

World Economic Forum (WEF) releases “Shaping the Deep-Tech Revolution in Agriculture”

The report has been released by **WEF AI for Agriculture Initiative (AI4AI)**.

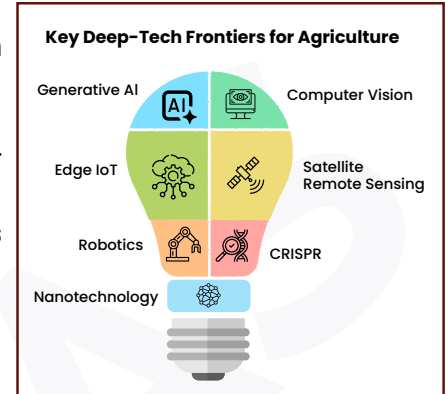
- **AI4AI** brings together public and private sector partners to **scale agritech solutions and accelerate the transformation** of global food systems.

Key Challenges in Agriculture

- **Declining Agricultural Workforce:** Rural-to-urban migration and an ageing farmer population reduce labour availability.
- **Climate Change and Weather Extremes:** Global **calorie yield from staple crops could fall by 24% by 2100** without emission cuts.
- **Degradation of Natural Resources:**
 - ⊕ Agriculture uses **70% of freshwater**; **71% of aquifers** are depleted.
 - ⊕ **One-third of soils degraded**; **90% of topsoil may be degraded** by 2050.

Key Use Cases for Deep Tech in Agriculture highlighted by the Report

- **Intello Labs** AI and computer vision-based solution **Fruitsort**: It uses advanced cameras and machine learning to rapidly analyse fresh produce, identifying defects.
- **Pradhan Mantri Fasal Bima Yojana (PMFBY)**: It uses **Remote sensing** (satellite imagery) for efficient crop insurance along with High-resolution drones and a dedicated mobile app.
- **Infosys “5G.NATURAL” programme**: It focuses on creating a scalable, modular and intelligent swarm system, specifically for harvesting.
- **Boomitra** launched **Vital Agricultural Regeneration and Adaptation (URVARA) project** for carbon monitoring, reporting and verification (MRV).



Financial Sector Assessment Program (FSAP) Report by World Bank

The FSAP report has urged India to accelerate financial sector reforms to achieve its long-term goal of becoming a **USD 30 trillion economy by 2047**.

Key Highlights of the Report

- **Resilient system:** Financial system is stronger and more diversified, with assets rising to about **175% of GDP (from 144% in 2017) with the state playing a dominant role**.
- **Digital strength:** Digital public infrastructure has improved access, efficiency, and financial inclusion.
- **Regulatory progress:** Reforms by the RBI and SEBI have enhanced supervision, though challenges persist in NBFC oversight and risk management.
 - ⊕ India’s expansion of regulatory authority on cooperative banks, tightening of key prudential rules has been appreciated.
- **Market development:** Corporate bond and infrastructure financing remain shallow, with investors preferring government securities.
- **Tax disparities:** Uneven tax treatment between debt and equity discourages bond market participation.

Required Reforms

- **Boost private capital mobilisation:** Deepen bond and securitisation markets to attract long-term investors.
- **Strengthen NBFC regulation:** Refine scale-based frameworks and align with global prudential norms.
- **Integrate digital and financial reforms:** Link fintech innovations with broader financial inclusion goals.
- **Sustain reform momentum:** Maintain coordination among financial regulators to ensure market stability and growth.
- **Mobilise green finance:** Use **DFIs** (Development Finance Institutions) to fund low-carbon projects and reduce investor risk.

About FSAP

- **Genesis:** FSAP is a joint **World Bank-IMF** program started in 1999.
- **Conduct:** FSAPs in advanced economies are conducted **by the IMF**. In developing and emerging market economies, **FSAPs are conducted jointly with the World Bank**.
- **India's previous FSAP was conducted in 2017.**

India set to join Tropical Forests Forever Facility (TFFF) as Observer

What is Tropical Forests Forever Facility (TFFF)?

- **Initiative by:** Brazil
- **About:** It is a **global fund** formed on the sidelines of COP-30 in Belem, Brazil for providing a **long-term finance** to make forest preservation a viable economic model.
- **Objectives:** To **incentivize the conservation and expansion of tropical forests** by making annual payments to Tropical Forest Countries (TFCs) that maintain their standing forest.
- **Funding Mechanism:** The facility seeks to **mobilize approximately \$125 billion** through a mix of public (20-25%) and private investment (70-80%).
 - ⊕ The returns generated from these investments will then be used to pay nations that successfully conserve their forests.
- **Eligibility:** The TFFF could support **over 70 TFCs** that meet certain criteria, such as **annual deforestation rate below 0.5%; fair resource allocation to Indigenous Peoples and Local Communities**, etc.

Importance of Forest Conservation

- **Climate Regulation:** Collectively, Forests **absorb about 7.6 billion tonnes of CO₂ annually** (as per Global Forest Watch), helping **slow global warming**.
- **Biodiversity Hotspots:** Tropical forests cover only **7% of Earth's surface**, but **hold 50% of global biodiversity** (WWF).
- **Soil Conservation:** Forests reduce soil erosion and prevent flood intensity by stabilizing slopes.
- **Other: Economic Value** (trade in timber, rubber, etc.); **Livelihood and Cultural Support**; **Medicinal Resource Base**; **Rainfall and Hydrological Cycle**, etc.

Other Global Initiatives for Forest Conservation

- **Convention on Biological Diversity (1992):** Encourages conservation of ecosystems, sustainable use, and equitable sharing of benefits.
- **UN REDD+ (2008):** Provides financial incentives to developing countries for reducing deforestation and enhancing carbon stocks.
- **Bonn Challenge (2011):** Aims to restore 350 million hectares of degraded forests by 2030.
- **Paris Agreement (2015):** Recognizes forests as key climate mitigation tools.

Supreme Court issued directions to remove stray dogs from key public spaces

SC noted that repeated incidents of dog bites at key public spaces are **not merely a public-health challenge but a matter of human safety under Article 21** of the Constitution.

SC Directions

- **A nodal officer must be** appointed for the upkeep and surveillance of each such premise like **educational institutions, hospitals, transport hubs**, etc. by their respective management.
- **District Magistrates** to ensure that such premises are secured by adequate fencing, boundary walls, gates.
- **Local municipal authorities and panchayats** shall carry out **regular inspections**, at least once in every three months.
- All Government and private hospitals shall maintain a **mandatory stock of anti-rabies vaccines and immunoglobulin at all times**.
- **Proper waste-management systems** shall be implemented to eliminate food sources that attract animals.

Issue of Stray dogs in India

- **Population size:** **1.5 crore** (2019 livestock census).
- **Dog Bites in India:** Around **37 lakh in 2024** (National Centre for Disease Control data).
- **Rabies:** **India contributes to 36%** of global rabies deaths.
- **Mortality:** **Dog bites are responsible for about 96%** of the mortality and morbidity associated with rabies in India.

Provisions and steps taken regarding Stray Dogs in India

- **Constitution:** As per **Articles 243(W)**, municipalities are mandated to control the stray dog population.
 - ⊕ **Article 51A (g):** Fundamental Duty "to have compassion for living creatures".
- **Animal Birth Control (ABC) Rules, 2023** under **Prevention of Cruelty to Animals Act, 1960** established the Capture-Sterilize-Vaccinate-Release (CSVR) model to control the stray dog population.
- **National Action Plan for Dog Mediated Rabies Elimination (NAPRE) from India by 2030'** launched by the Ministry of Health & Family Welfare.

Supreme Court Raises Concern over India's Land Registration System in Samiullah v. State of Bihar

Issues Highlighted by the SC

- **Outdated Laws:** Land registration still governed by colonial era laws such as the **Transfer of Property Act 1882, Stamp Act 1899, and Registration Act 1908.**
- **No Conclusive Title:** Registration of a deed (under the Registration Act) only provides presumptive evidence of ownership, **not conclusive title.**
 - ⌚ This means the **state does not certify the authenticity of ownership**, leaving buyers vulnerable to litigation.
- **Litigation Burden:** Fraudulent deeds, encroachments, and weak verification leads to **66% of civil litigation.**
- **Incomplete Digitisation:** Programmes like **DILRMP** (Digital India Land Records Modernization) and **NGDRS** (National Generic Document Registration System) digitise records but **do not correct faulty titles.**

Key Suggestions by the SC

- **Blockchain Integration:** Could create an incorruptible, transparent, and easily verifiable registry of property transactions.
 - ⌚ Such systems could **integrate survey data, cadastral maps, and registration details**, preventing multiple sales of the same property.
- **Conclusive Title:** Directed the **Law Commission** to study a shift from presumptive to conclusive titling.
- **Institutional Overhaul:** Called for **legal amendments or alignments** in the Registration Act (1908), Evidence Act (1872), IT Act (2000), etc. and **stronger Centre-State coordination.**

About Blockchain Technology

- **Definition:** It is a **DLT (Distributed Ledger Technology)** where encrypted records (blocks) are permanently linked across many computers.
- **Structure:** Data blocks are chronologically linked and cryptographically secured, preventing tampering.
- **Key Features:** Immutability, transparency, traceability, and decentralisation.
- **Benefit:** Enhances trust, reduces fraud, and improves efficiency in public systems.
- **Global relevance:** Countries like Sweden, Georgia, and Ghana have piloted blockchain-based land registries, showing improvements in efficiency and citizen trust.

Also In News



BRAIN Initiative Cell Atlas Network (BICAN)

Researchers have completed a **first draft of atlases** of the developing human brain.

- **The research** is part of the **U.S. National Institutes of Health's BRAIN Initiative Cell Atlas Network (BICAN).**

Key-findings of Research

- **Scientists** chart how the **many types of brain cells emerge** and mature from the **earliest embryonic and foetal stages** until **adulthood.**
- **Findings** could help in tackling certain brain-related conditions **like autism and schizophrenia.**

About BICAN

- It is a **collaborative** effort between **neuroscientists, computational biologists and software engineers** to create a open-access comprehensive atlas of the human brain.



Volcanic Lightning

Recently, volcanic lightning was mentioned in the news.

What is a Volcanic Lightning?

- It is a **powerful electrical discharge** caused by a volcanic eruption rather than from an ordinary thunderstorm.
- **Cause:** The primary mechanism is the **collision and rubbing** of **ash particles (near ground) or ice particles (higher up)** within the **volcanic plume**, generating **static electricity** and building up electric charges.
- **Significance:** The lightning acts as a natural **early warning system** of oncoming eruptions.



Section 33-36 of RPA, 1951

Recent debates over rejection of nomination papers have renewed calls to reform **India's electoral nomination process** under the Representation of the People Act, 1951 (**RPA, 1951**).

Key provisions (Sections 33-36, RPA 1951)

- **Section 33 - Nomination filing:** Candidates submit nomination papers signed by self and proposers (one for party, ten for independents).
- **Section 33A - Disclosure:** Mandatory declaration of criminal cases, assets, liabilities, and education.
- **Section 33B - Limitation:** Restricts disclosures beyond Section 33A.
- **Section 34 - Security deposit:** ₹25,000 (Lok Sabha) or ₹10,000 (Assembly), forfeited if below one-sixth votes.
- **Section 35 - Notification:** Returning Officer (**RO**) announces nomination, scrutiny, and withdrawal schedule.
- **Section 36 - Scrutiny:** RO examines and may reject **defective papers.**



Christmas Island

Google plans to build a large artificial intelligence data centre on **Australia's Christmas Island**.

About Christmas Island

- **Location:** In **Indian Ocean**, 1500 km North West of Australian mainland.
- Nicknamed the "**Galapagos of the Indian Ocean**".
- It is a **135 sq. Km island** famous for its **annual migration** of millions of **red crabs, sea birds, whale sharks and spectacular coral reefs**.
- Christmas Island is well positioned to **monitor Sunda Strait, Lombok Strait, Malacca Straits**.



Promotion of Research and Innovation in Pharma & MedTech (PRIP) Scheme

The Centre has extended the deadline for applying for Promotion of Research and Innovation in Pharma & MedTech (PRIP) Scheme.

About PRIP Scheme

- **Launched by:** the Department of Pharmaceuticals, **Ministry of Chemicals and Fertilizers**.
- **Financial outlay:** ₹5000 crores
- **Aim:** Transforming India into a global powerhouse for R&D in the Pharma MedTech sector.
- **Features:**
 - ⊕ **Component A:** Strengthening the research Infrastructure with setting up of **Centres of Excellence** at National Institute of Pharmaceutical Education & Research (NIPERs).
 - ⊕ **Component B:** Promotion of Research and Innovation in the Pharma MedTech sector.



Rhesus Macaque

The Standing committee of the **National Board for Wildlife** has recommended **reinstating Rhesus Macaque under Schedule II** of the **Wildlife (Protection) Act, 1972**.

- It will restore its **statutory protection** against illegal capture & cruelty.

About Rhesus Macaque

- **Scientific Name:** macaca mulatta
- **Native:** to **mainland Asia**.
- These are **nonhuman primates** that **share approximately 93% genetic sequence** identity with **humans**.
- **Diet:** omnivores
- **Characteristics:** They are **both arboreal and terrestrial**.
- **Conservation status:**
 - ⊕ **Least Concern** (IUCN).



Place in News



Denmark (Capital : Copenhagen)

Denmark to ban access to social media for anyone aged under 15.

Political Features

- It is situated in Northern Europe and is part of Scandinavian countries.
- It also encompasses the **Faroe Islands** and the **island of Greenland** (both located in the North Atlantic Ocean).
- **Land boundary:** Germany (South).
- **Surrounding water bodies:** North Sea (West), Baltic Sea (East).

Geographical Features

- It is made up of the **Jutland Peninsula** and more than 400 islands .
 - ⊕ **Zealand** is the largest and most populated island.
- **Longest River:** Gudenå.
- **Climate:** Warm Gulf Stream (North Atlantic Current) moderates the climate and rain falls throughout the year.



AHMEDABAD



BENGALURU



BHOPAL



CHANDIGARH



DELHI



GUWAHATI



HYDERABAD



JAIPUR



JODHPUR



LUCKNOW



PRAYAGRAJ



PUNE



RANCHI