VISIONIAS INSPIRING INNOVATION
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Office of the Principal Scientific Adviser (OPSA) released 'Future Farming in India: AI Playbook for Agriculture'

This has been released along with two other publications under the **AI for India 2030 initiative** led by the Centre for the Fourth Industrial Revolution (C4IR) India, World Economic Forum (WEF).

- Launched under guidance of OPSA and Ministry of Electronics and Information Technology (MeitY), AI for India 2030 initiative aims to **develop frameworks** placing **responsible, inclusive, and scale-driven AI** at the heart of India's digital economy.

Key Highlights of Report

- **Potential AI use cases in Agriculture:**
  - **Intelligent Crop Planning:** Uses wide range of data such as soil health, weather patterns, historical prices and food import/export trends for recommending optimal crops.
  - **Smart Farming:** Satellite crop monitoring, decision support systems, rapid soil health analysis, pest prediction, hyperlocal weather advice, yield prediction, automated farm machinery, etc.
  - **Farm-to-Fork Solutions:** Ensuring quality and traceability, optimizing supply chain, fintech adoption, market linkage demand and price prediction, etc.
- **Framework for developing AI ecosystems in Agriculture:** Report presents Inclusive Multistakeholder Pathway for the Accelerated Convergence of AI Technologies (IMPACT AI) Framework. It has three pillars:
  - It has **three pillars – Enable** (formulate AI strategy, enable DPI for AI, AI upskilling etc.), **Create** (develop innovative AI products, establish AI sandbox etc.) and **Deliver** (empower front line extension systems, AI marketplace, creating awareness etc.).

Challenges in AI Adoption for Agriculture

- **Limited Exposure to Technology:** Fewer than 20% of Indian farmers use digital technologies.
- **Lack of Financial Capability:** Low income of Indian farmers restricts both their ability and willingness to pay for AI solutions.
- **Fragmentation:** Close to 85% of India's 150 million farmers are smallholders and the Indian farmer's average landholding is just 1.08 hectares.
- **Lack of Investment:** Development and use of AI solutions need investment in infrastructure and resources.
- **Perception of Risk:** There are very limited institutional mechanisms for validating technology before it is deployed.

Transforming Small Businesses: An AI Playbook for India's SMEs Released

It provides a **strategic roadmap** to help India's **Small and medium-sized enterprises (SMEs)** overcome challenges in productivity, credit access, and market reach by democratising AI.

- It emphasises on the adoption of **Inclusive Multistakeholder Pathway for the Accelerated Convergence of AI Technologies (IMPACT AI) framework.**

Category	SME challenges	AI applications
Operational and supply-chain efficiency	Small manufacturers incur 15–20% higher raw material costs as well as 20% greater logistics costs compared to large enterprises.	• Integrated procurement and supplier monitoring • Inventory optimization with demand insights. • Logistics optimization, Predictive analytics for supply-chain continuity, etc.
Quality	High defect rates increase operational disruptions and compliance risks.	• Unified maintenance and quality control. • Parameter monitoring and optimization.
Sustainability	High energy consumption, inefficient waste management and overuse of water drive up costs.	• Energy optimization. • Waste and resource management with predictive insights, etc.
Financial efficiency	SMEs' costs of capital at 12–14% are higher than those of large Indian corporations' 8–10%.	• Credit-risk assessment. • Integrated financial forecasting.
Virtual prototyping	High cost of simulation tools.	• Real-time design simulations.
Workforce and talent	Shortage of skilled labour.	• Role–skill mapping. • Cross-application adaptive learning.

MeitY proposed amendments to the IT Rules, 2021 to regulate AI-generated Content

The **Ministry of Electronics and Information Technology (MeitY)** has **proposed amendments** to the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 (IT Rules, 2021)** by exercising power under the **Information Technology Act, 2000 (IT Act).**

Key Proposed Amendments

- **Defining Synthetically Generated Information** (commonly known as **deepfake or AI-generated Content):** It is information that **is artificially or algorithmically created,** generated, modified or altered using a computer resource, in a manner that appears reasonably authentic or true**.**
- **Mandatory Declaration:** Content creators must clearly label all AI-generated or modified content before upload.
- **Enhanced Obligations for Significant Social Media Intermediaries(SSMIs):** E.g., Obtain a user declaration on whether uploaded information is synthetically generated

MeitY tightens rules for online content removal under IT Rules 2021

- New rules limits content removal powers to officials at **joint secretary rank** or above in **central ministries,** their equivalents in states, and deputy inspector general or higher in police forces.
  - Every takedown order will now require a monthly review by a secretary-level officer to ensure actions remain lawful.
- Previously, even junior officers, sometimes of ranks as low as section officers or deputy directors, could send removal notifications and without providing detailed legal reasoning.

Need of Proposed Amendments

- **National Security Risk:** Deepfakes can be used for spreading **propaganda** by anti-national forces, **terrorist recruitment,** etc.
- **Spreading Misinformation:** E.g., Used to spread **false narratives**, manipulate public opinion, and influence elections.
- **Gender-Based Harm:** E.g., Deepfakes frequently targets **women,** leading to **non-consensual explicit content** and **harassment.**
- **Defamation:** Can damage the **reputation of individuals** or institutions through **fabricated** videos or statements.
- **Fraud & Impersonation:** Enables **identity theft, financial scams,** and **social engineering** attacks. E.g., Deepfake phishing

World Meteorological Organization (WMO) Congress calls for accelerated implementation of Early Warnings for All (EW4All)

At the Congress, WMO also released **"Early Warnings for All in Focus: Hazard Monitoring and Forecasting" report,** tracking progress in **detection, monitoring, and forecasting capabilities.**

- Report highlights gaps in basic forecasting capacity, low compliance with Global Basic Observation Network (GBON), and limited satellite data usage.

Early Warnings for All (EW4All) Initiative

- **Aim:** Ensure **universal protection** from hazardous hydrometeorological, climatological and related environmental events through **life-saving multi-hazard early warning systems by 2027.**
- **Launched:** At **COP27** of UNFCCC in **2022** by the UN Secretary-General.
- **Organizations:** It is jointly led by **WMO, UNDRR, ITU and IFRC.**
- **Coverage:** Initially focused on **30 high-risk countries,** EW4All has since expanded to more than **100 participating nations.**

About Early Warning System (EWS)

- EWS is an **integrated** system of **hazard monitoring, forecasting, disaster risk assessment, communication and preparedness** which aims at enabling early action to save and protect lives, livelihoods and assets of people at risk.
- **Need for Early Warning:**
  - The damage caused by a disaster can be **reduced by 30%** if an early warning is issued within 24 hours.
  - Disaster mortality is **six times higher** and the number of people affected is four times higher in countries with limited multi-hazard early warning systems.
  - Economic damages from extreme weather events continue to **surge,** with over **US$4 trillion in losses globally since 1970.**

Early Warnings for All (EW4All)

Four Pillars of Muiti-Hazard Early Warning Systems

1. **Disaster Risk Knowledge**
   Collect data and conduct risk assessments to increase knowiedge on hazards, vulnerabilities, and their evolving trends.
   Led by UNDRR (UN Office for Disaster Risk Reduction)
2. **Detection, Observation, Monitoring, Analysis & Forecasting**
   Develop and sustain operational capacity for hazard monitoring, forecasting, and delivery of early warming services.
   Led by WMO (World Meteorological Organization)
3. **Warning Dissemination & Communication**
   Communicate risk information effectively so it reaches all relevant users and communities at risk.
   Led by ITU (International Telecommunication Union)
4. **Preparedness & Response Capabilities**
   Build national and community-level capabilities to respond effectively to the warnings they receive.
   Led by IFRC (International Federation of Red Cross and Red Crescent Societies)

Sevilla Forum on Debt launched

The forum is launched at the 16th session of the **United Nations Conference on Trade and Development (UNCTAD16)** to tackle the **entrenched debt crisis in developing countries.**

About Sevilla Forum on Debt

- It is led by Spain, supported by the **UNCTAD** and **United Nations Department of Economic and Social Affairs (UN DESA).**
- It will bring together all stakeholders, creditors, borrowers, international financial institutions and academia on debt sustainability, management and innovative solutions.
- It is one of the **outcomes** of the **Fourth International Conference on Financing for Development (FfD4)** and part of **Sevilla Platform for Action.**
  - The other three outcomes are **Debt Swaps for Development Hub, Debt-for-Development Swap Programme,** and **Debt "Pause Clause" Alliance.**
- This initiative will complement the **Sevilla Commitment.**
  - **Sevilla Commitment** lays out a path to close the $4 trillion annual SDG financing gap in developing countries.
  - It is the **first inter-governmentally agreed** financing for development framework since 2015.

Debt Crisis

- **Global public debt:** In 2024, global public debt reached $102 trillion (**developing countries burden**-US$ 31 trillion)
  - Developing countries spend $1.4 trillion on annual debt service.
- Over **3.4 billion people** live in nations spending more on debt servicing than on health or education.

Food and Agriculture Organisation (FAO) released the Global Forest Resources Assessment (GFRA) 2025

Report, **released every five years,** was published during **Global Forest Observations Initiative (GFOI) Plenary in Bali, Indonesia.**

- GFOI is a **flagship programme of the Group on Earth Observations (GEO),** which is a network of governments, academia, organizations, civil society and private sector aiming to harness the power of Earth Intelligence.
  - India is a member of GEO.

Key highlights of GFRA 2025

- **Forest Extent:** Forests cover 4.14 billion hectares, or 32% of the global land area.
  - **Nearly half of the world's forests are located in the tropics,** followed by boreal, temperate and subtropical domains.
  - **Europe has the largest forest area,** accounting for 25% of world's total.
- **India's Forest Extent:** India moved up one rank to **9th position** in terms of total forest area globally, accounting for 2% of global forest area.
  - India ranks **5th in terms of rubber plantation.**
- **Deforestation and Expansion:** Deforestation slowed to 10.9 million hectares per year in 2015–2025, down from 17.6 million in 1990–2000.
- **Natural Regeneration:** More than 90% of world's forests are regenerating naturally.
- **Carbon Stock:** Forest carbon stocks have increased, reaching 714 gigatonnes, with soil holding majority forest carbon stock, followed by living biomass, and litter and deadwood.
- **Disturbances: Fire** is prevalent forest disturbance in subtropics while **insects, diseases and severe weather** affect mainly the temperate and boreal domains.

Also in News

Edible Oil

The Ministry of Consumer Affairs, Food and Public Distribution has amended the **Vegetable Oil Products, Production and Availability (Regulation) Order, 2011 (VOPPA Order).**

About Amendment

- It **mandates registration** of all stakeholders involved in the **processing chain of edible oil.**
- Mandates **submission of monthly production and stock returns** through the designated online portal.

Edible oil sector in India

- India ranks **fourth** in the world after the United States, China, and Brazil in the edible vegetable oil market.
- India contributes about **5-6% of the world's oilseeds production.**
- However, India **imports 57%** of its edible oil demand.

Tapioca

A study highlights the successful use of wasps for pest control in tapioca plantations.

- A **tiny parasitic wasp, Anagyrus lopezi,** was used to target the **cassava mealybug,** an invasive pest.

About Tapioca

- Also called **cassava,** it is a **tropical tuber crop** mainly cultivated in **Kerala, Tamil Nadu, Karnataka and Andhra Pradesh.**
  - **Kerala and Tamil Nadu** account for about **80%** of the total acreage of the crop in India.
- **Climate and Soil Requirement:**
  - Tropical, warm humid climate with well distributed rainfall of over 100 cm per annum.
  - Well drained soil preferably red lateritic loam
- **Applications:** As raw material for starch extraction in yarn textile and paper industry, manufacturing sago, etc.

International Convention for the Suppression of the Financing of Terrorism

Iran ratifies **International Convention for the Suppression of the Financing of Terrorism.**

About International Convention for the Suppression of the Financing of Terrorism

- Adopted by the UN General Assembly in 1999 and entered in 2002.
- **Purpose:** Criminalizes the financing of terrorism and holds funders of terrorist acts accountable.
- **India** has also **ratified it.**

State of Global Air Report 2025

The State of Global Air **(SoGA) 2025** report released by the Health Effects Institute **(HEI)** and the Institute for Health Metrics and Evaluation **(IHME),** United States.

Key findings about air pollution in India

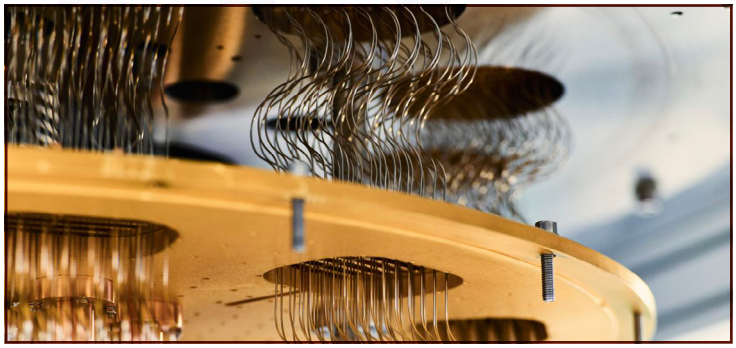
- **Mortality:** Around **2 million deaths in 2023** linked to air pollution, a 43% rise since 2000, and **52% of the global share.**
- **Ozone Pollution:** India has third highest exposure to ozone pollution.
- **Exposure: 75%** population exposed to **PM2.5** above WHO limits.
- **Pradhan Mantri Ujjwala Yojana (PMUY):** Modelling studies suggest that transitioning all PMUY households to **exclusive LPG use would avert more than 150,000 deaths annually.**

Quantum Echoes Algorithm

Google's Willow quantum chip demonstrated the **first-ever** algorithm, called **'Quantum Echoes algorithm,'** to achieve **verifiable quantum advantage on hardware.**

About Quantum Echoes algorithm

- It is an algorithm that successfully **runs 13,000 times faster** than one of the world's most powerful **supercomputers** and is **verifiable.**
  - **Quantum verifiability** means the result can be **repeated** to get the **same answer,** confirming the result.
- **Technique** works like a highly **advanced echo,** sending a quantum signals forward, perturbing one of the qubits, and then precisely reverse the signal's evolution to listen for the "echo" that comes back.
- **Potential Applications:** Study of molecular structures, drug discovery etc.



JAIMEX -2025

INS Sahyadri, an indigenously built Shivalik-class Guided Missile Stealth Frigate, participated in the Sea phase of **Japan-India Maritime Exercise (JAIMEX)-25.**

About JAIME X

- It is **a biennial** naval exercise.
- It is organised to enhance maritime cooperation between the **Indian Navy** and the Japan Maritime Self-Defense Force **(JMSDF).**
- **Conducted in 2 Phases: Sea Phase** and **Harbour Phase**

Methane Emissions

UN Environment Programme's (UNEP) releases fifth edition of its International Methane Emissions Observatory (IMEO) publication - An Eye on Methane: From measurement to momentum.

Key Highlights

- **Atmospheric methane** continues to be the **second biggest driver of climate change** after carbon dioxide, responsible for about one-third of the planet's warming.
- **High Impact Gas:** Methane is over 80 times more potent than CO_2 over 20 years but persists for a shorter period (7-12 years).
- **Major Sources:** About 60% of today's methane emissions result from human activities with agriculture, fossil fuels, and landfill waste being the largest contributors.
- **Natural Sources:** Natural processes contribute ~40% of emissions, with wetlands as the largest source.

Patna Sahib Gurudwara

Sacred **'Jore Sahib',** are being carried through **the Guru Charan Yatra,** from New Delhi to Bihar's Patna Sahib Gurudwara.

- Revered Jore Sahib are the sandals **of Guru Gobind Singh, the tenth Sikh Guru,** and his wife Mata Sahib Kaur Ji.

About Patna Sahib Gurudwara

- **Location:** Patna, Bihar; one of the five **Takhts** (seats of Sikh authority).
- **Historical Significance:** The construction of the Takhts was commissioned by **Maharaja Ranjit Singh** in the 18th century to mark the birthplace of Guru Gobind Singh.
- **Architecture:** Blend of Mughal and Sikh styles with golden dome and intricate artwork