

NEWS TODAY

China's Jiangmen Underground Neutrino Observatory (JUNO) to start gathering data on Neutrinos

JUNO will help in solving **mysteries** related to **Neutrinos** such as their origin, interaction with other particles, etc.

What are Neutrinos?

- Neutrino is a **subatomic particle** with mass much smaller than other elementary particles.
- **There are three types of neutrinos:** Electron, Muon, and Tauon neutrino.
 - ⊖ Neutrinos change between types as they travel. This process is called **neutrino oscillation**.
- **Key Characteristics:**
 - ⊖ It has **spin of 1/2** with a **net neutral charge**.
 - ⊖ It **travels at almost the speed of light** and in **straight lines** from their source.
 - ⊖ It rarely interacts with other matter (therefore also referred to as **ghost particle**).
 - ⊖ They are the **most abundant particles** that have mass in the universe.
 - ⊖ The only ways they interact is through gravity and the weak force.

JUNO's contribution in studying Neutrinos and its significance

- It would be able to **observe neutrinos from the sun**, gaining a real-time view of solar processes.
- It could also study neutrinos given off by the **radioactive decay of uranium and thorium in the Earth** to better understand mantle convection driving tectonic plates.
- It may provide information to probe the most violent astrophysical sources like **exploding stars, gamma-ray bursts**, etc.

Note: Juno Mission was launched by NASA to observe Jupiter in 2011.

Key Neutrino Observatories

- **India-based Neutrino Observatory (INO):** Jointly funded by the Department of Atomic Energy (DAE) and the Department of Science and Technology (DST).
 - ⊖ **Location:** Bodi West hills of Theni District of Tamil Nadu.
- **IceCube Neutrino Observatory:** It is the first detector of its kind, designed to observe the **cosmos from deep within the South Pole ice**.
- **Other:** China's **TRIDENT** (Tropical Deep-sea Neutrino Telescope) and US's **DUNE** (Deep Underground Neutrino Experiment)

Meta must face U.S. state lawsuits over teen Social Media Addiction

Meta (Facebook's parent company) and other social media platforms such as SnapChat have been also accused for fuelling social media usage among teen.

Key driving factor behind in rise in usage of social media among teen

- **Social media addiction algorithms:** As per studies these are based on a **human brain behavior** called the **habit loop**, where the brain motivates and engages in behavior to obtain the reward or to get the necessity.
- **Rise in access to mobiles and other digital devices:** It is also further promoted due to change in family structure (rise in nuclear families).
 - ⊖ Many parents are not able to give time to children due work related responsibilities.

Risk Posed/ Concern related to addiction

- **Mental health/ Psychological Issues:** Expose some teens to cyberbullying, which can raise the risk of mental health conditions such as anxiety and depression.
- **Reduces Outdoor activities:** As per studies, Children aged 9-13 years spend over 3 hours a day on social media and, watching videos or playing games on the internet.
- **Others:** Exposure to cyberstalking, promotes sedentary lifestyle, etc.

Measures Required to Check Addiction

- **Fixing the minimum age for social media**
- **Integrate technology-based tools** and applications that promote the productive use of social media, etc.

Initiative taken to Check Social Media Addiction

- **Age Restrictions by Social Media Platforms:** Like Meta, owner of Facebook and Instagram, which has a self-imposed minimum age of 13 years.
- **Digital De-Addiction (D-DAD) centres:** Kerala police provide free counselling to kids up to 18 years of age with digital addiction.
- **Central Board of Secondary Education (CBSE)** has issued guidelines in 2017 to schools on the safe and secure use of the Internet.

Supreme Court questions feasibility of Gram Nyayalayas

SC raised concern regarding the feasibility of setting up **Gram Nyayalayas (village courts)**, as mandated by the **Gram Nyayalayas Act of 2008**.

- Gram Nyayalayas ensure that opportunities for securing justice are not denied to any citizen by reason of social, economic or other disabilities.

Key Concern raised by SC

- **Establishment of Gram Nyayalayas by States/UTs is mandatory or not:** Section 3 of the Act provides that governments "may" constitute Gram Nyayalayas.
- **Resource Crunch:** State governments, already facing limited resources for **regular courts**, find it challenging to fund additional gram nyayalayas.
- **Rising Burden:** They may end up burdening high courts with appeals and writ petitions.

Key Features of Gram Nyayalayas

- **Seat:** Establish at intermediate level Panchayat or a group of contiguous Panchayats.
 - ⊕ State government appoints '**Nyayadhikari**' for each Gram Nyayalaya in consultation with the high court.
- **Jurisdiction:** Shall be a mobile court, with both civil and criminal jurisdiction.
- **Dispute Process:** Disputes are to be preferably settled with the help of conciliation.
 - ⊕ Social workers may be appointed as Conciliators.
 - ⊕ They are not bound by the **Indian Evidence Act, 1872** (replaced by the **Bharatiya Sakshya Adhinyam**) but by **Principles of Natural Justice**.

Implementation Status of Gram Nyayalayas

- There was an initial target of around 2,500 gram nyayalayas, however, fewer than 500 have been established, with only 314 currently operational across India.
- States such as Maharashtra, Madhya Pradesh and Rajasthan have shown progress, yet other major states, including Uttar Pradesh and Bihar, have seen limited or no implementation.

Initiative to Support Gram Nyayalayas

- **Under Gram Nyayalayas scheme** (Centrally Sponsored Scheme (CSS)), Union Government provides financial assistance to States to set up Gram Nyayalayas.

Supreme Court expressed concern over non-action by states of Punjab & Haryana against Stubble Burning

Supreme Court pulled up the states over their failure to **take action against farmers who are indulging in stubble-burning**, which results in the **deterioration of air quality in the Delhi-National Capital Region (Delhi-NCR)**.

- Court stated that the states have **not taken any steps to implement the directions issued by the Commission for Air Quality Management (CAQM) in NCR in 2021 to stop stubble burning**.

Stubble Burning

- **Parali or stubble** is **lowest portion of rice crop that remains after harvest** and the practice of setting fire to this leftover stubble is Stubble Burning.
- This method is commonly used between September and November, **especially in fields where combine harvesters are used, to quickly clear paddy residue** before planting wheat.
- **Contributing Factors: Short time available** between rice harvesting and sowing of wheat.
 - ⊕ Considered as **cheapest methods** to clean the field after harvesting season.

Impacts of Stubble Burning

- Source of **major air pollutants**, i.e., PM10 and PM2.5, NOx, etc. and causing major human health issues.
- **Releases Greenhouse Gases**, contributing to **rising global temperatures**.
- **Loss of nutrients** in crop leftovers to atmosphere and adverse **impact on soil fertility**.

Stubble Management Strategies

- **Incorporate them into the soil**, thus improving soil fertility, productivity, and replenishing soil nutrients.
- **Utilizing agricultural leftovers** for animal feed and generating nutrient rich compost.
- Production of **Bran Oil, Bioethanol, and Biogas**.

Initiatives to prevent Stubble Burning

- **Commission on Air Quality Management (CAQM) in NCR and Adjoining Areas:** A statutory body constituted under the CAQM in the NCR and Adjoining Areas Act 2021.
- **Graded Response Action Plan (GRAP)** as an **emergency response mechanism**, designed to combat air pollution in Delhi-NCR region.
 - ⊕ It is triggered when the AQI reaches "**poor**" levels.
- **Others:** Increasing affordability of Crop Residue Management (CRM) machinery.

International Union for Conservation of Nature (IUCN) released a flagship report titled "Agriculture and Conservation"

IUCN's flagship report comprehensively explores the complex relationship between agriculture and conservation.

Impact of Agriculture on Biodiversity

➤ Negative Impacts

- ⊕ Agriculture **directly threatens 34% of species** assessed on the **IUCN Red List of Threatened Species**.
- ⊕ **Direct threats** from agriculture include conversion of natural habitats to croplands, pasturelands, plantations and irrigation.
- ⊕ **Indirect impacts** through introduction of invasive alien species, nutrient loading, soil erosion, agrochemicals, and climate change.

➤ **Positive Impact:** About 17% of species on IUCN Red List have agriculture documented as a habitat.

Impact of Biodiversity on Agriculture

➤ **Positive Impact:** Ecosystems support agriculture through two main categories:

- ⊕ **Provisioning services** i.e. production of biomass and genetic materials), and
- ⊕ **Regulating and maintenance services** i.e. climate regulation, sediment retention, nutrient cycling, water flow regulation, pollination etc.

➤ **Negative Impact:** Ecosystem disservices such as crop predation, pests and pathogens.

Recommendations for aligning agriculture with conservation

- **Agriculture Sustainability:** Safeguard places and species that cannot persist with agriculture, and undermining food security or economic output.
- **Maintain ecosystem services** such as natural state of climate, soil, or water for agriculture.
- **Aligning agricultural and economic policies with conservation of living nature:** Globally, less than 5% of agricultural subsidies are green subsidies.
- **Reforming food policy:** Reducing food wastage and incentivise positive dietary change towards reduced meat consumption.

Delhi High Court authorises posthumous use of cryopreserved semen for reproduction

Delhi High Court has granted a 60-year-old couple the right to use the frozen sperm of their deceased son for surrogacy.

Highlights of Judgement

- Under Indian law, there is **no prohibition against posthumous reproduction**, in absence of the spouse, if the consent of the egg or sperm owner is demonstrated.
- ⊕ **Posthumous Reproduction** is the process of conceiving a child using Assisted Reproductive Technology (ART) after the death of one or both biological parents.
 - ◆ In such case, a deceased person's cryopreserved gametes are used to conceive a child.
- Court concluded that a **semen sample or an ovum sample constitutes 'property'** as it is part of individual's biological material and can be inherited by legal heirs.

Assisted Reproductive Technology (ART)

- ART includes all **techniques that attempt to obtain a pregnancy** by handling the sperm or the oocyte outside the human body and transferring the gamete or the embryo into the reproductive system of a woman.
- These include **In-Vitro Fertilization, Surrogacy, Gamete Cryopreservation, Gamete Intra-Fallopian Transfer (GIFT) etc.**

ART Regulation in India

- **ART (Regulation) Act, 2021:** Regulation and supervision of ART clinics and banks, prevention of misuse, safe and ethical practice of ART services.
- **Surrogacy (Regulation) Act, 2021:** It prohibits and punishes commercial surrogacy, permitting it only for altruism.

Also in News

Fast Track Diplomacy

Multi-Track Diplomacy

First ASEAN-India Track 1 Cyber Policy Dialogue was held in Singapore.

About Track 1 Diplomacy

- Track 1 Diplomacy refers to **official diplomacy, where communication is directly between or among governments**.
- These **formal discussions** are conducted by diplomats, heads of state, and other official authorities.

Other Tracks of Diplomacy

- **Track 1.5 Diplomacy:** It occurs when **government representatives and non-governmental experts engage** in dialogue or meetings together in less formal ways than Track 1 diplomacy.
- **Track 2 Diplomacy:** It denotes a **purely unofficial channel for dialogue between non-governmental experts**, without direct governmental involvement.
 - ⊕ 1993 Oslo Accords grew out of unofficial Track 2 discussions before transitioning into Track 1 negotiations.



SARTHI

National Institute of Food Technology Entrepreneurship and Management, Kundli (NIFTEM-K) has unveiled - **Solar Assisted Reefer Transportation with Hybrid Controls and Intelligence (SARTHI) System**.

About SARTHI

- **Objective:** It will help in reducing post-harvest losses in perishable food transportation.
- SARTHI containers **offer dual compartments for optimal storage** of fruits and vegetables, which have **varying temperature and humidity requirements**.
- It is an integration of Internet of Things (IoT) and real-time monitoring.
 - ⊕ Sensors measure temperature, humidity, ethylene, and CO2 levels, sending data to a mobile app for quality assessment.
 - ⊕ These features enable transporters to make informed decisions, potentially **rerouting produce to closer markets if spoilage is detected**.



Five Eye Alliance

United Kingdom, a Five Eye Alliance, recently extended support to Canada in recent diplomatic crisis with India.

About Five Eye (FVEY) Alliance

- A **multilateral intelligence-sharing** network shared by over 20 different agencies of five English-speaking countries (**Australia, Canada, New Zealand, the United Kingdom and the United States**).
- It is both **surveillance-based** and **signals intelligence (SIGINT)**.



Karakoram Wildlife Sanctuary

Standing Committee of the National Board for Wildlife (NBWL) has cleared key road stretches passing through the Karakoram Wildlife Sanctuary (KWS).

About KWS

- **Location:** Easternmost parts of the Karakoram range (part of Northwestern Himalayas), in the Leh district, **Ladakh**.
 - ⊕ Bounded on North and West by international boundary with China and Pakistan respectively.
- **Geography:** Most part is semi-arid, characterized by a cold desert and heavy glaciation.
- **Rivers:** Nubra and Shyok.
- **Fauna:** Snow leopard, Eurasian lynx, Himalayan wolf, Tibetan antelope etc.



World Energy Outlook 2024

International Energy Agency released its flagship World Energy Outlook 2024.

Key Observations

- **Geopolitical tensions and fragmentation** are major risks for energy security.
 - ⊕ Around 20% of today's global oil and LNG supplies flow through the **Strait of Hormuz**, a **maritime chokepoint** in the Middle East.
- **Clean energy** is entering the energy system at an unprecedented rate, with more than **560 gigawatts (GW) of new renewables capacity added in 2023**.
- **More than half of the world's electricity** will be generated by low-emission sources before 2030.



Hellfire Missile

India has signed a deal with the US to acquire **170 AGM-114R Hellfire missiles**.

AGM-114R Hellfire Missiles

- It is a **short-range Air to Ground Missile (AGM)** with a range of around 7-11 km.
- Precision strike, **Semi-Active Laser (SAL) guided missile**.
- Can **neutralize a broad range of targets** including air defence, patrol boats, armour, enemy combatants etc. with its multi-purpose warhead.
- Can launch from **various platforms**, including aircraft, Unmanned Aerial Vehicles etc.



Samarth (Scheme for Capacity Building in Textiles Sector)

Government recently extended **Samarth Scheme for two years (FY 2024-25 and 2025-26)** with a budget of Rs. 495 Crore to train 3 lakh persons in textile-related skills.

About Samarth

- **Nodal Ministry:** Ministry of Textiles
- **Objective:** aims to encourage and support the industry in creating jobs in the organized textile and related sectors, covering the entire value chain of textiles, excluding Spinning and Weaving.
 - ⊕ It is a demand-driven and placement-oriented umbrella skilling program
- **Achievement:** Trained 3.27 lakh candidates, of which 2.6 lakh (79.5%) have been employed.
 - ⊕ There is a strong emphasis on women's employment, and 2.89 lakh (88.3%) women have been trained so far.



Hand-in-Hand (HIH) Initiative

Food and Agriculture Organization (FAO) opened the 2024 Hand-in-Hand Investment Forum.

About HIH Initiative

- Launched in 2019 by FAO
- It supports the implementation of nationally led, ambitious programmes to accelerate agrifood systems transformations by **eradicating poverty (SDG1), ending hunger and malnutrition (SDG2), and reducing inequalities (SDG10)**.
 - ⊕ It uses advanced **geospatial modeling and analytics**, as well as a robust **partnership-building approach**.
- **Areas of intervention:** Developing value chains for priority commodities, building agro-industries, etc.
- **Members:** 72 countries (**India is not a member**)

Places in News



Algeria (Capital: Algiers)

President of India recently paid a visit to Algeria.

Political Features

- Country of **North Africa** located in **Maghreb region**.
 - **Maghreb region** comprises essentially the Atlas Mountains and the coastal plain of Morocco, Algeria, Tunisia, and Libya.
- Bounded by **Tunisia and Libya (east); Niger, Mali, and Mauritania (south); Morocco and Western Sahara (west); and Mediterranean Sea (north)**.

Geographical features

- **Key Rivers:** Chelif River and Djedi River
- **Highest Point:** Mount Tahat
- **Climate:** Mediterranean climate, with warm, dry summers and mild, rainy winters.

