

NEWS TODAY

“The State of the World’s Mangroves 2024” Report released by Global Mangrove Alliance

Report was released on World Mangrove Day (observed annually on 26th July).

Key Highlights of Report

- Southeast Asia has almost about **one-third of all mangroves globally** (Indonesia alone has 21% of world’s mangroves), followed by **West and Central Africa**.
- **Half of world’s mangrove provinces are considered threatened** (IUCN Red List of Mangrove Ecosystems).
- Mangroves in **Lakshadweep archipelago** and on **coast of Tamilnadu** are **critically endangered**.
- **Drivers of Mangrove Loss:**
 - ⊕ **Climate change** (sea-level rise, increased storm intensity).
 - ⊕ Expansion of **industrial shrimp aquaculture** (Andhra Pradesh, West Bengal, Gujarat).
 - ⊕ **Conversion to oil palm plantations**, rice cultivation (43% loss between 2000- 2020).

Benefits of Mangroves

- **Support variety of plants and animals** e.g. Over 5,700 plant/ animal species have been recorded in Indian mangroves.
- Acts as **carbon sinks** i.e. **store an average of 394 tonnes of carbon per hectare**.
- **Protect coastal regions** from disasters i.e. **Reduce flood depths by 15- 20%**, and over 70% in some areas.
- **Fish and seafood sourced from mangrove** ecosystems are often **rich in essential nutrients like protein**, omega-3 fatty acids, vitamins (e.g. vitamins D and B12), and minerals (e.g., iron, zinc).
- **Improves water quality** through filtering pollutants and trapping sediments.

About Mangroves

- **Grow along coasts in salt marshes**, tidal creeks, mud flats and estuaries.
- **Salt-tolerant plant communities** found in **tropical and subtropical intertidal regions** characterized by **high rainfall** (between 1,000-3,000 mm) and **temperature** (ranging between 260C-350C).
- **West Bengal has largest mangrove cover in India**. (India State of Forest Report, 2021)

Initiatives for Mangroves

India:

- Mangrove Initiative for Shoreline Habitats & Tangible Incomes (**MISHTI**).
- Sustainable Aquaculture in Mangrove Ecosystem (**SAIME**).

Global:

- **Mangrove Breakthrough** by GMA.
- **Mangrove Alliance for Climate**, headed by UAE in partnership with Indonesia.

Report on Currency and Finance 2023-24 released by Reserve Bank of India (RBI)

This year's report is centered around the theme "India's Digital Revolution."

Key Findings of the report

- **Digital economy:** In the last decade, global digital economy grew **2.5 times faster than physical economy** to account for **15% of global GDP**.
 - ⊕ Digital economy currently accounts for a **tenth of India's GDP** and is poised to constitute a **fifth of GDP by 2026**.
 - ⊕ **Growth factors:** Internet penetration, low data cost, highest mobile data consumption, large startup ecosystem etc.
- Globally, India ranks **first in biometric-based identification (Aadhaar) and real-time payments** volume.
- **Digital Public Infrastructure (DPI):** DPI is going global through Modular Open Source Identity Platform (MOSIP) programme; interlinkage and broadening of UPI with other nations’ fast payment systems like Singapore’s PayNow, etc.
- **Social Welfare:** Bridging economic inequalities via **Direct Benefit Transfer**.
 - ⊕ By harnessing DPI, India has lifted **415 million people from poverty between 2005-2021** (UNDP, 2023).

Challenges to Digitalization

- **Consumer Vulnerability:** In 2022-23, **47% of RBI ombudsman complaints** were about digital payments.
- **Cyber Security:** In India, **average cost of data breaches stands at US\$ 2.18 million** in 2023, a 28 per cent increase since 2020.
- **Use of Dark Pattern:** Misleading design tactics in digital interfaces that **manipulate users into unintended actions**.

Suggestions from the Report

- **Self-regulatory organisations (SROs):** SROs could play a pivotal role in FinTech industry by promoting responsible practices and maintaining ethical standards.
- **Scaling up Cyber Infrastructure:** To handle growing number of transactions without compromising security.
- **Data Localisation and Ring Fencing:** Multi-fold increase in digital transactions has necessitated regulatory measures for storage of critical data in the form of data localisation.

High-Level Committee (HLC) launched projects to tackle Urban Flooding

HLC, chaired by Union Home Minister, approved six projects of five states (Telangana, Gujarat, Karnataka, West Bengal and Maharashtra) for urban flood management.

About Urban Floods

- It refers to rapid rise of floodwaters in urban areas due to limited infiltration and heavy rainfall events.
- Management of urban floods falls under the purview of State Governments and Urban Local Bodies/Urban Development Authorities, responsible for maintaining drainage and sewerage system in cities/towns.

Factors Causing Urban Floods

- Meteorological Factors:** Unprecedented Rainfall (944 mm in 24 hours, Mumbai floods 2005); Cyclonic Storms (Hyderabad floods 2020); Global warming (Snowfall, snowmelt and sea level rise) etc.
- Hydrological Factors:** Change in course of rivers; Landslides and soil erosion; Presence/absence of overbank flow and High tide impeding drainage; etc.
- Human factors:** Rapid rate of urbanization and deforestation; Lack of maintenance of infrastructure and drainage channels; Unplanned release of water from dams/lakes (Chennai Floods 2015 –water released from Chembarampakkam lake) etc.

Impact of Urban Floods:

- Structural damage to buildings, Loss of lives and property, disruption in transport, power and incidence of epidemic (dengue, malaria, chikungunya) etc.

Steps taken by India to prevent Urban Floods

- State Initiatives:** Chennai Flood Warning System; Flood forecasting and early warning system for Kolkata City.
- AMRUT Mission:** Under it, Storm water drainage component involves construction and improvement of drains/ storm water drains to reduce/eliminate flooding.
- Standard Operating Procedure for Urban Flooding** by Ministry of Urban Development.
- NDMA guidelines:** Hazard Risk Zoning and Mapping; Establishment of comprehensive Urban Flood Disaster Management Information System; address urban flooding as separate disaster (constituted Separate Urban Flooding Cell at national/state level) etc.

Union Budget 2024-25 announced push towards Natural Farming

It announced that in next two years, 1 crore farmers will be initiated into natural farming supported by certification and branding.

- Its implementation will be through scientific institutions and willing gram panchayats.
- Also, 10,000 need-based bio-input resource centres will be established.

Natural farming

- It is a local low-input climate-resilient farming system that advocates the complete elimination of synthetic chemical agro-inputs.
- It is considered as agroecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity.
- It aims at promoting traditional indigenous practices and is largely based on following principles:
 - Use of multi-cropping systems.
 - No synthetic agroinputs – fertilizers, pesticides, or herbicides.
 - Soil should remain covered at all times using cover crops or mulch.
 - Use of bio-stimulants to enhance microbial activity of soil.
 - Minimal tillage.
 - Use of cow dung-urine formulations (such as Bijamrit, Jivamrit, Ghanjivamrit etc.).
- Practicing States:** Andhra Pradesh, Karnataka, Himachal Pradesh, Chhatisgarh, Jharkhand etc.

Significance

- Improve Yield and increases Farmers' Income.
- Ensures Better Health as food has a higher nutrition density.
- Environment Conservation with better soil biology, improved agrobiodiversity and much smaller carbon and nitrogen footprints.

Challenges

- Skeptical farmers, non-availability of quality inputs, lack of adequate research and higher Labor Costs.

Initiatives taken for Natural farming

- National Mission on Natural Farming (NMNF):** a separate and independent scheme from 2023-24.
- National Mission on Sustainable Agriculture and Paramparagat Krishi Vikas Yojana.**
- State Initiatives:** Push towards Zero Budget Natural Farming (ZBNF) in some states.
 - Andhra Pradesh Community Managed Natural Farming (APCNF) model, which recently won the 2024 Gulbenkian Prize for Humanity.

Meeting of Quadrilateral Security Dialogue (Quad) Foreign Ministers' held in Tokyo, Japan

Quad is an informal strategic forum comprising India, US, Australia, and Japan.

- Its objective is to secure a rules-based global order, freedom of navigation and liberal trading system and work for an open, stable and prosperous Indo-Pacific.
- In 2007, Quad held its inaugural meeting on sidelines of ASEAN Regional Forum.

Key highlights of meeting

- Expand Indo-Pacific Partnership for Maritime Domain Awareness into Indian Ocean Region (IOR) to ensure safety and security of the critical sea lanes.
- Plan to launch Quad Maritime Legal Dialogue under Quad Maritime Security Working Group to support rules-based maritime order in Indo-Pacific.
- Finalised standard operating procedures for Humanitarian Assistance and Disaster Relief operations to enable an effective, immediate and coordinated response mechanism.
- Implementing Women, Peace and Security (WPS) Agenda including its application to disaster risk reduction.

Significance of Quad for India

- Counterbalance China's growing presence in IOR, including its Belt and Road Initiative which has led to building of port facilities in countries neighbouring India.
- With rising significance of Indo-Pacific, QUAD provides India with a powerful platform to advance East Asia's interests and further strengthen its Act East policy.
- Evolving Foreign policy strategy by aligning with like-minded countries.
- Supplementing India's defense capabilities especially in maritime domain.

World's first thorium molten salt nuclear power station to be launched in Gobi Desert by China in 2025

Instead of Uranium, this nuclear power station uses thorium as fuel.

- Its reactor does not need water for cooling because it utilizes liquid salt or carbon dioxide to transfer heat and make electricity.
- Unlike the water-cooling model, this design significantly reduces the chances of meltdowns.

Thorium as a Fuel

- Thorium, a naturally occurring element with radioactivity, is found at trace levels in soil, rocks, water, plants and animals.
- Due to its physical characteristics, thorium cannot be used directly to produce nuclear energy. It has to be first converted to U-233 in a nuclear reactor.

Significance of Thorium based reactors

- Abundant Supply unlike Uranium. In India, Kerala and Odisha have rich reserves of monazite, which contains about 8 – 10% thorium.
 - ⊕ Monazite is also prominent in Andhra Pradesh, Tamil Nadu, West Bengal and Jharkhand.
- Chemically safe, due to higher melting point, better thermal conductivity, better fuel performance characteristics, chemical inertness and stability.
- Environmentally safe, generates lesser toxic and short-lived radioactive wastes.

Role of Thorium in India's Nuclear Programme

- Third stage of India's nuclear power program envisages large scale power production from thorium.
 - ⊕ First stage involves use of natural Uranium in Pressurised Heavy Water Reactors (PWRs), while second stage involves use of Plutonium in Fast Breeder Reactors.
- India has well established the processes for producing thorium from monazite.
 - ⊕ Advanced Heavy Water Reactor, currently under development with BARC, would serve as a technology demonstrator for thorium fuel cycle.

Also in News



Central Water Commission (CWC)

CWC has been awarded GEEF (Global Energy and Environment Foundation) Global WaterTech Award under category 'Water Department of the Year' recognising its role in hydro-meteorological data collection, flood forecasting, etc.

About CWC (HQ: New Delhi)

- Established in 1945 on advice of Dr. B.R. Ambedkar.
- Headed by Chairman, an Ex-officio Secretary to Government of India.
- Premier Technical Organization functioning as an attached office of Ministry of Jal Shakti.
- Three technical wings: Designs and Research Wing; Water Planning and Projects Wing; River Management Wing.
- Aims to promote integrated and sustainable development and management of India's water resources by using state-of-the-art technology and competency and by coordinating all stakeholders.



Periyar Tiger Reserve (PTR)

A first of its kind wind turbine to generate power for real-time monitoring cameras and Wi-Fi connectivity within its forests has been installed in PTR.

About PTR

- Location: Thekkady (Idukki) district, Kerala. Situated in Cardamom Hills and Pandalam Hills of Southern Western Ghats of peninsular India.
- Climate: Cool and humid climate with high rainfall.
- Forest Types: Tropical evergreen forests, tropical semi-evergreen forests, moist deciduous forests, grasslands and eucalyptus plantations.
- Major River: Periyar and Mullayar. Mullaperiyar Dam is located within PTR.
- Fauna: Asian Elephant, Bengal Tiger, Sambar Deer, Leopard, Barking Deer, Nilgiri Tahr, Lion Tailed Macaque, etc.
- Flora: More than 41 % of entire flowering plants (angiosperms).

Ideas4LiFE

Union Minister for Environment, Forest and Climate Change launched **Ideas4LiFE portal**.

About Ideas4LiFE portal

- Aims to encourage and motivate students, faculty and research scholars to contribute their innovative ideas to global initiative of **Mission LiFE**.
- **Focuses on bringing behavioral changes** related to environment-friendly lifestyles.

Mission LiFE (Lifestyle for Environment)

- Launched in **2022**, focuses on bringing about **behaviour changes** in individuals for combatting climate change.
- It is a **global movement** for transitioning from a model of destructive and mindless consumption to deliberate and mindful utilization of resources.

MQ-9B UAV

As per report, **Defence Acquisition Council**, chaired by Defence Minister, reviewed and approved amendments to the deal for 31 MQ-9B High Altitude Long Endurance (HALE) Unmanned Aerial Vehicles (UAV).

About MQ-9B UAV

- It has two variants: **SkyGuardian** and **SeaGuardian (Maritime variant)**.
- Designed to fly over the horizon via satellite for up to **40 hours (SkyGuardian)** and **30 hours (SeaGuardian)**.
- Outfitted with the revolutionary **Lynx Multi-mode Radar**, an advanced electro-optical/infrared (EO/IR) sensor, and automatic takeoff and landing.
- **Weapons:** Laser guided missiles, Anti-tank missiles, Anti-ship missiles etc.
- **Missions Capability:** Humanitarian Assistance/Disaster Relief, Electronic Warfare, Anti-Surface Warfare, Anti-Submarine Warfare etc.

Pumped Storage Hydropower

Uttar Pradesh government approved a **1,200 MW pumped storage power project in Sonabhadra**.

About Pumped Storage Hydropower

- Pumped storage plants use the **principle of gravity** to generate electricity.
- It is a configuration of **two water reservoirs** at different elevations that can generate power as **water moves down from one to the other (discharge)**, passing through a turbine.
 - ⊕ The system also requires power as it **pumps water back into the upper reservoir (recharge)**.
- Central Electricity Authority estimates **on-river pumped storage hydro potential in India** to be **103 GW**.

Hoolock Gibbon

Oil and gas exploration likely to threaten Hoolock Gibbon habitat in Assam.

About Hoolock Gibbon

- **Only ape found in India** (in northeast). They are primates like monkeys, langurs and chimpanzees.
- **Form an arboreal species**, and prefer to **live in canopies of evergreen forests** in northeast India.
- **Western hoolock gibbon (Hoolock hoolock):** Found in **all states of north-east**, restricted between south of Brahmaputra river and east of Dibang river; Eastern Bangladesh and north-west Myanmar.
 - ⊕ **IUCN Status:** Endangered.
- **Eastern hoolock gibbon (Hoolock leuconedys):** Specific pockets of Arunachal Pradesh and Assam in India, and southern China and north-east Myanmar.
 - ⊕ **IUCN Status:** Vulnerable.
- **Wildlife Protection Act 1972:** Schedule 1 (Western hoolock gibbon).

Advanced Land Navigation System (ALNS)

Defense Acquisition Council accorded **Acceptance of Necessity** for procurement of **Advanced Land Navigation System (ALNS), ALNS Mk-II for Armoured Fighting Vehicles (AFVs)** of Indian Army.

- It will be procured from Bharat Electronics Limited.

ALNS

- It is a Ring Laser Gyro (RLG) based navigation system.
- It is an equipment mounted in **Armoured vehicles** for Land Navigation in **featureless terrain**.
- **Three different modes:**
 - ⊕ **Inertial Mode** (independent of GPS).
 - ⊕ **Hybrid Mode** (taking inputs from both Inertial sensor and GPS receiver).
 - ⊕ **GPS Mode** (independent of Inertial sensor input).
- ALNS Mk-II is compatible with NaVIC and GLONASS.

Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR)/Cas9

Scientists developed enhanced, precise and more efficient genome-editing system than existing CRISPR-Cas9 technologies.

- Scientists explored **Fncas9 enzyme**, derived from *rancisella novicida* bacteria, which is highly precise.

About CRISPR-Cas9

- It is a **genome-editing tool** that allows scientists to precisely cut and modify DNA sequences.
- It involves **two key molecules:**
 - ⊕ **A guide RNA** designed to find and bind to specific part of target genome.
 - ⊕ **Cas9 (CRISPR-associated protein 9):** It acts as molecular scissors that can cut two strands of DNA.
- **Applications:** Treatment of cancer, hepatitis B, cardiovascular diseases; producing genetically modified organisms; enhance crop resilience etc.

Places in News **Venezuela (Capital: Caracas)**

President Nicolás Maduro has won Venezuela's presidential election third time.

Political features

- Located at **northern end of South America**.
- **Land boundaries:** Guyana (East), Brazil (South), and Colombia (West).
- **Maritime boundaries:** Caribbean Sea and Atlantic Ocean.

Geographical features

- **Highest Point:** Pico Bolivar.
- **Major Rivers:** Rio Negro, Orinoco, Arauca.
- **Climate:** Hot and humid tropical climate.

