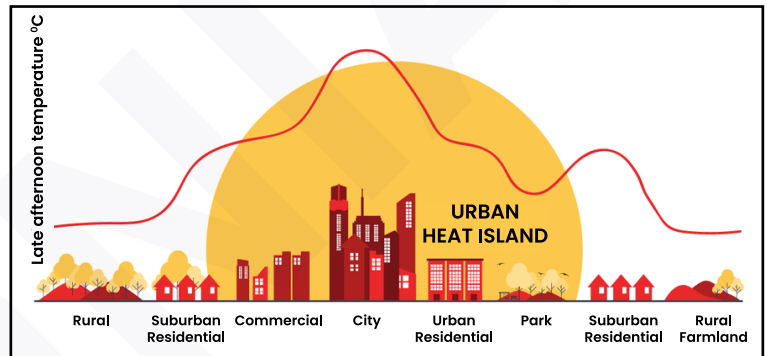


NEWS TODAY

A study investigated the interactions between Urban Heat island (UHI) effects and pollutants

- The study conducted by NIT Trichy has identified that there is a significantly **higher concentration of pollutants in the urban areas compared to the rural areas.**
 - ⊕ **Aerosols, Carbon monoxide (CO), and ozone (O₃)** has directly impacted the UHI phenomenon.
- **About Urban Heat Island (UHI)**
 - ⊕ It occurs when a **city experiences much warmer temperatures than nearby rural areas.**
 - ⊕ The urban heat-island effect can raise temperatures by **5°C to 10°C**, exacerbating heat waves.
 - ⊕ **Causes:**
 - ◆ **Reduced Natural Landscapes in Urban Areas:** Hard, dry surfaces in urban areas, such as roofs, sidewalks, roads, buildings, and parking lots, etc.
 - ◆ **Urban Geometry:** surfaces and structures obstructed by **neighboring buildings** become large thermal masses that cannot release their heat readily.
 - ◆ **Heat Generated from Human Activities:** Vehicles, air-conditioning units, and industrial facilities, etc
- **Impact of UHI**
 - ⊕ **Higher energy consumption:** e.g., increased demand for air conditioning to cool buildings.
 - ⊕ **Health:** respiratory problems, sunstroke, dehydration, tiredness, etc.
- **Way Forward**
 - ⊕ **Use of high albedo** (fraction of light that is reflected by a body or surface) and cool surface **materials can reduce the impact of UHI.**
 - ⊕ Further, Urban greenery, green roofs/surfaces, etc can also reduce its impact.



Artificial intelligence powered Disinformation is on the rise

- **Artificial intelligence-generated fake audio and video clips** have been reportedly used in recent national elections across the globe.
- Disinformation is **intentional spread of misleading or biased information.**
 - ⊕ **Criminals, terrorist/extremist groups, and state-sponsored actors** use disinformation to spread propaganda, incite confusion, or compel violence.
 - ⊕ **Information technology** has played a pivotal role in spread of disinformation.
- **Challenges Posed by Disinformation:**
 - ⊕ **Curtailing Human Rights:** It interferes with **right to freedom of thought and to hold opinions** without interference. As fake news interferes with free flow of correct news.
 - ⊕ **Weakening of trust in democratic institutions:** Use of misinformation can substantially sway **public opinion, influencing democracy or public policy.**
 - ⊕ **Polarisation of society:** Disinformation often seeks to polarize its target audience across contentious political or social divisions.
 - ⊕ **Digital violence and repression:** Coercive use of information by non-state actors against its challengers often includes cyber-stalking, harassment, or Cyberbullying.
- **Way- Forward:**
 - ⊕ **Technological solutions:** Using AI and machine learning for identifying and filtering out false information.
 - ⊕ **Collaboration between governments, technology companies, and civil organizations** for effective regulation.
 - ⊕ **Threat monitoring, and regular technological system updates**
 - ⊕ **International cooperation:** For sharing of best practices and intelligence.

Steps Taken:

- **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021:** It proposes that social media platforms are required to remove content that has been fact-checked.
- **Information Technology (IT) Act, 2008:** The act can be used to penalize those who spread fake news through electronic communication.
- **Bharatiya Nyaya (Second) Sanhita, 2023:** Has provisions for fake news including through electronic means.

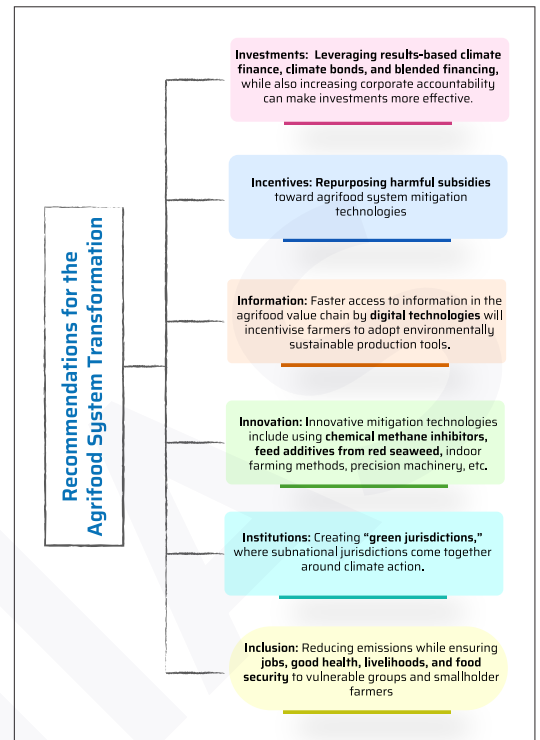
World Bank released 'Recipe for a Livable Planet: Achieving Net Zero Emissions in the Agrifood System' report

About Report

- Report provides **first comprehensive global roadmap** for mitigating the agrifood system's contributions to climate change.
 - Agri-food system encompasses the **entire journey of food from farm to table** (i.e., from cultivation, harvesting, processing, packaging, etc. to preparation, consumption, and disposal).
 - It also encompasses **non-food products** (for example forestry, animal rearing, use of feedstock, etc.)

Key findings

- Emissions:** Agrifood generates almost a **1/3rd of global greenhouse gas emissions**.
- Top Emitters:** 3/4th of agrifood emissions come from **developing countries** and **China, Brazil, and India** are the **top 3 emitters**.
 - In India, **60% of such emissions come from the farm gate**, mainly due to enteric fermentation in the livestock sector
- Suboptimal climate financing:** Despite an overall **doubling of climate financing** (at \$660 billion) **over the last decade**, project-level financing for **agrifood systems stands at only 4.3%** (at \$28 bn).
 - Annual investments must **increase to \$260 billion a year** to halve agrifood emissions by 2030 and **reach Net Zero emissions by 2050**.
- Greatest mitigation potential:** It lies in **carbon sequestration** in agriculture which includes measures to reduce **enteric fermentation**, **increase synthetic fertilizer efficiency**, and **manage water resources in rice cultivation**.



India is now a net exporter of medical consumables and disposables: Department of Pharmaceuticals (DoP)

- According to the DoP **exports surpassed imports in consumables and disposables** last year, yet the **overall MedTech sector** experienced an **import surge**.
 - The import was driven primarily by countries like the **US, China, and Germany**.

About Medtech sector

- MedTech (or Medical Technology) is a **segment of healthcare systems** that focuses on **designing and manufacturing** a wide range of **medical products/devices** for diagnosis, prevention, treatment.

Its major categories are:

- Disposables and consumables
- Electronics and equipment
- Surgical instruments, Implants

India's Medtech sector

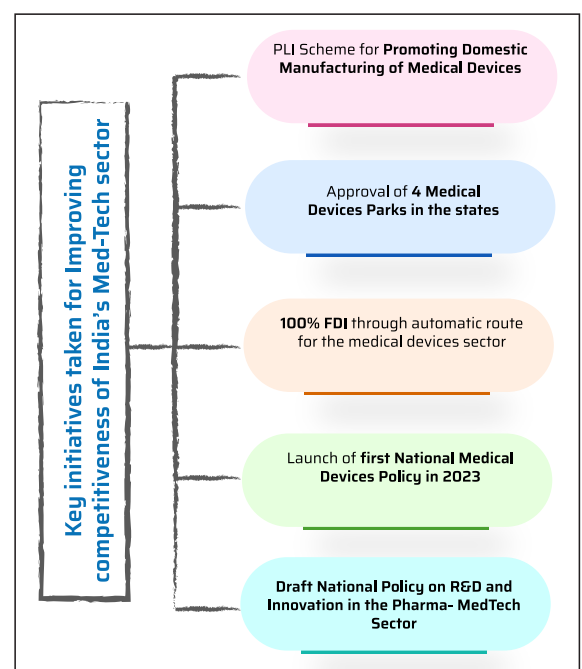
Current status:

- India's MedTech sector is projected to grow 28% annually, reaching a size of **US\$50 billion by 2030**.
- India ranks as the 4th largest market** for medical devices in Asia and stands among the top 20 globally.

Challenges:

- Indian companies mainly produce low-end product** such as syringes, needles, catheters, and blood collection tubes.
- Around 65% of the medical device manufacturers** in India are domestic players operating in the **consumables segment** and **catering mainly to local consumption**.
- Cost competitiveness, quality assurance, and regulation** are major hurdles.

- Way ahead:** Focus on the quality, fostering partnerships among stakeholders, boosting investment in research and innovation



ISRO successfully conducted the first Pre-Burner Ignition trial for semi-cryogenic engine (SCE)-200

- The ignition process is **one of the most critical parts in the development of liquid rocket engine systems**.
 - ⊕ The recent **SCE ignition** is achieved using a **start fuel ampule** which uses a combination of **Triethyle Alumide and Triethyle Boron** developed by Vikram Sarabhai Space Centre (VSSC).
- **Semi-Cryogenic Engine (SCE)**
 - ⊕ SCE utilises **liquid oxygen (LOX)** as an oxidiser and **refined kerosene** as fuel.
 - ⊕ **ISRO is developing a powerful SCE** that produces a thrust of **2,000 kilonewtons (kN)**.
 - ◆ This SCE is aimed at **improving the payload capacity of the Launch Vehicle Mark-3 (LVM3)** and future launch vehicles.
 - ◆ **Liquid Propulsion Systems Centre, Bengaluru**, is ISRO's lead center for development of SCE.
 - ⊕ These engines offer **significant advantages over traditional cryogenic engines**.
 - ◆ The cryogenic engine uses **liquid Oxygen as oxidiser and liquid Hydrogen as fuel** (both kept at very low temperatures). It is usually the **last stage of rockets**.
- **Advantages of SCE**
 - ⊕ **Easy storage and handling:** Refined kerosene is **lighter, needs less space** and can be stored at a **normal temperature**.
 - ⊕ **More thrust:** They can **carry huge weight** to a higher altitude.
 - ⊕ **Other benefits:** They are **eco-friendlier and more cost-effective** compared to cryogenic engines.

International Organization for Migration (IOM) released World Migration Report 2024

- **Key Findings at Global level**
 - ⊕ **Factors driving global displacement: Conflict and climate change** remain the most significant.
 - ⊕ **Total international migrants: about 281 million** worldwide, of which 117 million are displaced, marking the highest level recorded.
- **India related findings**
 - ⊕ In India, strong influence of **climate impacts on internal migration from Rajasthan, Uttar Pradesh and Madhya Pradesh**.
 - ⊕ India hosts the **world's largest number of international migrants** (18 million), residing notably in **UAE, USA, and Saudi Arabia**.
 - ⊕ In **2022, India remains the top remittance recipient country**, receiving more than **USD 111 bn**, the first country to reach and even surpass the **USD 100 bn mark**.
- **Issues faced by Migrants**
 - ⊕ **Reduced migration pathways** for individuals from less developed countries is driving more people to resort to **irregular migration pathways**.
 - ⊕ Migrants are subjected to **racism, xenophobia, criminalization, gender based violence** and other human rights violations.
- **About IOM**
 - ⊕ **Genesis:** Established in 1951, part of the UN System.
 - ⊕ **HQ:** Geneva, Switzerland.
 - ⊕ **Members:** 175 member states.
 - ⊕ **Objectives:** Driving solutions to displacement and Facilitating pathways for regular migration.
 - ⊕ **Initiatives:** Global Compact For Migration

Also in News



Border Roads Organisation (BRO)

- BRO celebrated its **65th Raising Day**
- **About BRO**
 - ⊕ **Apex Ministry:** Ministry of Defence
 - ⊕ **Establishment:** Founded in 1960 to build and maintain **roads in India's border regions** and its initial project was **Project Tusker** (renamed as Vartak) in the east.
 - ⊕ **Functions**
 - ◆ Beyond borders, BRO has expanded road infrastructure in various Indian states including **Bihar, Maharashtra, and others**, and in **friendly neighbouring countries** like Bhutan, Myanmar, and Afghanistan.
 - ◆ **Supports the Indian Army by maintaining roads in forward zones** during national emergencies and the outbreak of hostilities.
 - ◆ **Rehabilitating airfields** for the Indian Air Force.



Sahyadri Tiger Reserve (STR)

- Maharashtra plans to relocate tigers to the Sahyadri Tiger Reserve from Tadoba-Andhari Tiger Reserve in Chandrapur district.
- **About STR:**
 - ⊕ Located in the **Sahyadri Ranges of Western Ghats** in Maharashtra.
 - ⊕ Spread over **Kolhapur, Satara, Sangli and Ratnagiri districts** in western Maharashtra.
 - ⊕ Reserve was notified in 2010 **amalgamating Koyana Sanctuary and Chandoli National Park**.
 - ⊕ **Habitat:** Composed of woodlands, grasslands, and plateaus (Sadaa).
 - ⊕ **Flora:** Subtropical Hill Forests, Semi-evergreen Forests, Deciduous Forests.
 - ⊕ **Fauna:** Tiger, Atlas Moth, Moon Moth, and other endangered Butterflies, Blue finned Mahasheer fish, also supports Hornbills.



Darfur Crisis

- UN has said that people have been eating 'grass and peanut shells' in Darfur due to hunger crisis in Sudan.
- Since April 2023, civil war in Sudan has ensued with clashes between the **Sudanese army and Rapid Support Forces (RSF)**
- **About Darfur:**
 - ⊕ Darfur is a region of **western Sudan**, bordering **Libya, Chad, and the Central African Republic**.
 - ⊕ The latest surge in violence comes as the RSF encircles **North Darfur's capital, El Fasher**.
 - ⊕ It has halted aid convoys coming from **Chad's Tine border crossing** – a humanitarian corridor that passes through El Fasher.



Provisioning

- **Reserve Bank of India (RBI) has released a draft guidelines** regarding **provisioning** for lenders who undertake project finance.
 - ⊕ As per RBI guidelines, lenders shall maintain 5% provisions on exposures to projects under implementation at various stages.
- **About Provisioning**
 - ⊕ Banks in India have to set aside funds for a percentage of their assets.
 - ⊕ This means that the bank sets aside a prescribed amount of money from their profit to compensate for probable loss.



Foreign Exchange Management Act, 1999 (FEMA)

- RBI has eased FEMA norms to facilitate foreign investment in derivatives.
 - ⊕ **Derivative is a financial instrument** which derives its **value/price from the underlying assets**.
- **About FEMA**
 - ⊕ FEMA was enacted as a successor to Foreign Exchange Regulation Act (FERA) of 1973.
 - ⊕ **Aim:** Facilitating external trade and payments and for promoting the orderly development and maintenance of foreign exchange markets in India.
 - ◆ Two categories of foreign exchange transactions in: **capital account and current account transactions**.
 - ⊕ **Liberalized Remittances Scheme** allows residents to remit for any permissible current or capital account transactions.



West Nile Virus (WNV)

- Cases of West Nile fever, caused by WNV, were reported in Kerala
- **About WNV**
 - ⊕ **Isolation:** First isolated in **1937** in the **West Nile district of Uganda**, hence named so.
 - ⊕ **Virus Family:** a member of the flavivirus genus.
 - ⊕ **Vectors:** Transmitted through the bites of **infected mosquitoes**, specifically from the **genus Culex**.
 - ⊕ **Natural Hosts:** Bird
 - ⊕ **Health Risks:** Can cause **severe neurological diseases and death**. However, approximately **80%** of infected individuals do **not exhibit any symptoms**.
 - ⊕ **Vaccination:** Vaccines are available for horses but **not for humans**.



Artificial General Intelligence (AGI)

- Recently, the CEO of OpenAI, expressed his commitment to Develop AGI.
- **About AGI**
 - ⊕ It refers to a **hypothetical form of Artificial Intelligence (AI)** that possesses the ability to **understand, learn, and apply knowledge in a manner that is comparable to human intelligence**.
 - ⊕ **AGI (or strong AI) vs AI (or narrow AI)**
 - ◆ AGI envisions a broader, **more generalised form of intelligence**, not confined to any particular task (like humans).
 - ◆ **Narrow AI** is designed to **perform specific tasks** such as image recognition, translation, playing games like chess, etc.



Virtual Touch

- Delhi HC has said that the Minors must be taught about 'virtual touch' to recognise risks in cyberspace.
- **About Virtual touch:**
 - ⊕ Educating 'Virtual Touch' involves teaching appropriate online behavior, recognizing **predatory behavior warning signs**, and **understanding privacy settings** and online boundaries.
 - ◆ **It promotes critical thinking skills for assessing online contacts**.
 - ⊕ Just as good and bad touch in the physical world, Virtual touch is an **essential concept for minors in the digital age**.
- Schools should **include virtual touch**, its danger, in their curriculum.

Personality in news



Tileswari Koch (1930 -1942)

- **Early Life:**
 - ⊕ **Father:** Bhabakanta Barua
 - ⊕ **Birthplace:** Nij-Borgaon village on the outskirts of Dhekiajuli (Sonitpur district) Assam.
- **Contributions:**
 - ⊕ She was **shot by the British on September 20, 1942**, during the **Quit India Movement** while **attempting to hoist the Tricolour** at a police station in Dhekiajuli, along with other freedom fighters.
 - ⊕ This incident is sometimes called as **Dhekiajuli martyr** and the procession of freedom fighter to hoist flag is known as **mrityu vahini** (suicide squad) which was **led by Monbor Nath**.
- **Honour:** Dhekiajuli town marks September 20 as **Martyrs' Day** in her honour.
- **Values:** Courage, Justice, Valour etc.

