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ONE HEALTH APPROACH FOR AN INTERCONNECTED WORLD

Context

- The rising incidence of zoonotic diseases and antimicrobial resistance has highlighted the need for a coordinated One Health approach to address human, animal, and environmental health risks.

What is the One Health Approach?

- One Health is an **integrated, unifying approach** that aims to sustainably balance and optimize the **health of people, animals and ecosystems.**
- It recognizes that the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent.

Evolution of the Concept of One Health

- The concept gained prominence during the **outbreak of Severe Acute Respiratory Syndrome** in **2003–04.**
  - It was further strengthened during the spread of **Avian Influenza H5N1.**
- **The Manhattan Principles** formally recognised the linkages between human and animal health and their implications for global economies and food security.
- Scientific evidence over time has shown that;
  - Nearly **75%** of emerging infectious diseases are zoonotic.
  - **Anthropogenic factors** such as land-use change, urbanisation, and global trade drive disease emergence.

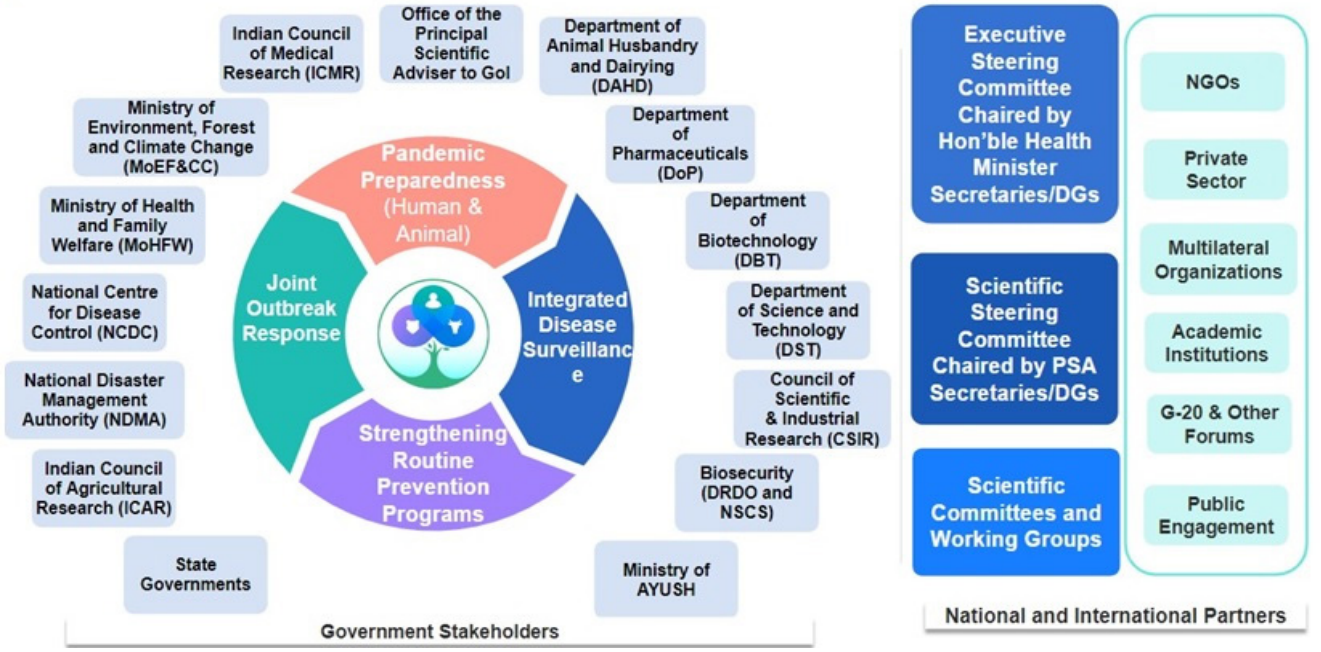
Significance of One Health Approach

- **Rising Zoonotic Diseases:** A large proportion of emerging pathogens originate in animals and spill over to humans. Further increased human encroachment into wildlife habitats has intensified such risks.
- **Impact of Climate Change:** Climate change is altering ecosystems, vector distribution, and disease transmission patterns.
  - Extreme weather events are increasing vulnerabilities in already fragile health systems.
- **Antimicrobial Resistance (AMR):** Indiscriminate use of antibiotics in humans, livestock, and agriculture is accelerating AMR.
  - A cross-sectoral strategy is essential to address this growing global threat.
- **Globalisation of Health Risks:** Increased mobility of people and goods has enabled rapid cross-border transmission of diseases. Health security has become a matter of global collective action.

Global Initiatives Strengthening One Health

- **The Quadripartite collaboration** provides leadership to the One Health approach, comprising;
  - World Health Organization
  - Food and Agriculture Organization
  - United Nations Environment Programme
  - World Organisation for Animal Health.
- **The One Health Joint Plan of Action (2022):** It aims to strengthen surveillance and early warning systems across countries. It also focuses on addressing zoonotic diseases and antimicrobial resistance in a coordinated manner.
- **The WHO Pandemic Agreement** aims to ensure equitable access to vaccines and therapeutics across countries. It also seeks to establish robust pathogen data-sharing mechanisms at the global level.
- **National One Health Mission**
- **Launched by:** The Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC) approved setting up a National One Health Mission with a **cross-ministerial effort in 2022.**
- **Objective:** To develop an integrated framework for surveillance, prevention, and control of zoonotic diseases, antimicrobial resistance (AMR), and emerging health threats.
- **Approach:** Cross-sectoral collaboration among ministries (Health, Animal Husbandry, Agriculture, Environment, etc.), research bodies, and state governments.
- **Focus areas:**
  - Zoonotic diseases (e.g., Nipah, Avian Influenza, COVID-19 origins).
  - Food safety and antimicrobial resistance.
  - Climate change and its impact on disease spread.
  - Capacity building for laboratories and data integration platforms.

Stakeholders of the One Health Mission



Challenges in Operationalizing One Health

- **Intersectoral Coordination:** Fragmented institutional silos between human, animal, and environmental health bodies.
- **Lack of Trained Workforce:** Shortage of epidemiologists, zoonotic disease experts, and data scientists at the district level.
- **Infrastructural Disparities:** States vary in surveillance capabilities and digital health integration.
- **Data Privacy & Sharing:** Ensuring secure and effective real-time data flow between sectors remains a concern.

Way Ahead

- **Integrated and real-time surveillance systems** should be strengthened to enable early detection and timely response to emerging health threats.
- **International cooperation should be strengthened** to ensure equitable access to vaccines, diagnostics, and treatments across countries.
- **Capacity building and community participation** should be promoted to strengthen preventive and resilient healthcare systems.

Source: TH

INDIA ACHIEVES MILESTONE IN NUCLEAR ENERGY PROGRAMME

Context

- India has achieved a major milestone as the indigenously built Prototype Fast Breeder Reactor (PFBR) at Kalpakkam has attained criticality.

Prototype Fast Breeder Reactor (PFBR)

- PFBR is an **advanced reactor** that **generates more fissile fuel** than it consumes.
- India's PFBR is located at Kalpakkam and operated by Bharatiya Nabhikiya Vidyut Nigam Limited. It uses Uranium–**Plutonium Mixed Oxide (MOX) fuel.**
- It is called a fast breeder because;
  - It uses **high-energy, fast neutrons** to sustain the fission reaction, rather than the slowed-down thermal neutrons used in standard reactors.
  - It converts fertile material (like Uranium-238) into fissile material (Plutonium-239).
- **The criticality refers** to the point at which a reactor achieves a **self-sustaining nuclear fission reaction,** where the number of neutrons produced is sufficient to keep the reaction going without external intervention.

Significance of the Achievement

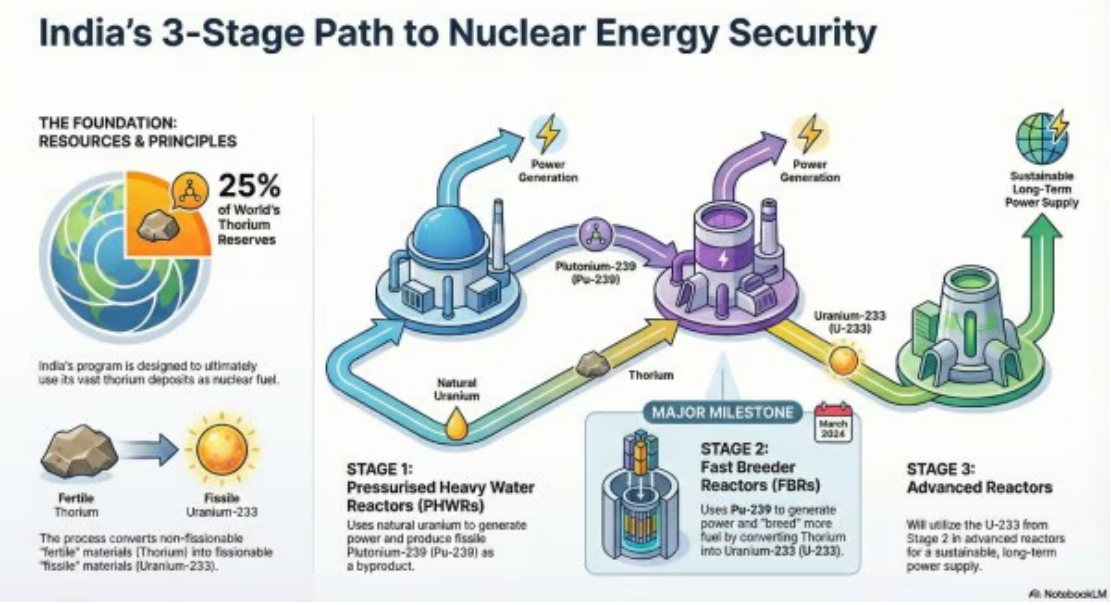
- **Advancement of India's Three-Stage Nuclear Programme:** The PFBR marks progress in the **second stage of India's three-stage nuclear programme.**
  - It enables the **conversion of fertile material into fissile fuel.**
  - It lays the **foundation for the third stage,** which focuses on thorium utilization.
- **Harnessing Thorium Potential:** India possesses vast thorium reserves, and the PFBR helps generate the required **fissile material (U-233) for thorium-based reactors.**

- **Thorium-232,** is not fissile but can be converted into a fissile material.

- **Technological and Strategic Significance:** India becomes only the second country after Russia to develop a commercial fast breeder reactor.
  - It demonstrates advanced indigenous capability in nuclear technology and engineering.

India's Three-stage nuclear programme

- **Establishment:** India established the **Atomic Energy Commission in 1948.**
  - **In 1956,** Asia's first research reactor, **Apsara**, was commissioned at the Bhabha Atomic Research Centre (BARC) in Trombay.
  - **India was the second Asian nation** to build a nuclear power plant in **1969** at Tarapur, just after Japan and long before China.
- India has a three-phase programme of nuclear power visioned by **Dr Homi J Bhabha,** the father of India's nuclear programme.
- **First Stage (Pressurized Heavy Water Reactors - PHWRs):** India's nuclear program initially focused on establishing a fleet of PHWRs.
  - These reactors use natural uranium **(U-238),** which contains minuscule amounts of **U-235,** as the fissile material.
  - Heavy water (deuterium oxide) **as both moderator and coolant.**
  - The primary purpose of this stage was to **produce plutonium-239 as a byproduct from the uranium fuel.**
  - **Plutonium-239 is a fissile material** used as fuel in nuclear reactors.
- **Second Stage (Fast Breeder Reactors - FBRs):** The second stage of the program involves the **deployment of Fast Breeder Reactors (FBRs).**
  - FBRs are designed to produce **more fissile material than they consume** by utilizing a fast neutron spectrum.
  - In this stage, **plutonium-239** produced in the first stage is used as fuel along with **U-238** to produce energy, **U-233, and more Pu-239.**
  - **Uranium-233** is **another fissile material** that can be used as fuel in nuclear reactors.
- **Third Stage (Advanced Heavy Water Reactors - AHWRs):** The final stage of the program entails the **deployment of Advanced Heavy Water Reactors (AHWRs).**
  - **Pu-239 will be combined with thorium-232 (Th-232)** in reactors to **produce energy and U-233.**
  - Thorium is abundantly available in India, and this **stage aims to harness its potential as a nuclear fuel.**



Source: PIB

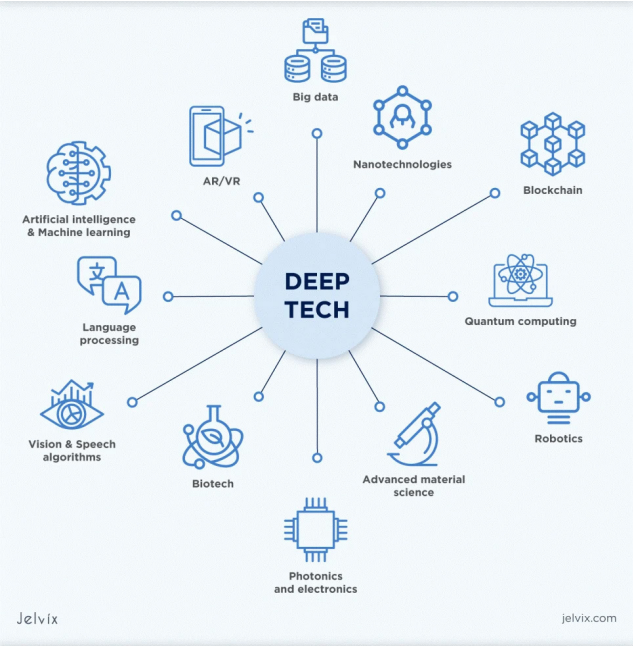
DEEP TECH IN INDIA

Context

- The Union government has undertaken various measures, including a policy push, to promote **deep tech in India.**

Deep Technology

- **Deep Technology** refers to innovations founded on advanced scientific and technological breakthroughs.



- Currently India has over 3600 Deep Tech startups, with over 480 being established in 2023 itself.

Significance of India's Deep-Tech Ambitions

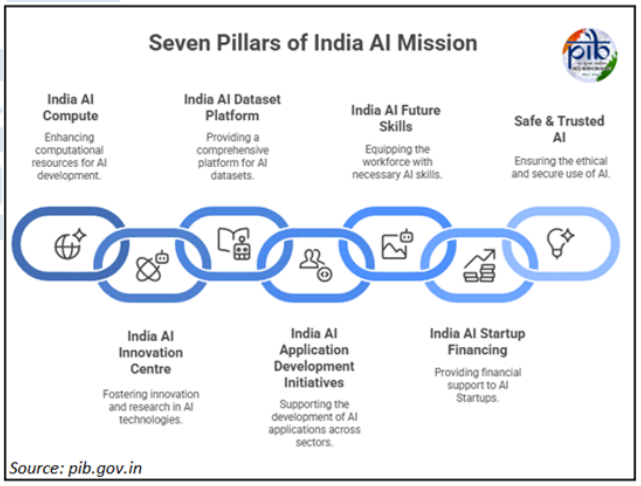
- **Global Leadership:** It positions India as a trusted R&D hub in the global landscape, leveraging its massive STEM talent pool to lead in frontier technologies.
- **Technological Sovereignty:** Reduces critical reliance on foreign imports for national security, defense, and space, ensuring India isn't vulnerable to global supply chain disruptions.
- **Solving Local Challenges:** Enables **India-first** solutions for massive social hurdles, such as AI for rural healthcare, precision agriculture for food security, and green hydrogen for energy independence.
- **Economic Value:** A robust deep-tech ecosystem enables India to move up the global value chain, shifting from **low-cost services and assembly-based manufacturing to high-value research,** design and intellectual property creation.

Challenges

- Deep tech often requires **large upfront investment** and **long development** timelines, making it less attractive to traditional venture capital.
- **Limited access to specialised labs,** supercomputing and testing facilities slows innovation.
- A **shortage of specialised research talent** and relatively low industry-linked R&D spending compared with global peers hinder progress.
- Deep tech solutions often face **regulatory and adoption barriers** that delay commercialisation.

Government Initiatives

- **The Draft National Deep Tech Startup Policy (NDTSP)** is strategically formulated to stimulate innovation, spur economic growth, and promote societal development through the effective utilization of deep tech research-driven innovations.
  - This policy aims to significantly strengthen India's capabilities and enhance global competitiveness.
- **IndiaAI Mission (2024):** It has a budget of ₹10,300 crore over five years.
  - A key goal is the creation of a high-end common computing facility with 18,693 GPUs.



- **India's AI Models & Language Technologies:** The government is facilitating the development of India's own foundational models, including Large Language Models (LLMs) and problem-specific AI solutions tailored to Indian needs.
- **Research, Development and Innovation (RDI) Scheme**: To finance innovation at scale, the Government also announced a new Research, Development and Innovation (RDI) Fund with a total outlay of ₹1 lakh crore.
- The Government has notified the **Indian Space Policy, 2023**, which clearly delineates the roles of ISRO, IN-SPACe and industry, thereby enabling private sector participation across the entire space value chain.

- **Foreign Direct Investment (FDI) norms in the space sector** have been liberalised, permitting up to **100% FDI** in satellite manufacturing and components, and enhanced limits in launch vehicles and satellite operations, to attract global capital and technology.
- **Establishment of the Anusandhan National Research Foundation (ANRF)** under the ANRF Act, 2023.
  - The ANRF is intended to provide strategic direction, competitive funding opportunities and collaboration pathways across industry, academia and government
- **The National Quantum Mission** launched in 2023 for the period 2023-24 to 2030-31 to accelerate research, development, and deployment of quantum technologies, including quantum computing, communication, and sensing.
- **The Bio-E3 Policy** is being implemented to promote biotechnology entrepreneurship, biomanufacturing, and bio-based innovation, creating an enabling environment for startups to scale their solutions in emerging biotechnologies.
- **AI Centers of Excellence:** Establishing dedicated AI hubs and innovation centers across the country to support AI startups and research.
- **Semicon India Program:** Launched in 2021, it is structured to promote the domestic semiconductor industry through incentives and strategic partnerships.
  - At Global Investors Summit 2025, it was announced that India's first indigenous semiconductor chip will be ready for production by 2025.

Source: TH

NEWS IN SHORT

PIPRAHWA RELICS IN LEH

Context

- The sacred Piprahwa Relics are set to arrive in Leh on the occasion of **Buddha Purnima.**
  - The Relics were repatriated from Hong Kong in July 2025.

About Piprahwa relics

- The Piprahwa relics were discovered in **1898** by British civil engineer **William Claxton Peppé** in Piprahwa, Uttar Pradesh.
  - They are excavated from the **Piprahwa Stupa**—widely recognized as the ancient city of **Kapilavastu**, the birthplace of Lord Buddha.
- **They include** bone fragments, soapstone and crystal caskets, a sandstone coffer, and offerings such as gold ornaments and gemstones.
- They are believed to be associated with the mortal remains of Lord Buddha.
  - An inscription in the **Brahmi script** on one of the caskets confirms these as relics of the Buddha deposited by the **Sakya clan.**
- **Status:** Most of these relics were moved to the **Indian Museum in Kolkata in 1899** and are legally protected as **'AA' antiquities**, forbidding their sale or removal.
- While some bone relics were gifted to the **King of Siam, a portion kept by Peppé's descendants.**

Ladakh as the Gateway of India's Buddhist Civilisation

- Ladakh has historically functioned as a **bridge between India, Central Asia, and East Asia.** It connected regions such as **Kashmir, Gandhara and Central Asia.**
- Through these routes, Buddhism spread via **trade caravans, monastic networks and cultural exchanges.**

Source: IE

NAMO DRONE DIDI SCHEME

Context

- According to the **Ministry of Civil Aviation** a total of 1,094 SHG members have been trained as drone pilots in the country.

Namo Drone Didi

- The **Namo Drone Didi scheme** is a 1,261 crore central initiative (2023-24 to 2025-26) providing drones to **15,000 women-led Self-Help Groups (SHGs) under the DAY-NRLM mission.**
- It **empowers rural women** as certified drone pilots to offer affordable, precise, and efficient spraying services for pesticides and fertilizers to farmers, improving crop yields and generating new income.
- The **15-day training for SHG members** (5 days drone pilot training and 10 days nutrient and pesticide application training) is provided under the scheme.

Source: TH

RBI REVISES BANKING CORRESPONDENT CLASSIFICATION

Context

- The RBI has proposed that in addition to bank branches, banking correspondents should be **classified into two categories** based on their

assignments and suggested uniformity in fixing their wages.

About

- **The RBI proposed defining three types of delivery points** — bank branches, Business Correspondent-Banking Outlet (BC-BO) and Business Correspondent-Banking Touchpoint (BC-BT).
  - **Banking correspondents are assigned in remote areas** to perform retail banking operations, expanding the reach of banks and helping in financial inclusion.
  - **BC-BOs** will be able to carry out activities such as opening of bank accounts; opening of term deposit accounts; cash deposits and withdrawals; fund transfers; issuance/ blocking of debit cards among many others.
  - **BC-BTs** will offer limited services such as small-value transactions and remittances with flexible hours.
- Currently, **there is no classification among business correspondents**, while the commissions they get paid vary from bank to bank.
  - As of 2025, there were over 16 lakh business correspondents engaged by various lenders.

Source: IE

BABU JAGJIVAN RAM

Context

- PM Modi paid tributes to **Babu Jagjivan Ram** on his birth anniversary.

About

- **Babu Jagjivan Ram** was a freedom fighter and social reformer born on **5 April 1908** in Chandwa village (present-day Bihar).
  - He studied at **Banaras Hindu University** and later graduated from **University of Calcutta.**
- **Role in Freedom Struggle:** He was inspired by Mahatma Gandhi and actively participated in the national movement.
  - He took part in the **Civil Disobedience Movement** and the **Quit India Movement.**
- **Social Justice Contributions:** He founded the **Akhil Bharatiya Ravidas Mahasabha** and the **All India Depressed Classes League** to mobilize marginalized communities.
  - He was instrumental in the enactment of the **Protection of Civil Rights Act, 1955.**
- **Political Career:** He was a member of the Constituent Assembly of India.
  - He was a **Cabinet Minister for 35 years**- the longest serving minister handling several key portfolios.
  - As Food & Agriculture Minister, he is credited with the **Green Revolution** and as Defence Minister he led India to the historic **1971 war,** which saw the birth of Bangladesh.
  - He served as the **Deputy Prime Minister** of India in **1979 under Morarji Desai.**

Source: PIB

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