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SAHITYA AKADEMI AWARDS



- It is awarded for the most **outstanding books of literary merit** published in any of the major Indian languages recognised by the Akademi.
- Along with the **22 languages enumerated** in the Constitution of India, the Sahitya Akademi has recognised **English and Rajasthani** as languages in which its programme may be implemented.
- The authors and poets will receive a **plaque, a shawl** and an amount of **₹1 lakh in an award**.

Key facts about the Sahitya Akademi:

- It was formally inaugurated by the Government of India **on 12 March 1954**.
 - It was registered as a society under the **Societies Registration Act, 1860**.
 - It is the central institution for literary dialogue, publication and promotion in the country and the only institution that undertakes literary activities in 24 Indian languages, including English.
 - **Ministry:** An autonomous organization under the **Ministry of Culture**.
 - **Head office:** New Delhi
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THE QUANTUM SATELLITE FOR INDIA'S NATIONAL QUANTUM MISSION

National Quantum Mission (NQM)

- NQM, launched by the Department of Science & Technology, aims to harness quantum physics for next-generation communication and sensing systems.
- While classical physics has driven technological advances like telecommunications, AI, and weather forecasting, it is approaching its performance limits.

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- Quantum physics, offering capabilities beyond classical systems, promises revolutionary devices with enhanced abilities.
- **Budget**
 - Approved by the Union Cabinet in April 2023 with a budget of Rs 6,000 crore, the NQM will run from 2023 to 2031.
 - A key initiative under the mission is the development of a quantum satellite, scheduled for launch within 2-3 years, to pioneer quantum communications.

Quantum satellite

- It is a communications satellite leveraging quantum physics to secure signals against interception.
- Communication technologies rely heavily on security to prevent unauthorized access during message transmission across networks.
- The rise of quantum computers poses a threat to current encryption methods.
- However, quantum physics also enables advanced security measures, with **quantum satellites** playing a pivotal role in ensuring robust, next-generation protection.

How Are Messages Secured?

- **Encryption as a Solution**
 - Modern communication tools like WhatsApp secure messages through encryption.
 - Encryption converts messages into a secret code before transmission, which can only be decoded by the recipient using the correct key.
 - If intercepted, the message remains unreadable without the key.
- **Cryptographic Security**
 - This system relies on hiding the decryption key behind complex mathematical problems.
 - While the sender's and recipient's devices already have the solution, an eavesdropper would require immense computing power and time to crack the code.

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How Can Quantum Physics Protect Messages?

- **Quantum Cryptography and QKD**
 - Quantum cryptography secures messages using principles of quantum physics, with **Quantum Key Distribution (QKD)** being its most well-known application.
 - QKD ensures that if an eavesdropper intercepts the key during transmission, the breach is detected, and the sharing is aborted.
 - **Quantum Measurement for Security**
 - Quantum physics states that measuring a quantum system, like a photon, changes its state.
 - If eavesdropper measures photons carrying the key (encoded in two states, 0 and 1), the state will change, alerting the compromise.
 - **Quantum Entanglement**
 - Quantum entanglement links two photons such that a change in one immediately affects the other.
 - This property helps detect eavesdropping, ensuring **unconditional security**.
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SMILE PROGRAMME



The Indian government and the Asian Development Bank (ADB) signed a landmark \$350 million policy-based loan under the second subprogramme of the Strengthening Multimodal and Integrated Logistics Ecosystem (SMILE)

programme.

- The **Strengthening Multimodal and Integrated Logistics Ecosystem (SMILE)** is a programmatic **policy-based loan (PBL)** to support the government in undertaking wide-ranging reforms in the logistics sector in India.
- The programmatic approach comprises two subprograms, which aim to expand India's **manufacturing sector** and improve the resilience of its **supply chains**.

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- This initiative is in collaboration with the Department of Economic Affairs (DEA) under the Ministry of Finance, the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry, and ADB.

Key pillars of the programme:

- **Strengthening institutional frameworks:** Developing capacities at national, state, and city levels for the seamless integration of multimodal logistics infrastructure.
 - **Standardising warehousing:** Establishing uniform standards to streamline supply chains and attract private investment.
 - **Improving trade logistics:** Enhancing the efficiency of India's external trade operations.
 - **Promoting smart, low-emission systems:** Leveraging advanced technologies to boost efficiency while reducing environmental impact.
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INDIA STATE OF FOREST REPORT



Recently, the Minister for Environment, Forest and Climate Change released the 'India State of Forest Report 2023 (ISFR 2023)' at Forest Research Institute, Dehradun.

- It is published by the **Forest Survey of India (FSI)** on a **biennial** basis since 1987.
- It carries out in-depth **assessment of the forest and tree resources** of the country based on interpretation of **Remote Sensing satellite data** and field based **National Forest Inventory (NFI)**.
- The India State of Forest Report 2023 is **18th such report** in the series.
- The report contains information on **forest cover, tree cover, mangrove cover**, growing stock, **carbon stock** in India's forests, instances of forest fire, Agroforestry, etc.

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Highlights of India State of Forest Report 2023

- The **Forest and Tree cover** of India is **17 percent** of the geographical area and in that 21.76% is **forest cover** and 3.41% is **tree cover**.
- As compared to assessment of 2021, there is an **increase in the forest and tree cover** of the country.
- Top four states showing **maximum increase in forest and tree cover** are **Chhattisgarh, Uttar Pradesh, Odisha** and
- Top three states showing **maximum increase in forest cover** are **Mizoram, Gujarat** and **Odisha**.
- **Area wise top three states having largest forest and tree cover** are **Madhya Pradesh, Arunachal Pradesh** and **Maharashtra**
- Area wise top three states having largest **forest cover** are **Madhya Pradesh, Arunachal Pradesh** and
- In terms of **percentage of forest cover with respect to total geographical area**, **Lakshadweep** (91.33 percent) has the highest forest cover followed by **Mizoram** and **Andaman & Nicobar Island**
- The present assessment also reveals that **19 states/UTs have above 33 percent of the geographical area** under forest cover. Out of these, eight states/UTs namely Mizoram, Lakshadweep, A & N Island, Arunachal Pradesh, Nagaland, Meghalaya, Tripura, and Manipur have forest cover above 75 percent.
- The total **mangrove cover is 4,992 sq km** in the country.
- The extent of **bamboo bearing area** for the country has been **increased** as compared to the last assessment done in 2021.
- There is an **increase in** the carbon stock of country as compared to the last assessment.
- **India's carbon stock has reached 30.43 billion tonnes of CO2 equivalent**; which indicates that as 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.



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NEXT GENERATION DNA SEQUENCING



Recently, the Union Minister for Environment, Forest and Climate Change inaugurated the Advanced Facility for Pashmina Certification and Next Generation DNA Sequencing Facility at the Wildlife Institute of India (WII), Dehradun.

- It is a revolutionary technology that enables the rapid **and high-throughput decoding of entire genomes**, analyzing millions of DNA sequences simultaneously.
- This allows researchers to gain deeper insights into **genetic diversity, evolutionary relationships, and population health**.
 - In wildlife conservation, NGS plays a pivotal role in **identifying population genetic health** with respect to genetic diversity, information on genetic barriers and their effect on populations, unique adaptations and species with unique evolutionary histories, **understanding disease outbreaks**, detecting illegal wildlife trade, and studying the **effects of climate change on biodiversity**.
- This cutting-edge NGS facility positions the Wildlife Institute of India as a leading centre for molecular and genetic research in wildlife conservation.

Key points about the Pashmina Certification Centre:

- It was established under a **Public-Private Partnership (PPP)** model between **WII and the Export Promotion Council for Handicrafts (EPCH)**.
- It was set up to:
 - To streamline the Pashmina Trade.
 - To provide a one-stop testing facility to **certify genuine Pashmina Product** free from any prohibited fibres to the associated manufacturers, exporters, and traders.



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- All the tested products will be labelled with a **traceable unique id tag with individual e-certificates**, enabling a seamless trade of such products in national and international markets.
- The upgraded Advanced Facility for Pashmina Certification now includes a dedicated Scanning Electron Microscope (SEM) with Energy Dispersive Spectroscopy (EDS), which enhances the precision and reliability of wool testing and certification.
- The upgraded facility offers:
 - **Advanced Fiber Analysis:** SEM-EDS technology to accurately identify and authenticate Pashmina fibers.
 - **Streamlined Certification:** Unique ID tagging and e-certificates for traceability and quality assurance.
 - **Global Trade Facilitation:** Hassle-free movement of certified products, eliminating delays and financial losses due to fibre scrutiny at exit points.

AUTOMATED & INTELLIGENT MACHINE-AIDED CONSTRUCTION (AIMC)



Why Roads Ministry Will Deploy 'Intelligent Machines' for National Highways Construction

- **AIMC (Automated & Intelligent Machine-aided Construction)** is an advanced system being implemented by the **Ministry of Road Transport & Highways (MoRTH)** for efficient **National Highway construction**.
- It integrates **intelligent machines** and **real-time data sharing** to expedite construction and enhance road quality.

Objective of AIMC

- To **increase productivity**, ensure **durable and long-lasting roads**, and reduce dependency on traditional surveys post-construction.



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- To tackle challenges such as **outdated technologies**, uncoordinated data, and **poor contractor performance** that lead to project delays.

Types of AIMC Machines:

- **GPS-Aided Motor Grader (3D Machine Control Technology):** It uses **Global Navigation Satellite System (GNSS)** data and angle sensors to position the grader's blade with precision.
 - Processes data in real-time to ensure alignment with digital design plans.
 - **Intelligent Compaction Roller (IC Roller):** It assists in minimizing post-construction consolidation.
 - Reduces air pockets or water voids in materials, preventing damage to roads.
 - **Single Drum/Tandem Vibratory Roller:** It ensures proper soil and base layer compaction for road stability.
 - **Current Network:** India's National Highway network spans **46 lakh km**, with **3,000 km** of high-speed corridors.
 - **Future Vision:** By 2047, the Ministry aims to expand the network by an additional **45,000 km**, ensuring a robust and efficient infrastructure system.
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FREE TRADE AGREEMENT (FTA)



The External Affairs Minister stated that India is taking a cautious approach to FTAs to protect farmers and MSMEs, as discussed at the Bharat@100 Summit by ASSOCHAM.

- **Definition:** Free Trade Agreements are comprehensive trade deals between two or more countries, aimed at reducing or eliminating trade barriers such as tariffs and import/export restrictions. These agreements provide preferential access to markets by offering **tariff concessions** and lowering **non-tariff barriers**.
- **Key Features:**



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- FTAs cover **trade in goods** (agricultural and industrial products) and **trade in services** (banking, IT, construction).
- Advanced FTAs may include chapters on **investment, intellectual property rights (IPRs), government procurement, and competition policy.**

Types of Trade Agreements:

- **Partial Scope Agreements (PSA):** Focus on a limited number of goods.
- **Free Trade Agreements (FTA):** Reduce tariffs between member countries while retaining individual tariff policies with non-members.
- **Customs Union:** Includes a common external tariff for non-members.
- **Common Market:** Facilitates free movement of goods, services, and factors of production.
- **Economic Union:** Coordinates macroeconomic and exchange rate policies among member nations.

Major Trade Agreements of India:

- India-ASEAN FTA, India-South Korea CEPA, and proposed agreements like India-UK and India-EU.
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