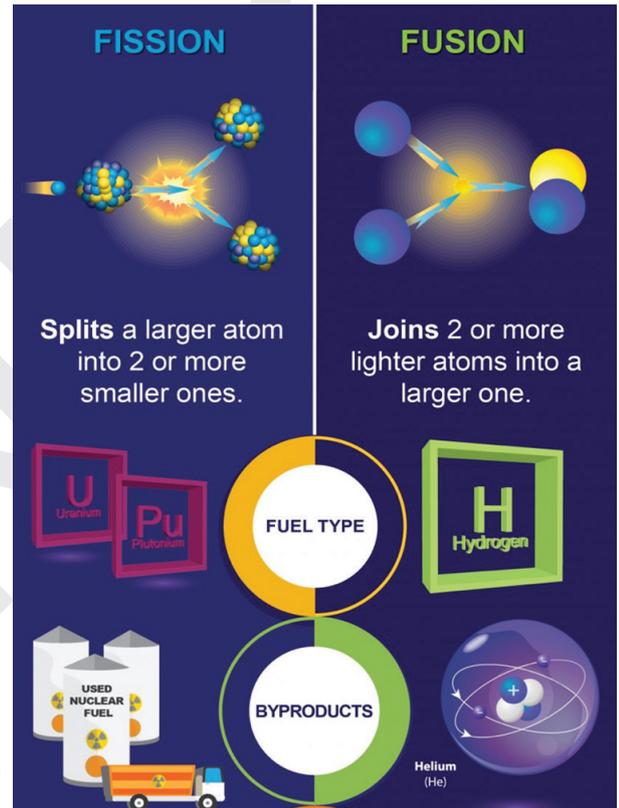


NEWS TODAY

US SCIENTISTS ACHIEVE NET ENERGY GAIN (NEG) FOR SECOND TIME IN NUCLEAR FUSION REACTION

- Nuclear fusion is the process by which two **light atomic nuclei combine to form a single heavier one while releasing massive amounts of energy.**
 - Fusion reactions occur in a **state of matter called plasma**- hot, charged gas made of positive ions and free-moving electrons.
 - In fusion, **two positive nuclei have to come close** to each other.
 - However, they repel each other—this phenomenon is called the **Coulomb Barrier.**
 - To overcome this barrier, massive **energy is required**, which is presently more than the energy generated from the fusion reaction.
- **NEG**, critical for commercial fusion power, implies that researchers could generate more energy than the nuclear fusion process consumed.
 - **India is part of the International Thermonuclear Experimental Reactor (ITER) project** to demonstrate NEG from fusion reactors.
 - India has also constructed its indigenous **tokamak ADITYA** and semi-indigenous **Steady State Superconducting Tokamak (SST-1).**
- **Significance of Nuclear Fusion:**
 - **Clean and safe power** as it releases **no greenhouse gases.**
 - 1 kg fusion fuel provides **as much energy as 10 million kilograms of fossil fuel.**
 - **Hydrogen, raw material for fusion, is available in abundance** while **fission uses uranium**, which is not an infinite resource.



NUTRITION SUPPORT REDUCES TB INCIDENCE, CURBS MORTALITY: LANCET STUDY

- ICMR backed study provides **first evidence that providing extra nutrition effectively prevents tuberculosis (TB) cases and mortality in India.**
 - **Jharkhand was chosen as a trial site** because it has a **high burden of TB** and second highest level of multi-dimensional poverty.
- **Key findings**
 - **Reducing Activation of Tuberculosis by Improvement of Nutritional Status (RATIONS) trial shows reduction of TB incidence of 39 percent (all forms) and 48 percent of infectious TB** in intervention group.
 - RATIONS, cluster-randomised controlled trial, are embedded within National Tuberculosis Elimination Programme (NTEP).
 - Weight gain in underweight patients with TB can **reduce their mortality risk by 60%.**
 - Nearly 30 households would need to be **provided nutritional supplementation to prevent one case of TB.**
- **TB is caused by Mycobacterium Tuberculosis** which affects lungs (pulmonary TB).
 - **As per WHO Global TB report 2022, TB cases are attributable to five risk factors** — **undernourishment, HIV infection, alcohol use disorders, smoking and diabetes.**
 - It is transmitted from **person to person** through air. It is **treatable and curable disease.**
 - Currently, **Bacille Calmette-Guerin (BCG) is only licensed vaccine** available for prevention of TB.

Steps taken by India to curb TB:

- **India's vision to eliminate TB by 2025** (five years ahead of global target by WHO i.e., 2030).
- **National Strategic Plan for TB Elimination 2017-2025** by MoHFW.
- **Nikshay Poshan Yojana** provides nutritional support to TB patients.



TAMIL NADU MOVES SUPREME COURT FOR IMMEDIATE RELEASE OF CAUVERY WATER BY KARNATAKA

- Cauvery water-sharing disputes between **Kerala, Karnataka, Tamil Nadu, and Puducherry dates back to agreement of 1924.**
 - As per agreement, **Tamil Nadu and Puducherry would get 75% of surplus water, Karnataka would get 23%** and remaining would go to Kerala.
 - In 1974, Karnataka claimed that **agreement restricted its ability to develop farming activities** along Cauvery basin. Thus, **it started building reservoirs.**
 - This posed **challenge for Tamil Nadu (dependent on Cauvery water)** especially for extensive agricultural lands in delta region.
 - **In 1990, Cauvery Water Disputes Tribunal (CWDT) was formed,** and given its final award in 2007.
 - **As per Supreme Court verdict of 2018,** Karnataka would get 284.75 thousand million cubic feet (tmcft), Tamil Nadu 404.25 tmcft, Kerala 30 tmcft and Puducherry 7 tmcft.
- **Constitutional provisions relating to Water**
 - **State list:** Entry 17 (Water supplies, irrigation and canals, drainage etc.).
 - **Union list:** Entry 56 (Regulation and development of inter-State rivers and river valleys).
 - **Article 262: Adjudication of disputes relating to waters** of inter-State rivers.
 - In exercise of power conferred by Article 262, Parliament enacted **Inter-State Water Disputes Act, 1956.**

Cauvery River

- It originates at Talakaveri in **Brahmagiri hills of Western Ghats in Karnataka.** It is often called **Dakshina Ganga.**
- **Tributaries:** Harangi, Hemavathi, Kabini, Shimsha, Arkavati, Amravati, etc.

INDIA'S FIRST MISSION TO STUDY THE SUN, ADITYA-L1 MISSION GETTING READY FOR LAUNCH: INDIAN SPACE RESEARCH ORGANISATION (ISRO)

- Aditya-L1 will be the **first Indian space mission to study sun.** It will be launched by **Polar Satellite Launch Vehicle (PSLV).**

➤ Spacecraft shall be placed in a **halo orbit around Lagrangian point 1 (L1) of Sun-Earth system,** about 1.5 million km from Earth.

- **L1 point** has a major advantage of continuously viewing the Sun without occultation/eclipses.

- **Lagrange Points** are positions in space where gravitational forces of a two-body system (like Sun and Earth) produce enhanced regions of attraction and repulsion.

➤ There are seven payloads on-board with **four of them carrying out remote sensing of Sun and three carrying in-situ observation (refer table).**

- **Objectives of Aditya L1: Study about Sun's corona, solar emissions, solar winds and flares, and Coronal Mass Ejections (CMEs),** and will carry out round-the-clock imaging of Sun.
- **Significance:** Provide crucial information to **understand problem of coronal heating,** pre-flare and flare activities and their characteristics, dynamics of space weather, propagation of particle and fields etc.
- **Other solar missions: Parker Solar Probe (NASA), Solar and Heliospheric Observatory (European Space Agency), Kuafu-1 solar probe (China)** etc.

Type	Payload
Remote sensing payboard	Visible Emission Line coronagraph (VELC)
	Solar Ultraviolet Imaging Telescope (SUIT)
	Solar Low Energy X-ray Spectrometer (SoLEXS)
	High Energy L1 Orbiting x-ray Spectrometer(HEL10S)
In-situ Payload	Aditya Solar wind Particle Experiment(ASPEX)
	Plasma Solar Package for Aditya (PAPA)
	Advanced Tri-axial High Resolution Digital Magnetometer

NANO DI-AMMONIUM PHOSPHATE (DAP) LIQUID PLANT AT GANDHIDHAM, GUJARAT INAUGURATED

- Nano DAP is a nanotechnology-based agri-input that provides plants nitrogen and phosphorous.
 - **Indian Farmers Fertiliser Cooperative Limited (IFFCO)** is first in the world to produce Nano Fertilizer.
- **Nano fertilisers** are highly efficient fertilisers that provide nutrients like nitrogen to crops through fine granules.
- **Benefits of Nano DAP:**
 - **Higher crop yield** due to increase in leaf chlorophyll, photosynthesis.
 - **Increase Farmers income** due to reduction in input cost of farmers.
 - **Nutritional Quality of harvested food** have better protein and nutrient content.
 - **Reduction** in Chemical Fertilizer usage.
 - **Reduces soil, air and water pollution** due to excessive use of phosphatic fertilizers.
 - **Easy to store and Transport.**
 - **Compared to Traditional DAP,** it is required in less quantity, is cost effective, Environment friendly etc.
- **Steps Taken to improve utilisation of Fertilizers**
 - PM Programme for Restoration, Awareness Generation, Nourishment, and Amelioration of Mother-Earth (**PM-PRANAM**).
 - **Nano Urea liquid fertiliser plant** in Gujarat.
 - Neem-coated urea.
 - Market Development Assistance (MDA) to promote organic fertilizers.

POST-PANDEMIC PROLIFERATION OF NON-TARIFF BARRIERS (NTBs) HINDERS INDIA'S EFFORTS TO BOOST GLOBAL TRADE

• A **tariff** is a tax a country imposes on import of goods and services from another country. **Policy measures apart from tariffs** that impact or restrict imports are broadly called **Non-Tariff Measures (NTMs)**.

➤ When NTMs become **arbitrary, applied discriminately** on some trading partners and create trade hurdles, then these are called **NTBs**.

➤ EU's recent **Carbon Border Adjustment Mechanism (CBAM)** is seen as a NTB.

• **United Nations Conference on Trade and Development (UNCTAD)** has categorized NTMs into -

➤ **Technical Measures** like Sanitary and Phytosanitary (SPS) Measures, Technical Barriers to Trade (TBT), and Pre-shipment Inspections.

➤ **Non-Technical Measures** like non-automatic import licensing, price control measures, restrictions.

➤ **Export-related measures** like export restrictions, formalities, production requirements.

• According to an assessment, **80% of India's trade is subject to some NTB**. The **key Indian exports routinely facing high NTBs**:

➤ Tea, Basmati Rice, Animal Products, Chemicals Products to the **EU**;

➤ Sesame seed, Shrimps, Medicines, Apparels to **Japan**;

➤ Meat, fish, dairy and industrial products to **China**;

➤ Fruits and Shrimps to **USA**;

INFLUENCE OF NTBs CAN BE MITIGATED THROUGH

Raising domestic standards in products being rejected due to quality issues.

Engaging bilaterally with countries and raising discriminatory practices in **WTO**.

Addressing NTBs issues through **Free Trade Agreements (FTAs)**.

Retaliate in case of unreasonable restrictions.

ALSO IN NEWS



Self-Regulatory Mechanism for Media Broadcasters

- Supreme Court (SC) has emphasized on the **necessity of an enhanced self-regulatory mechanism** for media broadcasters.
- **Existing self-regulatory mechanism** is represented by the **News Broadcasters and Digital Association (NBDA)**.
 - NBDA represents **27 news and current affairs broadcasters** and issues broadcasting and programming standards in the form of guidelines.
 - Its chairperson is a **former Supreme Court Judge**.
- NBDA administers the '**Codes of Ethics & Broadcasting Standards**' for its member broadcasters and can impose a **penalty of ₹1 lakh** in case of violation.
 - This penalty has been **deemed insufficient** by SC.



First Mile Connectivity (FMC)

- **FMC** is a part of proposed **National Coal Logistic Plan**, which focuses on eliminating road transportation of coal in mining areas **by using conveyors or roads to the nearest railway siding**.
- **National Coal Logistics Policy**: aims to identify, evaluate & eliminate gaps in existing coal evacuation infrastructure & environment-friendly transportation of coal from the mine to the end-use plant.
- **Impact of FMC**
 - **Reduced Carbon Footprint** by optimizing transport systems and reducing reliance on fossil fuel-powered vehicles.
 - **Preserving Natural Environment**.
 - **Improving Public Health** through Reduced air pollution and traffic congestion.



Deemed Forest

- After passage of **Forest (Conservation) Amendment Bill, 2023**, **Odisha government has underlined that 'deemed forests' as a category would cease to exist**.
- Deemed forest is **forest land that hasn't been recorded as such by Centre or States**.
 - Concept of deemed forests has **not been clearly defined in any law** including Forest Conservation Act, 1980.
 - In **1996 Godavarman verdict**, Supreme Court broadened the definition of forest to include not just land classified as forest under forest or revenue departments, but also those that are **forests according to dictionary definition of a forest**.
 - Later, Supreme Court asked States to **form committees to identify such non-notified and unrecorded forests and classify them as 'Deemed Forests'**.

 Vishwakarma Yojana	<ul style="list-style-type: none">● Prime Minister on the 77th Independence Day announces Vishwakarma Yojana to benefit individuals skilled in traditional craftsmanship.● Targeted beneficiaries: Weavers, goldsmiths, blacksmiths, laundry workers, barbers, etc.● Details of the yojana will be provided by government in coming days.
 Accredited Agent for Health and Extension of Livestock Production(A-HELP) program	<ul style="list-style-type: none">● The Union Minister for Animal Husbandry and Dairying unveiled the 'A-HELP' program.● A-HELP is an initiative of the Union Ministry of Fisheries, Animal Husbandry & Dairying, and the Ministry of Rural Development.● It aims to empower women by engaging them as trained agents who contribute significantly to disease control, artificial insemination under Rashtriya Gokul Mission (RGM), animal tagging, and livestock insurance.● Members of women self-help groups registered under the State Rural Livelihood Mission, who are helping in the form of Pashu Sakhi, will be trained as 'A-HELP'.
 Graphene-Aurora program	<ul style="list-style-type: none">● The Ministry of Electronics & Information Technology (MeitY) launched the 'Graphene-Aurora program'.● Implementation: Digital University Kerala with joint funding from MeitY and Kerala government and industry partner.● Aim: To bridge the gap between graphene research and commercialization.● About Graphene<ul style="list-style-type: none">➢ Graphene is a single layer of carbon atoms arranged in a hexagonal lattice, forming a two-dimensional structure discovered in 2004.➢ Properties: ultimately thin, mechanically very strong, transparent, and flexible.➢ Application: can be used in touch screens, light panels, solar cells, faster DNA sequencing, drug delivery, etc.
 Solar Terrestrial Relations Observatory (STEREO-A) spacecraft	<ul style="list-style-type: none">● NASA's STEREO-A spacecraft passes between Sun and Earth, marking the first Earth flyby of nearly 17-year-old mission.<ul style="list-style-type: none">➢ STEREO-A's flyby will allow scientists to understand how coronal mass ejection's (CME) magnetic field evolves on its way to Earth.● Launched in 2006, STEREO traces the flow of energy and matter from Sun to Earth.<ul style="list-style-type: none">➢ It provides unique and revolutionary views of the sun-Earth system. Mission observed the sun in 3-D for the first time in 2007.➢ Composed of two nearly identical observatories i.e. one ahead (STEREO-A) of Earth in its orbit, the other trailing behind (STEREO-B).
 Places in News	<p>Libya (Capital: Tripoli)</p> <ul style="list-style-type: none">● Clashes between two leading armed groups in Tripoli, only civilian airport, have led to its closure.● Political Boundaries<ul style="list-style-type: none">➢ Country located in North Africa.➢ Bounded by Mediterranean Sea (north), Egypt (east), Sudan (southeast), Niger and Chad (south), and Tunisia and Algeria (west).● Geographical features<ul style="list-style-type: none">➢ Highest mountain: Bikku Bitti.➢ Rivers: There are no permanent rivers, only ephemeral rivers or wadis like Zamzam.➢ Climate: Hot arid which is exacerbated by Ghibli (a hot arid wind that blows from south over entire country). 