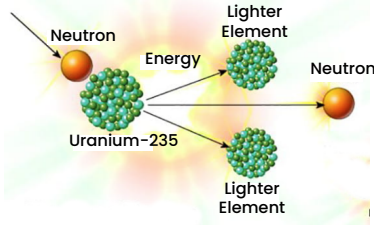
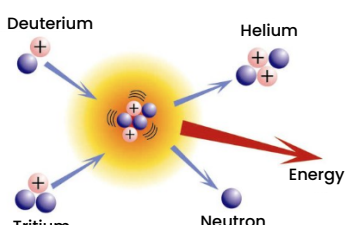


China detonated a Non-Nuclear Hydrogen Bomb

Different from the **traditional atomic and hydrogen bombs**, the 2-kg device reached temperatures **exceeding 1,000 degrees Celsius** marking a major step in the development and use of future weapons.

Key Features of the Non-Nuclear Hydrogen Bomb

- Chemical Reaction:** It deploys **chemical reaction** with **Magnesium Hydride** to create a powerful explosion **without nuclear materials**.
- Hydrogen bomb**, on the other hand, is primarily based on the **nuclear fusion process**.
- Uses Magnesium Hydride:** Unlike Hydrogen bombs that uses **radioactive hydrogen isotopes** like deuterium or tritium as fuel.
- Magnesium Hydride** is a **silvery powder** that acts as a **solid-state hydrogen storage material**.
- When ignited it releases hydrogen that rapidly mixes with air and on reaching explosive limits, the gas ignites creating a **self-sustaining combustion cycle**.
- Scale of Damage:** Generates only about **40% of Trinitrotoluene's blast force**, but demonstrates **greater thermal damage radius** with heat output enough to **melt materials** such as aluminium alloys.
- It requires **minimal ignition energy** and has the ability to **generate intense, sustained heat** without producing radiations.

Atomic Vs Hydrogen Bombs		
Parameters	Atomic Bombs	Hydrogen Bombs (Thermonuclear Bombs)
Type of Reaction	Nuclear Fission	Nuclear Fusion
Process	<ul style="list-style-type: none"> Splitting of nuclei of heavy atoms into smaller, lighter nuclei releasing excess energy. Achieves fission either spontaneously or through the use of neutrons. 	<ul style="list-style-type: none"> Fusing of two light elements into a heavier one releasing energy. Generates more energy than atomic Bombs.
Fuel Used	Uranium-235, Plutonium-239	Deuterium, Tritium (Hydrogen isotopes)
Reaction		

The price of 24-carat gold surged to Rs 1 lakh per 10 grams for the first time in India

Key Global Factors Driving Price Surge

- Geopolitical Tensions:** Rising global conflicts and economic uncertainties have led investors to flock to gold, which is seen as a safe-haven asset.
- US Federal Reserve Rate Cuts:** With falling interest rates, appeal of gold increases. As a non-yielding asset, gold becomes more attractive when the opportunity cost of holding cash or bonds drops.
- Weakening of US Dollar:** A declining dollar makes gold cheaper for buyers using other currencies, thereby boosting demand.
- Central Bank Accumulation:** Central banks, especially in Asia, are aggressively purchasing gold to reduce dependency on the US dollar and diversify reserves.

India's Gold Market

- India is the world's 2nd largest consumer of gold**, just after China. In **2024, India's gold demand reached 802.8 tonnes**.
- Approximately 85% of India's gold is imported**, making domestic prices highly sensitive to international trends.

Reasons for High Gold Demand in India

- Financial Security:** Gold is trusted as a long-term store of value, especially during inflation or market instability.
- Cultural & Religious Significance:** Gold is considered auspicious and forms an essential part of festivals like **Diwali, Dhanteras, and Akshaya Tritiya**.
- Wedding Season Boost:** Gold purchases spike during wedding season, with jewelry being a traditional and prestigious gift for brides.
- In rural areas** many people lack access to banks/stock markets. For them, gold serves as a **trusted and liquid asset** for saving, investing, or even borrowing.

Gold Reserves India

- Gold Ore:** largest resources in terms of gold ore (primary) are located in Bihar (43%) followed by Rajasthan (24.92%), Karnataka (20%).
- Metal Content:** In terms of metal content, Karnataka remained on top followed by Rajasthan, Andhra Pradesh, and Bihar.

World

- Major Holders of Gold Reserves:** **United States**, followed by **Germany** and **Italy**.
- Major Exporters:** **Germany** followed by European Union and Switzerland (World Integrated Trade Solution, 2023).

Terror attack in Pahalgam, Jammu and Kashmir (J&K)

A terror attack occurred in the scenic '**Baisaran meadows**' of Pahalgam often referred to as '**mini-Switzerland**', resulting in loss of civilian lives.

- **The Resistance Front (TRF)** a proxy outfit of **Lashkar-e-Taiba**, a proscribed terrorist organisation listed under the UAPA has claimed responsibility for the attack.

Reasons for Persistence of Terrorism in J&K

- **State-sponsored Terrorism:** Pakistan has been accused of supporting terror organizations operating in J&K with providing a **safe haven, logistical support, training etc.**
- **Porous Borders:** Difficult terrain along Line of Control makes it difficult to trace & prevent **infiltration of militants & weapons.**
- **Religious and Ethnic Tensions:** The communal mix of Muslims, Hindus, & various tribal groups are exploited by terror groups to create **communal unrest.**
- **Over Ground Workers (OGWs):** Aid in **sustaining militancy** through fund management, recruitment, propaganda, etc.
 - ⊕ **OGWs** are individuals/groups that provide **non-combat assistance** like logistical support, intelligence to militant groups **without directly participating in armed activities.**

Way Forward

- **Strengthening Border Security:** Strategic deployment of forces, strengthening border infrastructure, using technology etc. (**Madhukar Gupta Committee Recommendations**)
- **Strengthening Political institutions:** Empowering local governance and representatives.
- **Community involvement:** Confidence Building Measures like **civilian-military cooperation** (e.g. Village Defence Guards); counter-radicalization & rehabilitation.

India's Counter Terrorism Measures in J&K

- **Comprehensive Integrated Border Management System:** To improve capability of BSF in detecting & controlling cross border crimes like illegal infiltration.
- **Operation All-Out (2017):** Aimed at **neutralizing top militant commanders**, especially from LeT, JeM, etc.
- **Back to Village:** Promote governance at grassroots level to win public trust & reduce alienation.
- **Skill Development:** Schemes like **Himayat & Udaan.**

Union Environment Ministry notifies draft Greenhouse Gases Emission Intensity (GEI) Target Rules, 2025

Rules set **GEI Targets** for **four energy-intensive sectors** (aluminium, cement, chlor-alkali, and pulp & paper) ensuring emission cuts.

- **GEI means** Greenhouse Gases Emission Intensity in **tCO₂e/equivalent** output or product.

Key Highlights of the Rules

- **GEI Targets Calculation:** As per **Bureau of Energy Efficiency's methodology**, specific to each **obligated entity** as listed in the Schedule.
- **Compliance Requirements for Obligated Entities:** They must **meet GEI targets annually** as per the **Carbon Credit Trading Scheme, 2023** (see box).
 - ⊕ May also purchase **carbon credit certificates** from the **Indian Carbon Market (ICM)** to offset shortfalls.
- **Environmental Compensation:** To be imposed by the **Central Pollution Control Board (CPCB)**, equal to **twice of the average price at which carbon credit certificate** is traded in the compliance year, payable within **90 days.**
- **Legal Backing:** Non-compliance or rule violations is addressed under the **Environmental Protection Act, 1986.**

Significance of the Rules



Attainment of India's Nationally Determined Contributions (NDCs):
Reduce Emissions Intensity of its GDP by 45% by 2030 from 2005 levels.



Aligns with Article 6 of the Paris Agreement: Outlines tools and mechanisms for countries to voluntarily cooperate in meeting their NDCs through the **carbon market.**



Adoption of Sustainable and Cutting-Edge Technology: Across traditionally high emission industries.

About Carbon Credit Trading Scheme, 2023.

- **Genesis:** Notified in **2023** under the **Energy Conservation Act, 2001**, to create a **structured carbon market** in India.
- **Objective:** Reduce, avoid, or remove greenhouse gas emissions by enabling the trading of **Carbon Credit Certificates (CCSs).**
- **Mechanisms under CCTS**
 - ⊕ **Compliance Mechanism:** For **obligated entities** who earn CCSs on **complying** with the prescribed GHG emission intensity reduction norms.
 - ⊕ **Offset Mechanism:** For **Non-obligated entities** who can register their projects that reduce, or remove emissions to earn CCSs.

IMF releases "World Economic Outlook (WEO): A Critical Juncture Among Policy Shift" Report

The report **cuts global growth forecasts to 2.8%** (6.2% for India) from its earlier January 2025 update due to **trade tensions and policy uncertainty** and recommends policies favouring **healthy ageing** enabling participation of older individuals in labour force.

Key Observations

- **Economies worldwide are aging rapidly:** Due to **declining fertility** and **rising life expectancy** crossing their **demographic turning point** and shifting from **demographic dividend to demographic drag**.
 - ⊕ The **average age of the world's population is projected to increase by 11 years** between 2020 and the end of the century.
- **Healthy Ageing:** Alongside increase in longevity, the **functional capacity of older individuals** has improved over time.
 - ⊕ 70 year old in 2022 had the same **cognitive ability** as a 53 year old in 2000.

Benefits of Healthy Ageing

- **Impact on Global GDP Growth:** Healthy aging is projected to **add 0.4% point** to global average GDP growth over 2025–50.
 - ⊕ The contribution from **India** would be large as the share of workers aged 50 and older is to grow faster in that period.
- **Impact on Labor Force Participation:** **Targeted health policies** enable older workers to increase their labor force participation rates.

Policy Recommendations on Healthy Ageing

- **Comprehensive Approach:** Combining pension reforms, training, workplace adaptations, with health-oriented interventions to **increase effective retirement ages**.
- **Reducing labor force participation gaps:** Fostering **higher female labor force participation** through improved work-life balance, affordable childcare, etc., to counter demographic headwinds.

ISRO's SpaDeX mission completes second docking of satellites

The docking technology, **indigenously developed** by ISRO, is known as the **Bharatiya Docking System**.

- In-space docking technology is essential when multiple rocket launches are required to achieve common mission objectives.

About SpaDeX Mission

- It is a **technology demonstrator mission** for the demonstration of **in-space docking** (Joining of two fast-moving satellites in space) using two small spacecrafts launched by PSLV C60.
- **Primary Objective:** To develop and demonstrate the technology needed for **rendezvous, docking, and undocking** of two small spacecrafts {SDX01 (Chaser) and SDX02 (Target)} in a **low-Earth circular orbit**.
- SpaDeX spacecrafts were designed and realized by the **UR Rao Satellite Centre (URSC)** with the support of other ISRO centers.
 - ⊕ URSC, Bengaluru, formerly known as ISRO Satellite Centre (ISAC) is the lead centre for building satellites and developing associated satellite technologies.

Significance of the Mission

- **Strategic Space Capability:** Orbital docking is a crucial technology for **future human spaceflight, satellite servicing missions**, and establishing **Bharatiya Antariksh Station**.
- **National Advancement:** The mission made **India the fourth country in the world to achieve satellite docking in space**, joining the ranks of the US, Russia, and China.
- **Enabling Future Space Missions:** It will support missions like Chandrayaan-4 without the support of GNSS from Earth.



Also In News



Standing Deposit Facility (SDF)

The Standing Deposit Facility (SDF) marks three years since its introduction as **Reserve Bank of India's liquidity management framework**.

About SDF

- It is a monetary tool that **absorbs liquidity** from commercial banks **without collateral**. The government does not need to give securities to banks for deposits.
- **Features:**
 - ⊕ SDF **replaced** the Fixed Rate Reverse Repo as the Liquidity Adjustment Facility (LAF) corridor's floor.
 - ⊕ SDF is an **overnight liquidity absorption mechanism** with the flexibility for the RBI to increase its duration.
 - ⊕ Any entity that is **eligible for LAF** can use this facility.
 - ⊕ SDF will be available **every day**, including holidays and weekends.



Tobacco

The Government has amended 'Tobacco Board Rules, 1976', extending the validity of registration for Virginia tobacco growers from **1 year to 3 years**.

About Tobacco

- Tobacco is believed to have originated from South America. There are more than 60 species of tobacco.
- **Ideal Growing Conditions:**
 - ⊕ **Temperature:** 20°–27°C
 - ⊕ **Rainfall:** Minimum 500 mm; not suitable above 1200 mm
 - ⊕ **Soil:** Prefers sandy or sandy loam
 - ⊕ Frost-free period of 90 to 120 days.

Production in India

- **Status:** India is **2nd largest producer** of tobacco after China & the **4th largest exporter** of unmanufactured tobacco.
- **Major States:** Predominantly cultivated in **Gujarat** (30% of production), **Andhra Pradesh, Karnataka, UP & Bihar**.



Vulture Conservation and Breeding Centre (VCBC)

34 critically endangered vultures were transferred from the **Vulture Conservation Breeding Centre (VCBC)** in **Pinjore (Haryana)**, to **Maharashtra**.

About VCBC, Pinjore

- **Genesis:** Established in **2001** with the UK Government's '**Darwin Initiative for the Survival of Species**' fund.
- **Partners:** **Haryana Forest Department** and the **Bombay Natural History Society (BNHS)**.
- **Aim:** To save three species of vultures, the **White-backed, Long-billed and Slender-billed**.
- **Location:** Edge of the **Bir Shikargaha Wildlife Sanctuary, Haryana**.
- **Achievement:** Confirmed that **diclofenac**, a **non-steroidal anti-inflammatory drug**, was the main cause of vulture mortality.



Davis Strait Proto-Microcontinent

Scientists have discovered a hidden continent beneath Greenland's ice, called the **Davis Strait Proto-Microcontinent**.

- Proto-Microcontinents are "regions of relatively thick continental lithosphere separated from major continents by a zone of thinner continental lithosphere."

Davis Strait Proto-Microcontinent

- It is a newly identified **submerged microcontinental fragment** located beneath the **Davis Strait**.
- Davis Strait connects **Labrador Sea and Baffin Bay**.
- Researchers believe this landmass was **partially separated during ancient tectonic shifts** but did not completely detach from the surrounding continents.
- As a result, it became **stranded beneath the seafloor**, buried under layers of sediment and water.



Aadhaar

Union Agriculture Ministry has made **Aadhaar authentication** mandatory for individuals and farmer groups to avail benefits under the **e-NAM (National Agriculture Market)** scheme.

- **Section 7 of the Aadhaar Act, 2016** provides for Aadhaar based authentication for availing any subsidy, benefit or service whose expenditure is incurred from the **Consolidated Fund of India**.

About Aadhaar

- **Features:** **12 digit individual identification number** serving as **proof of identity and address** (Not a proof of citizenship or domicile); contains **both biometric and demographic** information.
- **Issued By:** **Unique Identification Authority of India (UIDAI)**.
- **Eligibility:** **Resident of India** (irrespective of age and gender).



Taj Trapezium Zone (TTZ)

Supreme Court directed **NEERI (National Environmental Engineering Research Institute)** to assess the impact of neighboring **glass industry** on **Taj Mahal**.

- SC had in the past issued orders from time to time for **TTZ** (E.g., ban of coal/coke in industries in **TTZ**, 1996).

About TTZ

- **Location:** **10,400 sq km** area (shaped like a trapezoid) around **Taj Mahal** to protect it from pollution.
- **Coverage:** **Three World Heritage Sites-** **Taj Mahal, Agra Fort, and Fatehpur Sikri**.
- **Taj Trapezium Zone Pollution (Prevention and Control) Authority:** Constituted under the **Environment Protection Act, 1986**.
- **Categories of Industries:** **Red, Green, Orange, and White**.



Mehrgarh Archeological Site

A new radiocarbon study using **Accelerator Mass Spectrometry (AMS)** dating revised the age of farming settlement in **Mehrgarh**, from **8000 BCE to 5200 BCE**.

About Mehrgarh Archeological Site

- It is a **Neolithic site** located at the mouth of **Bolan Pass** in present-day **Balochistan, Pakistan**.
- Evidence of **continuous occupation** for more than **3 millennia** prior to the **Harappan civilization**.
- **Key Features:**
 - **Early farming village:** **Domestication of wheat and barley, and cattle**.
 - **Earliest known example of cotton** in the Old World.
 - Found well-preserved remains of **mud brick structures, burials, Pottery** (called **Togau**) etc.



Arun-3 Hydroelectric Project

India-Nepal inaugurated commencement of electromechanical works at the **Arun-3 Hydroelectric Project** to ensure its timely completion.

About Arun-3 Hydroelectric Project

- **Location:** **Arun River (Tributary of Kosi)** in **Sankhuwasabha District of Eastern Nepal**.
- **Features:** **900 MW Run-of-River** scheme.
- **Operation:** **SJVN Arun-III Power Development Company (SAPDC)**, is developing it on **Build-Own-Operate-Transfer** basis for a period of **30 years including five years construction period**.
- SAPDC is a **fully owned subsidiary** of India's **Satluj Jal Vidyut Nigam**, showcasing significant collaboration between **SJVN** and the **Government of Nepal**.

Place in News



Saudi Arabia (Capital: Riyadh)

- The Indian PM visited **Saudi Arabia** and co-chaired the 2nd meeting of the **India-Saudi Arabia Strategic Partnership Council (SPC)**.

Political Features

- It is an **absolute Monarchy** located in the **Middle East**.
- Saudi Arabia is the largest country in the **Arabian Peninsula**, occupying nearly four-fifths of its total area.
- **Bordering states:** **Iraq, Jordan, Kuwait, Oman, Qatar, UAE, Yemen;** **Maritime** (**Persian Gulf, Red Sea, Gulf of Aqaba**)
- Home to Islam's 2 holiest shrines in **Mecca and Medina**.

Geographical Features

- It is the **largest country in the world without a river**.
- **Climate:** **Harsh, dry desert** with temperature extremes.
- **Natural resources:** **Oil, natural gas, iron ore** etc.



AHMEDABAD



BENGALURU



BHOPAL



CHANDIGARH



DELHI



GUWAHATI



HYDERABAD



JAIPUR



JODHPUR



LUCKNOW



PRAYAGRAJ



PUNE



RANCHI