, and legal experts. A majority supported the concept of simultaneous elections, emphasizing the waste of resources and socio-economic disruptions caused by frequent elections.
4. Economic Impact: Business organizations like CII, FICCI, and ASSOCHAM supported the proposal, highlighting the positive impact on economic stability by reducing disruptions and costs associated with election cycles.
5. Legal and Constitutional Analysis: The Committee proposed amendments to Articles 82A and 324A of the Indian Constitution to enable simultaneous elections for the Lok Sabha, State Assemblies, and local bodies.

6. **Phased Approach to Implementation:** The Committee recommended implementing simultaneous elections in two phases:
 - o Phase 1: Synchronizing Lok Sabha and State Legislative Assemblies elections.
 - o Phase 2: Synchronizing elections for Municipalities and Panchayats with Lok Sabha and State Legislative elections within 100 days.
7. **Electoral Roll and EPIC Harmonization:** The Committee highlighted inefficiencies in electoral roll preparation by State Election Commissions and recommended creating a Single Electoral Roll and Single EPIC for all three tiers of government. This would reduce duplication and errors, safeguarding voter rights.
8. **Public Sentiment on Frequent Elections:** Public responses indicated significant concern about the negative impacts of frequent elections, such as voter fatigue and governance disruptions, which are expected to be mitigated by simultaneous elections.

Rationale for Simultaneous Elections

The points below are based on the findings of the report issued by the High-Level Committee on simultaneous elections, headed by former President Ram Nath Kovind:

- **Promotes Consistency in Governance:** Due to the ongoing cycle of elections in various parts of the country, political parties, their leaders, legislators, and both State and Central Governments often focus their efforts on preparing for upcoming elections rather than prioritizing governance. The adoption of simultaneous elections would refocus the government's attention towards developmental activities and the implementation of policies aimed at promoting the welfare of the masses.
- **Prevents Policy Paralysis:** The implementation of the Model Code of Conduct during elections disrupts routine administrative activities and developmental initiatives. This disruption not only hampers the progress of vital welfare schemes but also leads to governance uncertainty. Holding simultaneous elections would mitigate the prolonged enforcement of the MCC, thereby reducing policy paralysis and enabling continuous governance.
- **Mitigates Resource Diversion:** The deployment of a substantial number of personnel for election duties, such as polling officials and civil servants, can lead to significant diversion of resources from their core responsibilities. With elections conducted simultaneously, the need for frequent deployment would diminish, allowing government officials and public institutions to focus more on their primary roles rather than election-related tasks.

- **Preserves Regional Party Relevance:** Holding simultaneous elections does not undermine the role of regional parties. In fact, it encourages a more localized focus during elections, enabling regional parties to highlight their unique concerns and aspirations. This setup fosters a political environment where local issues are not overshadowed by national election campaigns, thus preserving the relevance of regional voices.
- **Enhances Political Opportunities:** Conducting elections simultaneously entails a more equitable allocation of political opportunities and responsibilities within political parties. Currently, it is not uncommon for certain leaders within a party to dominate the electoral landscape, contesting elections at multiple levels and monopolizing key positions. In the scenario of simultaneous elections, there arises greater scope for diversification and inclusivity among political workers representing various parties, allowing a wider range of leaders to emerge and contribute to the democratic process.
- **Focus on Governance:** The ongoing cycle of elections across the country diverts attention from good governance. Political parties focus more on election-related activities to secure victories, leaving less time for development and essential governance. Synchronised elections would allow parties to dedicate their efforts to addressing

the needs of the electorate, reducing instances of conflicts and aggressive campaigning.

- **Reduced Financial Burden:** Conducting simultaneous elections could significantly cut down the financial costs associated with multiple election cycles. This model reduces the expenditure related to the deployment of resources like manpower, equipment, and security for each individual election. The economic benefits include a more efficient allocation of resources and better fiscal management, fostering a conducive environment for economic growth and investor confidence.

The High-Level Committee on Simultaneous Elections, led by former President Ram Nath Kovind, has laid the groundwork for a transformative shift in India's electoral process. By aligning the election cycles of the Lok Sabha and State Legislative Assemblies, the committee's recommendations promise to address long-standing challenges associated with frequent elections, such as governance disruptions and resource wastage. The proposed phased approach to implementing simultaneous elections, along with constitutional amendments, could pave the way for a more efficient and stable electoral environment in India. With widespread public and political support, the concept of simultaneous elections stands poised to streamline India's democratic processes and bolster the efficiency of governance.

References

- [ONOE-HLC-Report](#)
- https://legalaffairs.gov.in/sites/default/files/simultaneous_elections/79th_Report.pdf
- [ANALYSIS OF SIMULTANEOUS ELECTIONS : THE "WHAT", "WHY" AND "HOW"](#)
- [One Nation, One Election](#)

104. Boosting Indian Shipbuilding: Government Initiatives and Progress



As of November 30, 2024, India's shipping fleet includes 1,552 Indian-flagged vessels, amounting to 13.65 million gross tons. To enhance domestic shipbuilding, the government has introduced several initiatives aimed at modernizing the industry, fostering sustainable practices, and promoting indigenous manufacturing. Here are the key measures:

Key Government Initiatives

1. **Enhanced Financial Assistance:** The Shipbuilding Financial Assistance Policy (SBFAP) has been amended to provide greater aid for constructing wind farm installation vessels and sophisticated dredgers. Specialized vessels can receive over ₹40 crores, while green fuel-powered vessels (e.g., Methanol, Ammonia, Hydrogen) receive 30% assistance, and those with electric or hybrid propulsion systems receive 20%.
2. **Local Procurement Mandate:** Under the Public Procurement (Preference to Make in India) Order, 2017, government bodies must procure ships costing less than ₹200 crores from Indian shipyards, promoting indigenous shipbuilding.
3. **Infrastructure Status for Shipyards:** Granted in April 2016, infrastructure status enables Indian shipyards to access cheaper long-term capital, reducing costs and supporting capacity expansion.
4. **Standard Tug Designs:** In November 2021, five variants of standard tug designs were released for major ports, ensuring procurement from Indian shipyards.
5. **Tendering and Right of First Refusal (RoFR):** Guidelines issued in May 2016 prioritize Indian shipyards in government tenders by granting them the RoFR, allowing them to match foreign bids. The

RoFR hierarchy was revised in 2023 to give preference to Indian-built, flagged, and owned vessels.

6. Atmanirbhar Bharat Scheme: Approved in 2021, this scheme allocates ₹1,624 crore in subsidies over five years, empowering Indian shipping companies in global tenders and bolstering domestic industry confidence.
7. Green Tug Transition Programme (GTTP): Launched to reduce carbon emissions, this program promotes environmentally sustainable tugboat operations, integrating advanced technologies to enhance industry competitiveness.
8. Harit Nauka Guidelines: Focused on inland vessels, these guidelines encourage the use of eco-friendly materials, energy-efficient designs, and sustainable practices, aligning with the vision of a greener shipping industry.
9. Global Tendering Policy: The RoFR policy remains active for government departments and PSUs acquiring vessels through global tenders, further stimulating demand for Indian shipbuilding.

Conclusion

These strategic initiatives underscore the government's commitment to bolstering the Indian shipbuilding sector, ensuring sustainable

development, and fostering technological advancements. With these efforts, India aims to become a leading player in the global shipbuilding market.

Reference: [Parliament Question: - Ship Building Industry](#)

Image: [Pixabay](#)

105. India Meteorological Department (IMD)

Due to climate change, annual temperatures are increasing globally, and the impact is reflected in the rising frequency and intensity of extreme weather events in various parts of the globe, including India.

The India Meteorological Department (IMD) issues various outlooks/forecasts/warnings for the public and disaster management authorities to prepare for extreme weather events and to adapt and mitigate various extreme weather-related risks. IMD started issuing Impact Based Forecasts (IBF), which details what the weather will do rather than what the weather will be. It contains the details of impacts expected from the severe weather elements and guidelines to the general public about do's and don'ts while getting exposed to severe weather.

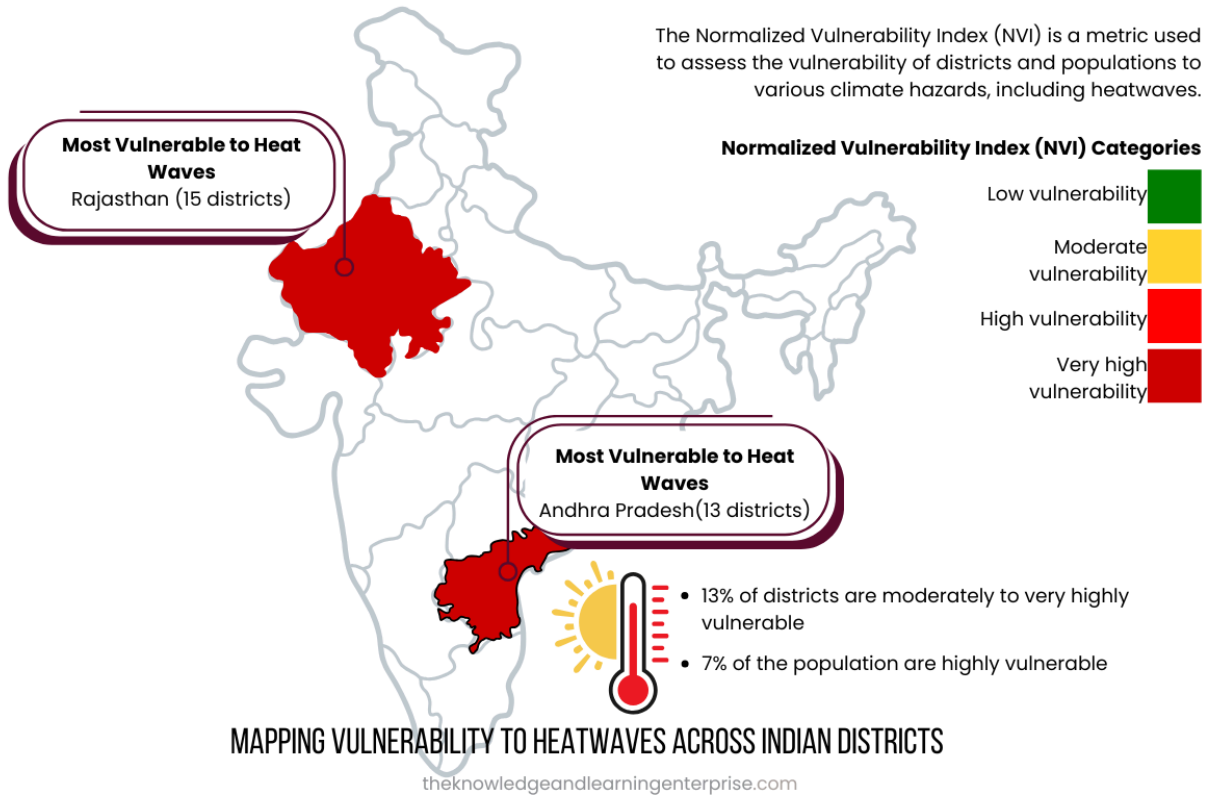
IMD has recently brought out a web-based online "Climate Hazard & Vulnerability Atlas of India" prepared for the thirteen most hazardous meteorological events, which cause extensive damages and economic, human, and animal losses. The climate hazard and vulnerability atlas will help state government authorities and disaster management agencies plan and take appropriate action to tackle various extreme weather events. This product is useful in building Climate Change resilient infrastructure also.

IMD has launched seven of its services (Current Weather, Nowcast, City Forecast, Rainfall Information, Tourism Forecast, Warnings, and Cyclone) with the 'UMANG' Mobile App for use by the public. Moreover, IMD developed a mobile App, 'MAUSAM' for weather forecasting, 'Meghdoot' for Agromet advisory dissemination, and 'Damini' for lightning alerts. The common Alert Protocol (CAP) developed by the National Disaster Management Authority (NDMA) is also being implemented to disseminate warnings by the IMD.

Guidelines for preparedness are finalized in collaboration with the NDMA and respective State Governments and are already implemented successfully for extreme weather events such as cyclones, heatwaves, thunderstorms, and heavy rainfall.

Percentage of districts and populations affected by disastrous weather events in different categories of vulnerability scales based on the Normalized vulnerability index for eleven of thirteen climate hazards are prepared.

The vulnerability atlas for heatwaves indicates that 13% of the districts and 15% of the population are moderate to very highly vulnerable, and 4% of the districts and 7% of the population are highly vulnerable. The States of Rajasthan (15 districts) and Andhra Pradesh (13 districts) are the most vulnerable to heatwaves.



Reference: [parliament question: phenomenon of el nino-southern oscillation](#)

106. Promoting Private Sector in India's Space Environment

Enhancing Private Sector Involvement and Startup Growth in India's Space Sector

Introduction

The Government of India has implemented several strategies to boost the participation of the private sector and foster the growth of startups in the space industry. These initiatives aim to create a robust and thriving space ecosystem in India.

Liberalization of the Space Sector

The Indian government has liberalized the space sector, allowing private companies to engage in comprehensive space activities. This move encourages innovation and competition within the industry.

Establishment of IN-SPACe

The Indian National Space Promotion and Authorization Centre (IN-SPACe) has been set up within the Department of Space to promote, authorize, and oversee activities by Non-Government Entities (NGEs) in the space sector.

Introduction of the Indian Space Policy, 2023

The Indian Space Policy, 2023 provides regulatory certainty to stakeholders involved in space activities, fostering a conducive environment for a thriving space ecosystem.

Supportive Schemes by IN-SPACe

IN-SPACe has rolled out various schemes to support and nurture the private sector, including:

- Seed Fund Scheme
- Pricing Support Policy
- Mentorship Support
- Technical Centre and Design Lab for NGEs
- Skill Development in the Space Sector
- Utilization Support of ISRO Facilities
- Technology Transfer to NGEs
- IN-SPACe Digital Platform for stakeholder engagement

Growth in Space Startups

The number of space startups in India has surged from just one in 2014 to approximately 266 today, showcasing significant growth and interest in the sector.

Decadal Vision and Strategy

IN-SPACe has announced a decadal vision and strategy for India's space economy, aiming to increase India's share in the global space economy.

Rs. 1,000 Crore Venture Capital Fund

The Union Cabinet has approved the establishment of a Rs. 1,000 crore Venture Capital Fund dedicated to supporting India's burgeoning space sector.

MoUs with Non-Government Entities

IN-SPACe has signed around 71 Memorandums of Understanding (MoUs) with NGEs to provide support for developing space systems and applications, enhancing industry participation in manufacturing launch vehicles and satellites.

Revised FDI Policy

To facilitate easier access to foreign capital for Indian NGEs, the Central Government has introduced a revised Foreign Direct Investment (FDI) policy for the space sector.

Public-Private Partnership Initiatives

IN-SPACE has initiated the establishment of an Earth Observation (EO) system under a Public-Private Partnership (PPP) model, inviting Expressions of Interest (EOI) from NGEs.

Small Satellite Launch Vehicle (SSLV) Technology Transfer

The process of transferring Small Satellite Launch Vehicle (SSLV) technology to Indian entities is underway, with requests for proposals (RFP) invited from shortlisted bidders.

Access to Orbital Resources

IN-SPACE has announced opportunities for NGEs to access Indian orbital resources, with one Indian entity already selected.

Conclusion

These comprehensive initiatives by the Indian government and IN-SPACe are designed to enhance private sector involvement, support the growth of startups, and solidify India's position in the global space industry.

Reference: [parliament question: promotion of private sector in space sector](#)

107. IUCN Red List of Threatened Species, Red List Index & Kunming-Montreal Global Biodiversity Framework

The IUCN Red List of Threatened Species, a global initiative, applies quantitative criteria to evaluate species extinction risk (IUCN, 2012). As of 2024, it has assessed a staggering 163,040 species, categorizing each into one of nine categories: Extinct, Extinct in the Wild, Critically Endangered, Endangered, and Vulnerable (representing the 'threatened' categories), Near Threatened, Least Concern, Data Deficient, and Not Evaluated.

The Red List Index, an indicator of the aggregate extinction risk of all species within a given species group, is derived annually from the IUCN Red List of Threatened Species (IUCN, 2024). It holds a significant role as the official indicator for SDG 15.5 (UNSD, 2024), underlining the importance of our work in achieving sustainable development goals, and is a headline indicator for Goal A of the KMGBF (CBD,2024).

The Kunming-Montreal Global Biodiversity Framework (KMGBF) is a testament to our collective efforts, a global plan for biodiversity adopted by the Fifteenth Conference of the Parties to the Convention on Biological Diversity in December 2022 (CBD, 2022).

Reference :

- *LIVING NATURE IN A GLOBALISED WORLD IUCN Flagship Report no.2*
- [IUCN](#) Library

108. NITI Aayog Releases Report on “S.A.F.E. Accommodation: Worker Housing for Manufacturing Growth”

NITI Aayog released a report on “S.A.F.E. Accommodation - Worker Housing for manufacturing growth”. This comprehensive report explores the crucial role of secure, affordable, flexible, and efficient (S.A.F.E.) accommodations for industrial workers in boosting India’s manufacturing sector. It identifies key challenges, offers actionable solutions, and highlights the pivotal interventions required to scale up such housing facilities across the country.

In the Union Budget 2024-25, the Hon’ble Finance Minister emphasized the importance of rental housing with dormitory-style accommodations for industrial workers. This initiative, to be executed under a Public-Private Partnership (PPP) model with Viability Gap Funding (VGF) support and commitments from anchor industries, underscores the government’s commitment to addressing a critical component of India’s manufacturing ecosystem.

India’s Manufacturing Aspirations: A Vision for *Viksit Bharat*

India is poised to elevate its manufacturing sector’s contribution to GDP from the current 17% to 25% as part of its long-term vision of achieving *Viksit Bharat* by 2047. This ambitious goal is aligned with the country’s objectives of becoming a global manufacturing hub under

flagship initiatives such as Make in India and Atmanirbhar Bharat. Realizing this vision demands a robust workforce strategy, including sufficient, proximate, and affordable housing for industrial workers.

According to the Economic Survey 2023-24, India needs to generate 7.85 million jobs annually until 2030 to sustain its economic growth trajectory. A significant portion of these jobs will come from the manufacturing sector, which is increasingly characterized by large-scale mega factories. These facilities require a centralized workforce, often composed of migrant workers, to maintain competitiveness and achieve economies of scale.

Inadequate housing near industrial hubs is a major bottleneck. Poor housing conditions lead to high attrition rates, reduced productivity, and workforce instability. Moreover, the lack of suitable accommodations restricts the migration of workers, particularly women, thereby limiting the sector's growth potential.

India's manufacturing sector is at a critical juncture. As the country progresses towards becoming a \$5 trillion economy, addressing worker's accommodation challenges is a priority. Inflexible regulations, financial constraints, and inadequate private sector participation have created significant gaps in the availability of quality housing.

The S.A.F.E. accommodation initiative offers a comprehensive framework to bridge these gaps. By aligning regulatory and financial frameworks, India can unlock the potential for sustainable worker housing solutions that bolster the manufacturing ecosystem, enhance workforce productivity, and attract global investments.

Why S.A.F.E. Accommodation Matters

Providing S.A.F.E. accommodations for industrial workers is essential to addressing challenges associated with workforce housing. The report identifies several benefits:

1. **Enhancing Workforce Productivity and Retention:** Proximate and well-designed housing improves workers' quality of life, reduces commute times, and enhances overall productivity. This leads to lower attrition rates and recruitment costs, ensuring a stable and skilled workforce for factories.
2. **Attracting Global Investments:** Multinational corporations and global investors increasingly evaluate worker welfare and operational efficiency when making investment decisions. High-quality accommodations demonstrate India's commitment to international standards, thereby making the country a preferred destination for manufacturing investments.
3. **Aligning with Global Labour Standards:** Adherence to international labour standards that prioritize adequate and safe worker housing enhances India's reputation and competitiveness in the global market. This

alignment fosters stronger partnerships with international firms and opens new business opportunities.

4. Creating a Win-Win-Win Scenario:

- Workers benefit from improved living conditions, leading to higher job satisfaction and reduced turnover rates.
- Companies gain from a more stable, productive workforce and reduced labour costs.
- The Government achieves sustainable urban development, increased foreign investment, and a globally competitive manufacturing sector.

Challenges in Scaling Up Worker Accommodation

The report highlights several challenges that hinder the development of worker accommodations:

1. **Restrictive Zoning Laws:** Residential developments are often prohibited in industrial zones unless explicitly permitted, forcing workers to live far from their workplaces. This increases commute times and costs, impacting productivity and retention.
2. **Conservative Building Bye-Laws:** Low Floor Area Ratios (FAR) and other inefficient land-use regulations limit the potential for high-capacity housing on available land.

3. **High Operating Costs:** Hostel accommodations in industrial zones are often classified as commercial establishments, leading to higher property taxes and utility rates. These increased costs discourage private sector participation.

4. **Financial Viability:** High capital costs and low returns make large-scale worker accommodation projects unattractive to private developers. Coordination challenges also arise, as industrial hubs require synchronized investments in housing, infrastructure, and industries to succeed.

Proposed Solutions: Regulatory Recommendations

To address regulatory challenges, the report recommends:

1. **Reclassify Worker Accommodations:** Designate S.A.F.E. accommodations as a distinct category of residential housing to ensure:
 - Residential property tax, electricity, and water tariffs apply.
 - GST exemptions for accommodations meeting specified criteria (e.g., ₹20,000 per person per month for a continuous stay of 90 days).
2. **Streamline Environmental Clearances:** Include S.A.F.E. accommodations under the exemptions provided for industrial sheds, schools, colleges, and

hostels in the draft notification issued by the Ministry of Environment, Forest, and Climate Change (MoEF&CC).

3. **Promote Gender-Inclusive Policies:** Encourage the development of accommodations suitable for workers, addressing their specific safety and welfare needs.

4. **Flexible Zoning Laws:** Amend zoning regulations to allow mixed-use developments near industrial hubs, facilitating worker housing close to workplaces.

Proposed Solutions: Financial Recommendations

To overcome financial barriers, the report suggests:

1. Viability Gap Funding (VGF):

- Provide up to 30%-40% of project costs (excluding land) through VGF support. This includes 20% from the Department of Economic Affairs (DEA) and 10% from the sponsoring nodal ministry, with additional contributions from state governments.
- Amend Annexure 3 of the VGF scheme to include affordable rental housing as an eligible sector.

2. **Competitive Bidding:** Implement transparent bidding processes to determine VGF support, ensuring efficiency and cost-effectiveness.

3. Retrofitting Existing Facilities: Leverage VGF to upgrade brownfield worker accommodations, enhancing their safety, capacity, and utility.

Conclusion

The provision of S.A.F.E. accommodation is not merely a welfare initiative but a strategic imperative for India's economic growth. It addresses critical challenges in workforce retention, productivity, and global competitiveness, while fostering sustainable urban development.

By implementing the recommendations outlined in this report, India can create a robust ecosystem for industrial worker housing, enabling the manufacturing sector to thrive and contributing significantly to the nation's Viksit Bharat vision. It is now imperative for all stakeholders—government, industry, and private developers—to collaborate and take decisive action to make S.A.F.E. accommodations a reality.

The Report may be accessed online at the following link: [SAFE Accommodation](#)

Reference: [Press Information Bureau](#)

109. Understanding Jevons Paradox and Pareto Efficiency

Jevons Paradox

Jevons Paradox describes a phenomenon where advancements in technology improve the efficiency of resource usage. However, as the cost of using that resource decreases, it leads to an increase in demand. As a result, overall resource consumption rises instead of falling, defying expectations of reduced usage.

Pareto Efficiency

Pareto Efficiency refers to an optimal allocation of resources within an economy. In this state, it's impossible to improve one outcome without causing a disadvantage to at least one other outcome. Essentially, the economy operates at its maximum efficiency level, balancing the distribution of goods and resources.

Source: Living Nature in a Globalised World - IUCN Flagship Report No. 2

Incorporating these concepts into sustainable development discussions is crucial for understanding the complexities of resource management in our globalized environment.

Reference: [Agriculture and conservation](#)

110. India State of Forest Report 2023

GOI released the 'India State of Forest Report 2023 (ISFR 2023)' today at Forest Research Institute, Dehradun. The Forest Survey of India (FSI) has brought out the ISFR biennially since 1987. FSI conducts an in-depth assessment of the country's forest and tree resources. It is based on the interpretation of remote sensing satellite data and field-based National Forest Inventory (NFI). Consequently, ISFR publishes the results. The India State of Forest Report 2023 is the 18th such report in the series.

The report contains information on forest cover, tree cover, and mangrove cover. Additionally, it also covers growing stock, carbon stock in India's forests, instances of forest fire, agroforestry, etc. ISFR reports unique thematic information on forest cover and essential characteristics of forests. The objective is to present a detailed picture of forest health at the country level. As per the present assessment, the total Forest and Tree cover is 8,27,357sq km, which is 25.17 percent of the country's geographical area. The Forest Cover has an area of about 7,15,343sq km (21.76%), whereas the Tree Cover has an area of 1,12,014 sq km (3.41%).

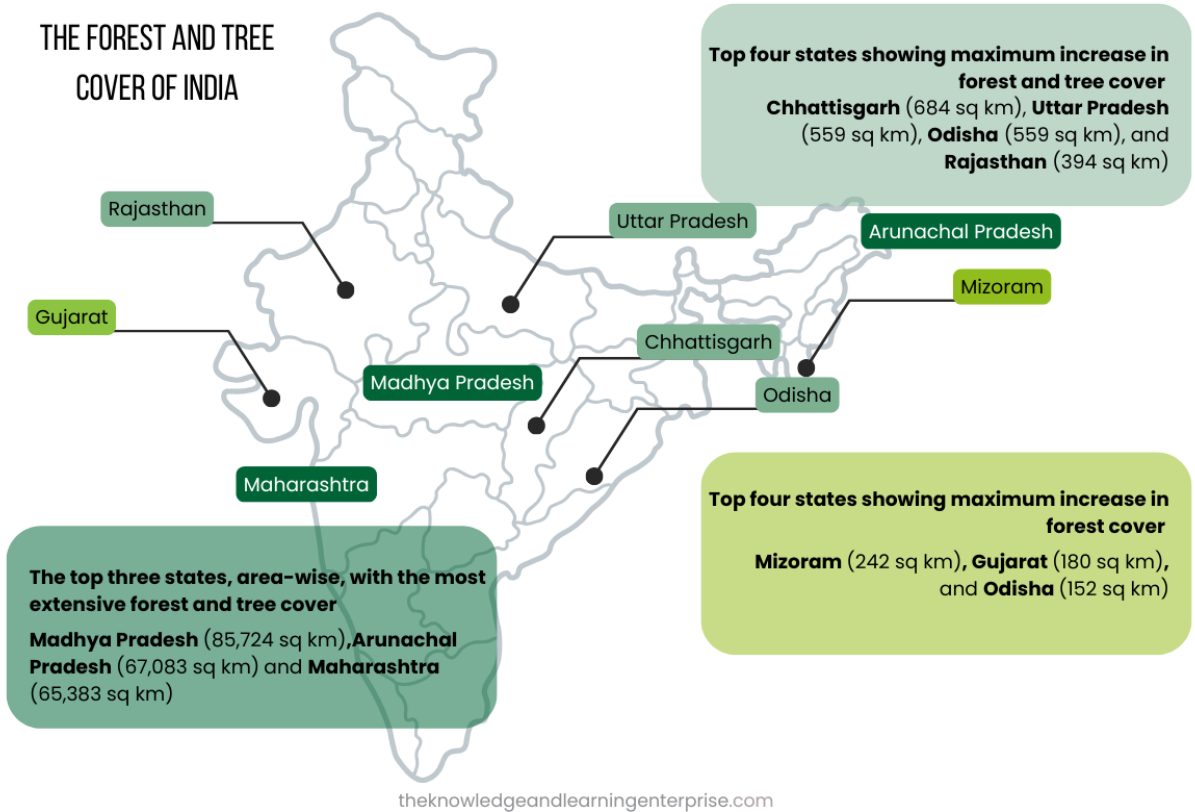
MAJOR FINDINGS

Forest and Tree Cover

- The forest and tree cover of the country is 8,27,357 sq km, which is 25.17 percent of the geographical area of the country, consisting of 7,15,343 sq km (21.76%) as forest cover and 1,12,014 sq km (3.41%) as tree cover.

- As compared to the assessment of 2021, there is an increase of 1445 sq km in the forest and tree cover of the country, which includes 156 sq km increase in the forest cover and 1289 sq km increase in tree cover.
- The top four states showing the maximum increase in forest and tree cover are Chhattisgarh (684 sq km), Uttar Pradesh (559 sq km), Odisha (559 sq km), and Rajasthan (394 sq km). Their significant contributions are a testament to the collective efforts in forest management. The top three states showing the maximum increase in forest cover are Mizoram (242 sq km), Gujarat (180 sq km), and Odisha (152 sq km).

The top three states, area-wise, with the most extensive forest and tree cover are Madhya Pradesh (85,724 sq km), followed by Arunachal Pradesh (67,083 sq km) and Maharashtra (65,383 sq km). Their conservation efforts have led to these impressive numbers.



Forest Cover

Area-wise, the top three states with the largest forest cover are as follows:

- Madhya Pradesh (77,073 sq km)
- Arunachal Pradesh (65,882 sq km)
- Chhattisgarh (55,812 sq km)

In terms of forest cover percentage with respect to total geographical area, Lakshadweep (91.33 percent) has the highest forest cover, followed by Mizoram (85.34 percent) and Andaman & Nicobar Island (81.62 percent).

The present assessment also reveals that 19 states/UTs have forest cover above 33 percent of the geographical area. Eight states/UTs, namely Mizoram, Lakshadweep, A & N Island, Arunachal Pradesh, Nagaland, Meghalaya, Tripura, and Manipur, have forest cover above 75 percent.

Mangrove Cover and Other Data

The total mangrove cover is 4,992 sq km in the country. Mangroves are vital ecosystems that provide a range of ecological services, including coastal protection, carbon sequestration, and habitat for numerous species. The preservation of these mangroves is crucial for the overall health of our forests and the sustainability of our environment.

- The total growing stock of India's forest and trees outside forests is estimated as 6430 million cum. All in all 4479 million cum is inside the forests and 1951 million cum is outside the forest area. Present assessment reports an increase of 262 million cum of total growing stock as compared to the previous assessment. This includes an increase of 91 million cum inside the forest and 171 million cum outside the forest area.
- The country's bamboo-bearing area has been estimated at 1,54,670 sq km. Compared to the last assessment done in 2021, the bamboo area has increased by 5,227 sq km.

- The total annual potential production of timber from trees outside the forest has been estimated as 91.51 million cum.
- The total carbon stock in the country's forests is estimated to be 7,285.5 million tonnes in the present assessment. Markedly, this is an increase of 81.5 million tonnes compared to the last assessment.
- Regarding the status of achieving the target under tender NDC related to carbon sequestration, the current assessment shows that India's carbon stock has reached 30.43 billion tonnes of CO₂ equivalent. This indicates that compared to the base year of 2005, India has already reached 2.29 billion tonnes of additional carbon sink as against the target of 2.5 to 3.0 billion tonnes by 2030.

Data Relevance

Besides providing vital information for monitoring the country's forest and tree resources, the ISFR data is a useful information source. Policymakers, planners, state forest departments, and research organizations use this data. Additionally, the line agencies involved in various developmental works also benefit from this information. Academicians, civil society, and others interested in natural resource conservation and management, too, seek such data.

Reference: [Union Minister Bhupender Yadav Releases India State of Forest Report 2023](#)

111. KeyTerms from the Cyber Security Economics for Emerging Markets



01. Critical infrastructure: Systems and assets, whether physical or virtual, that are vital to the nation, and whose incapacity or destruction would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters (NIST, n.d.).

02. Cyber: Refers to both information and communications networks (NIST, n.d.). The prefix "cyber" is etymologically rooted in the Greek definition of *kubernetes*, which implies the interface and interaction of the biological and the mechanical (Van Puyvelde and Brantly 2019).
03. Cyber capability: A system's potential to maintain the confidentiality, integrity, and availability of computers, networks, and their resident data or data in transit. Cyber capability is a combination of mutually reinforced technical, physical, and procedural controllers and measures (NIST, n.d.; Van Puyvelde and Brantly 2019).
04. Cyber incident or cyber event: An event or the end result of any single unauthorized effort taken using an information system (for example, computer technology) or network that resulted in an actual or potentially nationally relevant adverse effect on any of the three layers that constitute cyberspace, including information systems, networks, and/or the information residing therein (Harry and Gallagher 2023; NIST, n.d.).
05. Cyber incident response: Response to threats and the mitigation of violations of cybersecurity policies and recommended practices. Incident response allows victims to detect, contain, and recover from security incidents (NIST, n.d.; Taddeo 2019; Woods et al. 2023).
06. Cyber risk: "Risk" describes possible negative consequences (harm) weighted by the probability of occurrence, and "cyber" restricts the

scope to incidents caused by logical (as opposed to physical) force (Woods and Böhme 2021). The harm could be related to the loss of confidentiality, integrity, or availability of information, data, or information (or control) systems and reflect the potential adverse impacts on organizational operations (mission, functions, image, or reputation) and assets, individuals, other organizations, and the nation (NIST, n.d.).

07. Cyber threat: Any circumstance or event with the potential to have an adverse impact on victims' operations in cyberspace. It is also the potential for a threat source to exploit a particular information system vulnerability successfully (NIST, n.d.).
08. Cyberattack: Malicious activity attempting (successfully or not) to gain control of an information system without permission, to disrupt, collect, disable, destroy, degrade, or deny information system infrastructure or the information itself (NIST, n.d.).
09. Cyberattack surface: The set of points on the boundary of a cyber system, a cyber system element, or a cyber environment where an attacker can try to enter, cause an effect on, or extract data from that system, system element, or environment (NIST, n.d.).
10. Cybersecurity: Systemic security in cyberspace to ensure the availability, integrity, authentication, confidentiality, and nonrepudiation of all components of cyberspace, including systems,

information, and data. Instruments for achieving cybersecurity include any technology, measure, or practice that aims at preventing cyber incidents or mitigating their impact (IBM 2023; Van Puyvelde and Brantly 2019).

11. Cybersecurity awareness: A learning process that aims to focus attention on security and change individual and organizational attitudes to realize the importance of cybersecurity and the adverse consequences of its failure (NIST, n.d.).
12. Cybersecurity domains: At a high level of abstraction, cybersecurity goods and services can be bundled into robustness of digital systems (secured by design systems), resilience of digital systems (sustainable systems), and incident response capabilities (Taddeo 2019).
13. Cybersecurity resilience: The ability of an information system to continue to: (1) operate under adverse conditions or stress, even if in a degraded or debilitated state, while maintaining essential operational capabilities; and (2) recover to an effective operational posture in a timeframe consistent with mission needs (NIST, n.d.).
14. Cybersecurity robustness: The ability of cybersecurity measures to operate correctly and reliably across a wide range of operational conditions, including threats (NIST, n.d.). Robustness is also described as the difference between the expected and actual behavior of a system (Taddeo 2019).

15. Cyberspace: A physical and virtual domain on a par with the other domains of land, sea, air, and space, which allows for human interactions and forms the Cybersecurity Economics for Emerging Markets foundation of modern life. Unlike its counterpart domains, cyberspace is entirely made by humans whose interactions form a giant grid of networks called "cyberspace," which depends on physical, logical (code), and human structures to operate. The centrality of humans in cyberspace makes social scientific approaches essential to its study. This comprehensive definition was formed by blending descriptions from academic scholars and government agencies, like the US Department of Defense, Van Puyvelde and Brantly (2019), and Demchak and Dombrowski (2013).
16. Cyberspace layers: The cyber persona (user), logical (code), and physical (infrastructure) layers.
17. Disruptive cyber incident: A cyber incident that impedes the normal operation of the targeted information systems (Harry and Gallagher 2018).
18. Exploitive cyber incident: A cyber incident designed to access or exfiltrate information from information systems illicitly (Harry and Gallagher 2018).

19. Threat intelligence: Threat information that has been aggregated, transformed, analyzed, interpreted, or enriched to provide the necessary context for decision-making processes (NIST, n.d.).

20. Vulnerability: Weakness in an information system, application, network, system security procedures, internal controls, or implementation that could be exploited or triggered by a threat source (NIST, n.d.).

Source: [CYBER SECURITY ECONOMICS FOR EMERGING MARKETS](#)

Image: [Pixabay](#)

112. Science Essential



Why does eating less slow ageing?

A component of bile called lithocholic acid, which is made by gut bacteria and helps to digest fat, can extend the lifespan of some animals. Researchers found, in mice, that levels of the acid rise during calorie restriction and that it activates a protein called AMPK — which scientists have already linked to the health benefits of eating less. When the team fed lithocholic acid to nematodes (*Caenorhabditis elegans*) and fruit flies (*Drosophila melanogaster*), the animals lived significantly longer than those that had not been given it. There is no evidence yet that taking lithocholic acid would have the same effect in humans — and at high doses, it could be toxic.

Reference: [Nature](#)

Stay Connected With Knowledge and Learning

*Thank you for exploring the first issue of The Knowledge & Learning Digest Part 1, brought to you by **The Knowledge and Learning Enterprise**. Our mission is to empower professionals and aspiring learners with valuable insights, educational resources, and the latest trends in the world of knowledge and development.*

Inside, you found a wealth of information tailored for both seasoned professionals and those preparing for competitive examinations. From in-depth articles to essential tips and strategies, we aim to equip you with the tools you need to succeed in your journey of lifelong learning.

***Don't miss out on staying informed!** Subscribe to our blog site for regular updates on news, views, and fun facts that will enrich your understanding and keep you engaged. Join our community of passionate learners and professionals who are dedicated to growth and innovation.*

Thank you for being a part of our learning journey. We look forward to bringing you more enriching content in the next issue!

Subscribe now at theknowledgeandlearningenterprise.com to unlock a world of knowledge!



Innovations Changing Our World

Discover the latest breakthroughs in science and technology that are shaping our future today and tomorrow.

ABOUT THE DIGEST

At The Knowledge and Learning Enterprise, we strongly believe in passion for learning. Stay informed and sharpen your knowledge with our publications, designed to provide quick, concise and valuable insights. Whether you're looking to expand your general knowledge or preparing for competitive exams, this resource offers everything from essential facts to fun trivia, all in an easy-to-digest format

We keep you informed, so you stay ahead

Visit us at: <https://theknowledgeandlearning.com>

