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MK Yadav Sir

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ECONOMIC TIMES

Page 5

LETTER OF COMFORT

(Syllabus: GS Paper 3 - Economy)

Finmin Relaxes Curbs on CPSUs Issuing Letters of Comfort

Our Bureau

New Delhi: The finance ministry on Monday eased restrictions to allow central public sector undertakings (CPSUs) to issue letters of comfort (LoCs) to financiers on the strict condition that no liability from such letters will devolve on the government.

In March 2022, it had prohibited state-run entities from issuing LoCs in a bid to further improve financial transparency. The LoC is usually a statement by a third party (usually a promoter or controlling entity) that it will stand behind the obligations of a party under a contract.

The relaxation comes after the petroleum ministry sought a breather from this prohibition on behalf of HPCL and IOCL on February 24. Similarly, the ministry of power had sought relief for NTPC through its communications dated January 16 and February 23, according to an office memorandum of the department of economic affairs.

Context: The finance ministry eased restrictions to allow central public sector undertakings (CPSUs) to issue **letters of comfort (LoCs)** to financiers on the strict condition that no liability from such letters will devolve on the government.

- In March 2022, it had **prohibited state-run entities from issuing LoCs** in a bid to further improve financial transparency.

Letter of Comfort (LoC)

- **About**: The LoC is usually a statement by a third party (usually a promoter or controlling entity) that it will **stand behind the obligations of a party** under a contract.
  - It is a letter issued to a lending institution by a stakeholder of the company acknowledging support of the **attempt for financing** asked by that company.
  - A letter of comfort **does not imply that the parent company guarantees repayment** of the loan being sought by the subsidiary company.
  - It merely gives reassurance to the lending institution that the parent company is aware of the **credit facility** being sought by the subsidiary company, and supports its decision.
- **Letter of Guarantee (LoG)**: It is a written promise to take responsibility for another company's **financial obligation** if that company cannot meet its obligation.
  - The entity assuming this responsibility is the **guarantor**.

BUSINESS STANDARD

Page 8

IMF BAILOUT

(Syllabus: GS Paper 3 - Economy)

Lanka's world-beating bonds pin hopes on IMF billions

KARL LESTER M. YAP, MALAVIKA KAUR MAKOL
20 March

Investors are betting that Sri Lanka will win final approval for about $2.9 billion bailout from the International Monetary Fund, a key step for the bankrupt nation to revive its economy from the worst crisis in decades.

The nation's dollar bonds have returned 20 per cent this year, the top performers. The local currency surged 8 per cent and stocks climbed 5 per cent this month, beating their Asian peers on anticipation of billions of dollars in financing trickling in. The rupee fell 45 per cent last year, while the CSE All-share index declined more than 30 per cent in 2022.

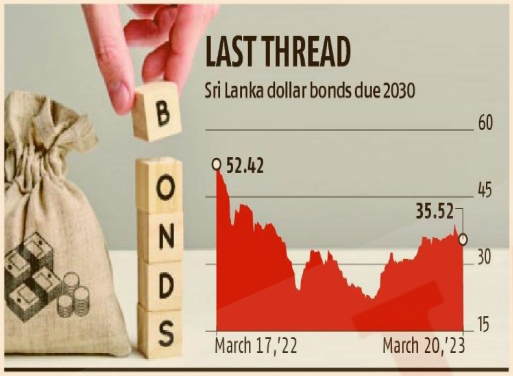
The funds are crucial to restore stability and debt sustainability for an economy mired in a recession. Through 2022, shortages of essential goods from fuel to medicines loomed large, stoking Asia's fastest inflation and depleting funds.

Since defaulting on its dollar debt in May, Sri Lanka has taken tough measures to put its economy back on a steadier path, including cutting subsidies, raising taxes and loosening its control on the currency. It also increased borrowing cost to the most since 2001.

Sri Lanka also secured debt assurances from bilateral creditors including India, China and Paris Club nations and initiated good-faith negotiations with private bondholders as pre-requisites to getting the bailout.

"The pathway appears to have been gradually cleared for the IMF board to sign off on the program," said Esther Law, senior investment manager for emerging-markets debt at Amundi SA in London. "One would expect the bonds move up slightly in price the moment the IMF program is announced."

Debt due in 2030 has risen to about 36 cents on the dollar from 21 cents in November. BLOOMBERG



Lanka seeks '10-yr' time to repay debt

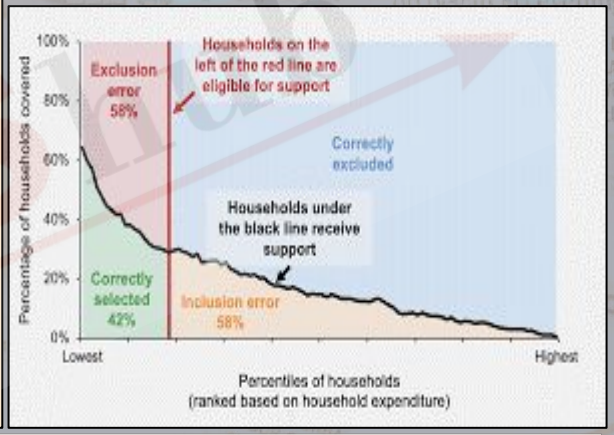
Sri Lanka is seeking a 10-year moratorium on its foreign debt, President Ranil Wickremesinghe's office said Monday.

Wickremesinghe's office quoted him as saying the widely expected International Monetary Fund rescue "will only give us a breathing space where they will say we are no longer bankrupt".

"All the money we have to repay this year, I hope we will be given at least 10 more years to repay it," Wickremesinghe said.

He did not give details of his plans to restructure Sri Lanka's $46 billion external debt. PTI

Context: Investors are betting that Sri Lanka will win final approval for about $2.9 billion **bailout from the International Monetary Fund,** a key step for the bankrupt nation to revive its economy from the worst crisis in decades.



IMF's Lending instruments

- The IMF's various **lending instruments** are tailored to different types of balance of payments need as well as the specific circumstances of its diverse.
- All IMF members are eligible to access the Fund's resources in the **General Resources Account (GRA)** on non-concessional terms.
- The IMF also provides **concessional financial support** (currently at zero interest rates through June 2021) through the **Poverty Reduction and Growth Trust (PRGT)** which is better tailored to the diversity and needs of low-income countries.
- Reflecting different country circumstances, **GRA-supported programs** are expected to resolve the member's BoP problems during the program period, while PRGT programs envisage a longer duration for addressing BoP problems.
- Historically, for emerging and advanced market economies in crises, the bulk of IMF assistance has been provided through **Stand-By Arrangements (SBAs)** to address short-term or potential balance of payments problems.
- The **Standby Credit Facility (SCF)** serves a similar purpose for low-income countries.
- The **Extended Fund Facility (EFF)** and the corresponding **Extended Credit Facility (ECF)** for low-income countries are the Fund's main tools for medium-term support to countries facing protracted balance of payments problems.
- To help prevent or mitigate crises and boost market confidence during periods of heightened risks, members with already strong policies can use the **Flexible Credit Line (FCL)** or the **Precautionary and Liquidity Line (PLL).**
- The **Rapid Financing Instrument (RFI)** and the **corresponding Rapid Credit Facility (RCF)** for low-income countries provide rapid assistance to countries with urgent balance of payments need, including from commodity price shocks, natural disasters, and domestic fragilities.

PIB MARCH 21

NAFED
(Syllabus: GS Paper 3 - Agriculture)

Union Agriculture Minister Shri Narendra Singh Tomar has directed NAFED, it's Nodal Organization to contribute and promote the 'International Year of the Millet' 2023 on a global scale

Context: Union Minister for Agriculture and Farmers Welfare has directed **NAFED**, it's Nodal Organization to contribute and promote the 'International Year of the Millet' 2023 on a global scale.

- NAFED has entered into a **MoU with the Ministry of Agriculture & Farmers Welfare** to extend its support to Millets initiatives.

National Agricultural Cooperative Marketing Federation of India Ltd (NAFED)

- **About**: It is an apex **organization of marketing cooperatives for agricultural produce** in India, National Agricultural Cooperative Marketing Federation of India Ltd, Official website.
  - NAFED is now **one of the largest procurement** as well as marketing agencies for agricultural products in India.
- **Origin**: It was **founded on the birthday of Mahatma Gandhi** on 2 October 1958 to promote the trade of agricultural produce and forest resources across the nation.
  - It is registered under **Multi State Co-operative Societies Act.**
- **Nodal Ministry**: Ministry of Agriculture & Farmers Welfare.
- **Headquarters**: With its headquarters in **New Delhi,** NAFED has four regional offices at Delhi, Mumbai, Chennai and Kolkata, apart from 28 zonal offices in capitals of states and important cities.
- **Functions**: NAFED is the nodal agency to implement **price stabilization measures under "Operation Greens"** which aims to double the farmers' income by 2022.
  - NAFED along with FCI with proactive role of state governments also physically procures oilseeds, pulses and copra under the **Price Support Scheme (PSS) w**hich in turn is under the umbrella scheme of **PM-AASHA.**
  - In 2008, it established, National Spot Exchange, a Commodities exchange as a joint venture of Financial Technologies (India) Ltd. (FTIL).
- **Latest Scheme to be implemented by the NAFED:** The Ministry of Agriculture and Farmers Welfare inaugurated the **Honey Farmer Producer Organisation Programme (FPO).**
  - The **National Agricultural Cooperative Marketing Federation** of India Limited will be the one of the national implementing agency.
  - It is a **Central Sector Scheme** that will promote 10,000 new FPOs
  - Initially three implementing agencies would implement this scheme; they were the **Small Farmers Agri-business Consortium (SFAC)**, National Cooperative Development Corporation (NCDC) and National Bank for Agriculture and Rural Development (NABARD).
  - The states may nominate their own implementing agency should they desire after consulting the Department of Agriculture.
  - The FPOS will be developed by **Cluster Based Business Organizations (CBBOs).**

THE HINDU Page 6

GOVERNOR'S POWER ON BILLS

(Syllabus: GS Paper 2 - Polity & Governance)

SC seeks Centre's stand on plea over Telangana Governor delaying Bills

The Hindu Bureau
NEW DELHI

The Supreme Court on Monday sought the Centre's stand on a petition filed by the Telangana government against Governor Tamilisai Soundararajan for creating a "constitutional impasse" by refusing to act on several Bills passed by the State legislature.

A Bench led by Chief Justice of India D.Y. Chandrachud issued notice to the Centre. It asked Telangana to serve a copy of the petition to the counsel instructing Solicitor-General Tushar Mehta, appearing for the Centre. The case was listed for hearing on March 27.

Senior advocate Dushyant Dave, for Telangana, said the State has specifically impleaded the Governor's secretary in order for the court to issue notice to the office of the Governor.

However, the court said it would follow the convention of seeking a response from the Centre in cases in which Governors were involved.

Mr. Dave had earlier submitted that the Bills were pending since September 14 last year, awaiting the assent of the Governor.

"In a parliamentary democracy, the Governor has no discretion to delay necessary assent as required on the Bills. Any refusal on the part of the Governor, including delay, will defeat parliamentary democracy and will of the people," the State has said in its petition filed through advocate S. Udaya Kumar Sagar.

The State has urged the court to "declare that the inaction, omission and failure to comply with the constitutional mandate qua the assent of the Bills by the Governor is highly irregular, illegal".

Mr. Dave, through the petition, has argued that the Governor may or may not give assent to a Bill. However, the decision should be taken, rather than keeping the Bills pending for months together.

Context: The Supreme Court sought the Centre's stand on a petition filed by the Telangana Government against Governor for creating a "constitutional impasse" by **refusing to act on several Bills** passed by the State legislature.

Constitutional Provisions

- **Article 200**: It deals with the **Governor's function in passing a Bill** of the state legislature. Under Article 200 of the Indian Constitution, the Governor may :
  - grant assent
  - withhold assent
  - return for reconsideration by the Legislature or
  - **reserve for the consideration of the President** any Bill passed by the State legislature and presented to him for assent of the following nature:
    - Ultra-vires, that is, against the provisions of the Constitution.
    - Opposed to the Directive Principles of State Policy.
    - Against the larger interest of the country.
    - Of grave national importance.
    - Dealing with compulsory acquisition of property under Article the Constitution.
      - There is **no time frame fixed** in the Constitution for any of these functions.

- **Article 201:** As per Article 201, when a Bill is reserved by a Governor for the consideration of the President, the **President shall declare either that he assents to the Bill or that he withholds assent therefrom.**
  - The President may also direct the Governor to return the Bill, where the Bill is not a Money Bill, with a message.
  - When a Bill is so returned, the House or Houses shall reconsider it accordingly within a period of six months from the date of receipt of such message and, if it is again passed by the House or Houses with or without amendment, it **shall be presented again to the President.**
  - There is **no timeframe mentioned** for the above provisions.

TIMES OF INDIA

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LANGUAGE IN STATES LEGISLATURE

(Syllabus: GS Paper 2 - Polity & Governance)

Context: Bihar's Chief Minister **slammed a farmer for using too many "English phrases"** when recounting his thrilling life's adventure.



LANGUAGE PROBLEMS

English on House display screens irritates Nitish

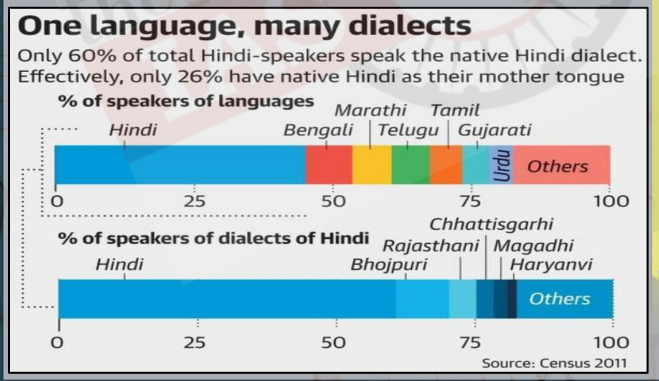
Patna: English words interspersed with Hindi on display screens in the Bihar legislative council angered CM Nitish Kumar on Monday, reports **Sheezan Nezami**.

"What have you written? It is written 'honourable', 'speaking time'. What do these mean? Why do you write in such a way in Bihar? Why are you even displaying it? Everything should be in Hindi. Get it done in Hindi," the CM said, adding, "Will you completely finish off Hindi?" He was assured by the chairperson that corrections would be effected by the evening.

Meghalaya guv addresses House in Hindi, MLAs protest

Shillong: Four newly elected MLAs of Voice of People's Party (VPP) staged a walkout on Monday, the first day of Meghalaya assembly's session, protesting against governor Phagu Chauhan addressing the House in Hindi, reports **Manosh Das**.

Before the walkout, Speaker Thomas A Sangma had given his ruling allowing the governor to deliver his address in Hindi. However, VPP chief Ardent Miller Basaiawmoit objected as soon as the governor started his address should be conducted in English, as per rules.



Language in States Legislature

- **Constitutional Provisions**: The **Constitution does not provide for the official language of states**.
  - However, It says that The legislature of a state may adopt any one or more of the languages belonging to the state or Hindi as the official language of that state. Until then, English will continue as the official language of that state.
  - As a response to this the states have **adopted the following regional languages as their official language:**
    - Andhra Pradesh - Telugu
    - Meghalaya, Arunachal Pradesh and Nagaland - English
    - Jammu and Kashmir - Urdu (and not Kashmiri)
    - Goa - Marathi and Konkani
    - Gujarat - Hindi and Gujarati
    - Himachal Pradesh, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, Haryana, and Rajasthan - Hindi.
    - Odisha–Odia
    - West Bengal–Bengali
    - Assam–Assamese
    - Kerala–Malayalam
- **No Compulsion**: There is no compulsion for the state to choose the language from the **Eighth Schedule** of the Constitution.
  - For the time being, **English would remain the communication language** between the Union and the states or between various states.
  - **Any two or more states are free to agree to use Hindi** (instead of English) for communication between themselves (Rajasthan, Uttar Pradesh, Madhya Pradesh and Bihar are communicating in Hindi among themselves).
- **Official Languages Act (1963)**: English should be the communication language between the Union and the non-Hindi states.
  - The act also provides that, the communication between Hindi and **Non-Hindi states if done in Hindi then it** must be accompanied by an English translation.
  - If a **demand is made to the president** and he is satisfied that a substantial proportion of the population of a state wish to use any language spoken by them to be recognized by that state, then he may direct them to recognize that language as an official language of the state.
  - The main objective here is to **protect the linguistic interests of minorities** in states.

INDIAN EXPRESS

Page 1

INTERPOL NOTICE

(Syllabus: GS Paper 2 - International Organisations)

CBI suffers setback as Interpol withdraws notice against Choksi

DEEPTIMAN TIWARY
NEW DELHI, MARCH 20

IN A major setback for the CBI and India's efforts to get fugitive jeweller Mehul Choksi back, the Interpol has withdrawn the Red Corner Notice issued against the key accused in the Rs 13,500-crore PNB loan fraud case.

The notice is now unavailable on Interpol's website. Choksi's lawyer in India, Vijay Aggarwal, said, "Because of the efforts of the legal team and the genuineness of my client's case, his RCN has been cancelled, and ultimately truth has prevailed." The CBI, which is probing the case, declined comment.

Sources said the RCN was removed following a petition by Choksi to Interpol. In 2021, Choksi had alleged an abduction bid by men he claimed were

CONTINUED ON PAGE 4



Mehul Choksi fled India in Jan 2018

EXPLAINED

E. Stalls his return

THE DEVELOPMENT weakens India's efforts to get Choksi back, and could be used by his defence during extradition proceedings pending in Antigua. He can now move freely across the world, barring India. India can petition the Interpol again or get a fresh notice issued in a separate case.



Context: In a major setback for the CBI and India's efforts to get fugitive jeweller Mehul Choksi back, the Interpol has withdrawn the **Red Corner Notice (RCN)** issued against the key accused in the Rs 13,500-crore PNB loan fraud case.

- A **Red Notice** is a request to law enforcement worldwide to locate and provisionally arrest a person pending extradition, surrender, or similar legal action.
- In 2021, **Choksi had alleged an abduction bid** by men he claimed were Indian agents who took him from the Caribbean nation of Antigua and Barbuda, where he was staying, to Dominica.

International Criminal Police Organisation or Interpol

- **About**: a **195-member intergovernmental** organisation.
  - Formed in 1923 as the International Criminal Police Commission, and **started calling itself Interpol in 1956.**
  - **India joined the organisation in 1949**, and is one of its oldest members.
- **Headquarter**: Lyon, France.
- **General Assembly**: It is Interpol's **supreme governing body, and comprises representatives from all its member countries**.
  - It **meets annually** for a session lasting approximately four days, to vote on activities and policy.
  - Each country is **represented by one or more delegates at the Assembly**, who are typically chiefs of law enforcement agencies.
  - The **Assembly also elects the members of the Interpol Executive Committee**, the governing body which "provides guidance and direction in between sessions of the Assembly".
- **Interpol's declared global policing goals include:** Countering terrorism, promoting border integrity worldwide, protection of vulnerable communities, providing a secure cyberspace for people and businesses, curbing illicit markets, supporting environment security, and promoting global integrity.
- **INTERPOL Notices**: international requests for cooperation or alerts allowing police in member countries to share critical crime-related information.
  - **Interpol issues eight different types**: Red Notice, Green Notice, Yellow Notice, Orange Notice, Blue Notice, Purple Notice, Black Notice, and an INTERPOL–United Nations Security Council Special Notice.

PIB MARCH 21

EXTENDED PRODUCER RESPONSIBILITY

(Syllabus: GS Paper 3 - Env & Eco)

2.32 million tons of plastic packaging covered under Extended Producer Responsibility for the year 2022-23

Context: Minister of State for Environment, Forest and Climate Change informed in Lok Sabha informed that identified single use plastic items, which have low utility and high littering potential, have already been prohibited, with effect from 1st July, 2022, vide **Plastic Waste Management Amendment Rules, 2021 n**otified on 12th August 2021.

- Presently, a total of 6186 of Producers, Importers and Brand Owners have been registered on the Centralized Online **Extended Producer Responsibility (EPR)** Portal on Plastic Packaging.

Extended Producer Responsibility

- **About**: Extended producers' Responsibilities is a globally recognized policy used as an effective tool to put the **onus on the producers for efficient end of life waste management of the plastic, electronic and electrical equipment**. The concept of EPR responsibility is based on three foundation principles:
  - Pollution prevention approach
  - Life cycle thinking,
  - Polluter pay principle
    - EPR responsibility makes it the responsibility of the producers not only to take back products for recycling but also to **design better and longer life products** to minimize the amount of waste generated.
- **EPR in India:**
  - **EPR responsibility Certificate:**
    - EPR responsibility Certificate is **authorized by Central Pollution Control Board** which is mandatory for Producers/Importers of the Electronic products.
    - Under these rules, the producers have a responsibility to d**elegate this responsibility to the third party or specialized organizations which manufacturers can** financially aid for proper waste management.
  - **EPR Responsibility Policies under E-Waste Management Rules:**
    - **E-Waste (management and handling) Rules, 2016** adopted Extended Producers Responsibility for the first time in India.
    - EPR responsibility under E-Waste (management) Rules, 2016 stipulates collection targets of **E–Waste for producers.**
    - The producers are responsible for setting up **collection centres for e-waste** and financing and organizing a system for environmentally sound management of e-waste.
    - The producers are required to have an arrangement with dismantlers and recyclers through either the **Producers responsibility organization** or the E-Waste exchange system.
    - **Marketing or selling any electronic equipment** without EPR responsibility Authorization is considered a violation of the rules.
  - **EPR responsibility Policy under Plastic Waste Management Rules:**
    - The **Plastic Waste Management (Amendment) Rules, 2022** provide guidelines for strengthening the circular economy of plastic packaging waste as well as promoting alternatives to plastic.
    - Producers of waste are mandated to ensure that **generation of plastic waste is minimized**, and plastic waste is not littered and stored at the source, which is then handed over to local bodies or authorized agencies.

DTE

MARCH 21

DEFORESTATION IN INDIA

(Syllabus: GS Paper 3 - Env & Eco)

India lost 668,400 ha forests in 5 years, 2nd highest globally: Report

India was ranked between Brazil and Indonesia in UK-based firm's report

NEXT NEWS >

By Shuchita Jha
Published: Monday 20 March 2023



INDIA'S GREEN COVER INCREASES

Change in forest & tree cover

Class	Area (sq km) 2021	Area (sq km) 2019	% of GA* 2021	% of GA* 2019	Net increase (in 2021 compared to 2019)	% increase
Forest Cover	7,13,789	7,12,249	21.71	21.67	1,540	0.22
Tree Cover**	95,748	95,027	2.91	2.89	721	0.76
Total	**8,09,537**	**8,07,276**	**24.62**	**24.56**	**2,261**	0.28

*GA - geographical area ; **Tree Cover (patches of size less than 1 hectare outside recorded forest area)

States/UTs showing gain/loss in forest cover in 2021

Gain in sq km		Loss in sq km	
Andhra Pradesh	647	257	Arunachal Pradesh
Telangana	632	249	Manipur
Odisha	537	235	Nagaland
Karnataka	155	186	Mizoram
Jharkhand	110	73	Meghalaya

Forest cover in major mega cities in 2021

Cities	Area (sq km)	Decadal change**
Delhi	194	(+11%)
Mumbai	111	(+9%)
Bengaluru	89	(-5%)
Hyderabad	82	(+15%)
Chennai	23	(+26%)
Ahmedabad	9	(-48%)
Kolkata	2	(-30%)

** Decadal change between 2011 and 2021 in %

Context: India has seen the **highest rise in deforestation** in the last 30 years, with a stark surge recorded between 2015 and 2020, according to the report by Utility Bidder, a United Kingdom-based comparison site for energy and utility costs.

- During these years, the country was **ranked second only after Brazil**, with average deforestation of 668,400 hectares (ha).

Key Points

- While **India lost 384,000 ha of forests between 1990 and 2000**, the figure rose to 668,400 ha between 2015 and 2020.
- With a difference of 284,400 ha in forestry loss between 1990 and 2020, **India has seen the biggest increase in deforestation.**
- As the country with the second largest population in the world, India has had to **compensate for the increase in residents** - this has come at a cost in the way of deforestation.
- **Palm oil cultivation** in Indonesia led to the destruction of 650,000 ha of forests, making it the third-highest loss in the world, right behind India.
- While Brazil has reduced its deforestation by 2,559,100 ha from 2015 to 2020 and Indonesia by 1,876,000 ha for the same period, **India's figures have only increased significantly.**

India State of Forest Report, 2021

- **Increment in Area**: The forest and tree cover in the country continues to **increase with an additional cover of 1,540 square kilometres** over the past two years.
  - India's forest cover is now 7,13,789 square kilometres, **21.71% of the country's geographical area,** an increase from 21.67% in 2019.
  - Tree cover has increased by 721 sq km.
    - **Tree cover** is defined as all tree patches of size less than one hectare occurring outside the recorded forest area. This covers trees in all formations including scattered trees.
- **Increase/Decrease in Forests:** The states that have shown the highest increase in forest cover are **Telangana (3.07%), Andhra Pradesh (2.22%) and Odisha (1.04%).**
  - Five states in the **Northeast** – Arunachal Pradesh, Manipur, Meghalaya, Mizoram and Nagaland have all shown **loss in forest cover.**
- **States with Highest Forest Area/Cover:**
  - **Area-wise**: **Madhya Pradesh has the largest forest cover** in the country followed by Arunachal Pradesh, Chhattisgarh, Odisha and Maharashtra.
  - In terms of forest cover as percentage of total geographical area, the top five States are Mizoram, Arunachal Pradesh, Meghalaya, Manipur and Nagaland.
  - The term **'forest area'** denotes the legal status of the land as per the government records, whereas the term 'forest cover' indicates presence of trees over any land.

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AI IN HEALTHCARE

(Syllabus: GS Paper 3 - Sci & Tech)

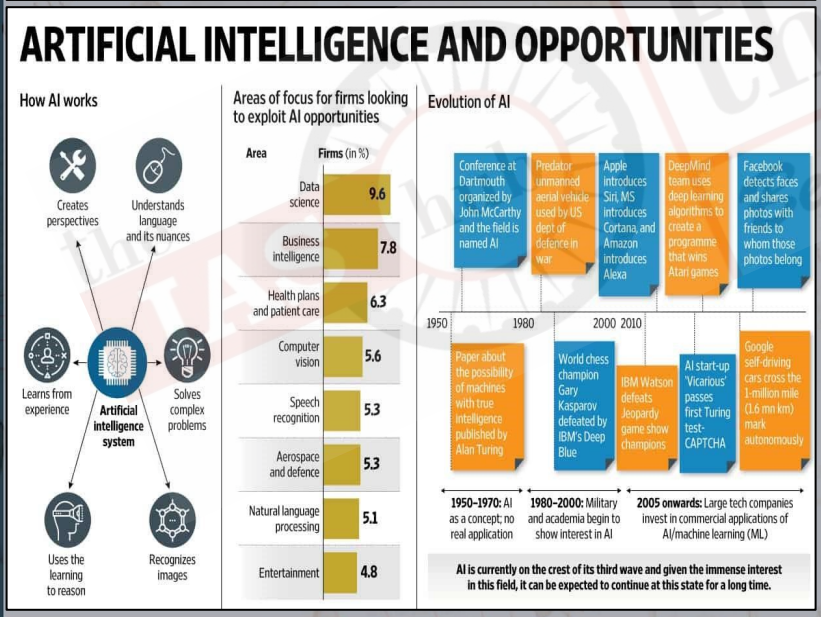
ICMR releases guidelines for artificial intelligence use in the health sector

Guiding document outlines 10 key patient-centric ethical principles for AI application in health sector

NEXT NEWS >

By Taran Deol
Published: Monday 20 March 2023





Context: The **Indian Council of Medical Research (ICMR)** has released Ethical Guidelines for Artificial intelligence (AI) in Healthcare and Biomedical Research to "guide effective yet safe development, deployment and adoption of **AI-based technologies"**.

- Diagnosis and screening, therapeutics, preventive treatments, clinical decision-making, public health surveillance, complex data analysis, predicting disease outcomes, behavioural and mental healthcare and health management systems are among the **recognised applications of AI in healthcare.**

Key Points

- It outlined **10 key patient-centric ethical principles** for AI application in the health sector for all stakeholders involved.
    - These are accountability and liability, autonomy, data privacy, collaboration, risk minimisation and safety, accessibility and equity, optimisation of data quality, non-discrimination and fairness, validity and trustworthiness.
- The guidelines also **outlined a brief for relevant stakeholders** including researchers, clinicians / hospitals / public health system, patients, ethics committee, government regulators and the industry.
- As per the guidelines, the ethical review process for AI in health came under the domain of the **ethics committee** which assess a host of factors including data source, quality, safety, anonymization, and/or data piracy, data selection biases, participant protection, payment of compensation, possibility of stigmatisation among others.
- The body is **responsible for assessing both the scientific rigour and ethical aspects** of all health research and should ensure that the proposal is scientifically sound and weigh all potential risks and benefits for the population where the research is being carried out.
- **Informed consent and governance** of AI tools in the health sector are other critical areas highlighted in the guidelines where the latter is still in preliminary stages even in developed countries.
- India has a host of **frameworks** that marry technological advances with healthcare.
    - These include the **Digital Health Authority for leveraging Digital health Technologies under the National Health Policy (2017)**, the Digital Information Security in Healthcare Act (DISHA) 2018 and the Medical Device Rules, 2017.

DST

MARCH 21

ENZYME LACCASE

(Syllabus: GS Paper 3 - Sci & Tech)

Substrate promiscuity of fungi generated enzyme Laccase shows potential in degrading industrial dye effluents

Context: A joint team from S. N. Bose National Center for Basic Sciences (SNBNCBS), Kolkata, an autonomous institute of Department of Science and Technology (DST) tested the **efficacy of laccase** in degrading some standard dye molecules like Methyl Green, Crystal Violet, Thioflavin T, Coumarin 343, and Brilliant Blue.

Enzyme Laccase

- Laccase is an enzyme generated by **a group of fungi.**
  - An enzyme is a substance that acts as a **catalyst in living organisms** and regulates the rate at which chemical reactions proceed without being altered in the process.
- It is known for its capacity to **degrade various organic molecules.**
- It contains **4 copper atoms** in two different oxidation states.
- It degrades substrates through **redox reactions,** producing only water and the simplest non-virulent or less virulent oxides of carbon, nitrogen and sulphur.

Key Findings

- Laccase has been **found capable of degrading a variety of hazardous organic dye molecules** that are regularly drained into water bodies after dying clothes in the textile industry.
- This observed characteristic which the scientists termed **substrate promiscuity** can have deep implications in designing enzyme-coated cassettes for treating heavily dye-polluted water through a natural solution to make the environment greener.
- **Enzyme promiscuity** is defined as the capability of an enzyme to catalyze a reaction other than the reaction for which it has been specialized.
- Although the enzyme is known for its specificity, many enzymes are reported to be **promiscuous**.

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