

NEWS TODAY

South Korean scientists develop sodium ion battery that can be charged in seconds

- The technology is a high-power hybrid sodium-ion battery capable of rapid charging.
 - ⊕ It is being conceived as an cheaper and potentially more feasible source of energy than Lithium-Ion batteries.
- Sodium Ion Battery vs Lithium-Ion Battery

Specifications	Sodium Ion Battery	Lithium-Ion Battery
Occurrence	Sodium is 500-1000 times more abundant than lithium.	Lithium availability is limited to few countries.
Charging time	Charges faster	Slow charging rate
Safety	Safer, as they do not explode or catch fire easily	Less safe, prone to catching fire or exploding
Operation and use	Higher operating temperature range and thus can be used in more extreme temperatures.	Lower operating temperature range and can cause fire if operated in higher temperatures.
Applicability	Can be used in small as well as large-scale energy storage applications.	Suitable for portable devices and electric vehicles.

- Limitations of Sodium Ion Battery
 - ⊕ Shorter lifespan as compared to Lithium-ion batteries.
 - ⊕ Infant technology and lack of a well-established supply chain.
 - ⊕ Limitations of flexibility into various shapes (e.g. prism, cylinder).
 - ⊕ Cycle life of 5,000 times, significantly lower than the cycle life of commercial lithium iron phosphate batteries, which is 8,000-10,000 times.

Fourth meeting of Intergovernmental Negotiating Committee (INC-4) held in Ottawa, Canada on UN Plastics Treaty

- United Nations Environment Assembly adopted a resolution in 2022, mandating the creation of an INC to develop a legally binding instrument to end plastic pollution across its life cycle.
- About Plastic Pollution
 - ⊕ Annual plastic production has doubled from 234 million metric tonnes (MMT) in 2000 to 460 MMT in 2019 and is set to reach 1,261 MMT by 2060.
 - ⊕ China (32%) has evolved as a hub for plastic manufacturing in 2022.
 - ⊕ India ranked third globally, contributing 5.5 million tonnes of single-use plastic (SUP) waste, with per capita single-use plastic waste of 4 kg per year.
- Initiatives to combat plastic pollution
 - ⊕ Global
 - ◆ Basel Convention: To regulate movement and disposal of hazardous waste, including plastic waste.
 - ◆ Global Partnership on Marine Litter: To share knowledge and coordinate effort to reduce marine litter.
 - ⊕ India
 - ◆ Plastic Waste Management Rules, 2016: Mandate implementation of Extended Producer Responsibility (EPR) by producers, importers, and brand owners. EPR was introduced as an important feature in E-waste (management & handling), Rules 2011.
 - ◆ Ban on SUP products, including plastic bags, straws, cups, and plates.
 - ◆ Campaigns like "Beat Plastic Pollution" and "Plastic-Free India".

Chemicals used in plastics and its human impact

- Vinyl chloride monomer in liquid and vapour form increases risk of liver and brain cancer.
- Benzene and butadiene cause leukemias and lymphomas.
- Styrene is neurotoxic and a possible human carcinogen.

Indian Space Research Organisation (ISRO) tracks notable expansion of glacial lakes in Indian Himalayas

- As per ISRO, **long-term satellite imagery** covering the catchments of Indian Himalayan river basins from 1984 to 2023 indicates **significant expansion of glacial lakes**.
 - ⊕ Indian Himalayas are often called **Third Pole** because of **extensive glaciers** and **snow cover**.
 - ⊕ **Satellite remote sensing technology** is crucial for **understanding glacier retreat rates, assessing Glacial Lake Outburst Floods (GLOF) risks**, and gaining insights into climate change impacts.
- **Key observations**
 - ⊕ Glacial Lake is a **body of water that originates from melting of glacier**.
 - ⊕ Based on their **formation process**, they are grouped into **four broad categories**, namely
 - ◆ **Moraine-dammed** (water dammed by moraine), **Ice-dammed** (water dammed by ice), **Erosion** (water dammed in depressions formed by erosion), and **other glacial lakes**.
 - ◆ Material, usually **soil and rock, left behind by moving glacier** is called **Moraine**.
 - ⊕ Of the 2,431 lakes, **676 glacial lakes have expanded since 1984**. **130 of these lakes are situated within India** in Indus, Ganga, and Brahmaputra River basins.
 - ◆ Among 676 expanding lakes, **majority of them are Moraine-dammed** followed by Erosion dammed glacial lakes.
 - ⊕ Glacial lakes are **freshwater sources for rivers** in Himalayan region. However, they also **pose significant risks like GLOFs**.

About GLOFs

- GLOFs occur when **glacial lakes release large volumes of melt-water due to failure of natural dams**, such as those made of moraine or ice, resulting in sudden and severe flooding downstream.
 - ⊕ These **dam failures can be triggered by various factors**, including **avalanches of ice or rock, extreme weather events** like global warming, earthquake etc.
- GLOFs are recognized as a **potential climatological disaster** in **National Disaster Management Plan 2019 of India**.

'Ensuring safety and health at work in a changing climate' released by International Labour Organization (ILO)

- Report highlights the **impacts of climate change on Occupational safety and health (OSH)**.
- **Impact of Climate change on OSH**
 - **Climate-related threats:**
 - ◆ Every year, **2.09 million disability-adjusted life years (DALYs) are attributable to excessive heat alone**.
 - ◆ Some workers, such as **agricultural workers and other outdoor workers** carrying out heavy labour in hot climates, are **particularly at higher risk**.
 - ◆ **Numerous health conditions in workers have been linked to climate change**, including cancer, cardiovascular disease, kidney dysfunction, mental health conditions etc.
 - **Vulnerable sections:**
 - ◆ **Women workers** may be at increased risk due to their job roles, such as in subsistence agriculture.
 - ◆ **Workers with a disability** are particularly vulnerable due to poverty and lower educational attainment.
 - **India Related findings:** An estimated **100,000 farmers committed suicides between 1993 and 2003**, for reasons such as water shortages and decreased crop yields.
- **Existing international labor standards related to climate change and OSH**
 - **Climate-related OSH Hazards:** The Occupational Safety and Health Convention, 198, Promotional Framework for Occupational Safety and Health Convention, 2006, etc.
 - **Excessive Heat:** Plantations Convention, 1958, Ambient factors in the workforce, etc.
 - **Air pollution:** Working Environment (Air Pollution, Noise, and Vibration) Convention, 1977.

Recommendations

- **OSH policies and programs** should be coordinated among government departments to ensure policy coherence.
- **Targeted policies at the national level** alongside effective workplace preventive measures.
- **Global multisectoral response** to tackle the impacts of climate change using mitigation and adaptation strategies.

Supreme Court (SC) permits abortion beyond 24 weeks of Pregnancy

- SC used special powers under **Article 142** to allow a medical termination of a 14 year old minor who survived rape.
 - ⊕ Relief is rare as **abortion law in India** caps the **upper limit for termination of pregnancy at 24 weeks**.
- **About India's law on abortion**
 - ⊕ **Medical Termination of Pregnancy (MTP) Act 1971** provides for the termination of certain pregnancies by registered Medical Practitioners.
 - ⊕ **2021 amendment of MTP Act** raised the upper gestation limit from **20 to 24 weeks**. Further,
 - ◆ **Opinion of 1 doctor is required** where gestation period does **not exceed 20 weeks**.
 - ◆ **Opinion of 2 doctors is required** where gestation period is between **20 to 24 weeks**.
 - ◆ After 24 weeks of pregnancy, a **medical board has to be set up in "approved facilities"**.
 - ⊕ **MTP (Amendment) Rules, 2021** lists categories of forced pregnancies, like
 - ◆ Rape in case of minors or sexual assault or incest;
 - ◆ Women with disabilities;
 - ◆ When there is a change in marital status of women during pregnancy etc.
- Recent judgement holds significance as it ensures **dignity, autonomy, confidentiality and justice for women** who need to terminate pregnancy.

Article 142

- It provides a unique power to the SC, **to do "complete justice" in any case before it**, where, at times, the law or statute may not provide a remedy.

Trade gap between India and China continues to widen

- **Status of India- China Trade**
 - ⊕ **India's exports to China increased** from \$15.33 billion in FY23 to **\$16.67 billion in FY24**.
 - ◆ **Key items exported to China** include iron ore, cotton yarn, cotton, quartz, etc.
 - ⊕ **India's imports from China rose** from \$98.51 billion in FY23 to **\$101.75 billion in FY24, widening trade deficit by to \$85.08 billion in FY 24 (i.e. 2.3%)**.
 - ◆ **Key items imported from China** include plastics, steel products, fertilisers etc.
- **Reasons for increasing Trade Deficit**
 - ⊕ **Narrow basket of commodities, mainly raw material and minerals are exported**, from India to China.
 - ⊕ **Increased imports of material for solar energy, electric vehicles etc.** due to focus on renewable energy and carbon neutrality.
 - ⊕ Growth of manufacturing units in India has led to increased raw material imports from China.
 - ⊕ **Preference of firms** in sourcing supplies from China due to less cost.
- **Measures taken by India**
 - ⊕ **Production-Linked Incentive** scheme to make Indian manufacturers globally competitive, attract investment, promote exports.
 - ⊕ **Expanding India's trade partners** by signing and negotiating trade facilitation agreements with European Union, Canada etc.
- **Way ahead**
 - ⊕ Explore alternative sources of imports from the ASEAN countries.
 - ⊕ Boosting India's domestic manufacturing base and exports.

Also in News



Golden trevally (Gnathanodon speciosus)

- **Central Marine Fisheries Research Institute (CMFRI)** achieved captive breeding of high-value marine fish golden trevally.
- It will help to promote **sustainable seafood production** and **boost India's mariculture activities**
- **Golden trevally (or golden king fish)**
 - ⊕ It is a **reef-associated fish** and lives in company of larger fishes like skates, groupers etc.
 - ⊕ **Use:** For consumption and ornamental purposes.
- **CMFRI:**
 - ⊕ **Monitor and assess the marine fisheries resources** of the Exclusive Economic Zone (EEZ).
 - ⊕ Under the **Ministry of Agriculture and Farmers Welfare**.
 - ⊕ Joined the **Indian Council of Agricultural Research (ICAR) in 1967**.



Padma Awards

- President conferred Padma Awards at Rashtrapati Bhavan in New Delhi.
- **About Padma Awards**
 - ⊕ **Instituted in 1954**, these are **one of the highest civilian honours of India** announced annually on Republic Day.
 - ⊕ Given in three categories **Padma Vibhushan** (for exceptional and distinguished service), **Padma Bhushan** (distinguished service of a high order) and **Padma Shri** (distinguished service).
 - ⊕ **Given in various disciplines and fields** like art, medicine, literature and education, sports etc.
 - ⊕ **Normally not conferred posthumously**. However, in highly deserving cases, Government could consider giving an award posthumously.
 - ⊕ Award **does not amount to a title and cannot be used as a suffix or prefix to name**.



Trends in World Military Expenditure, 2023 Report

- It was released by **Stockholm International Peace Research Institute (SIPRI)**.
 - ⊖ Established in 1966, it is an independent international institute dedicated to research into conflict, armaments, arms control and disarmament.
- **Key findings**
 - ⊖ India was **fourth largest military spender** in world in 2023 with an expenditure of \$83.6 billion after **United States, China and Russia**.
 - ⊖ In 2023, military expenditure by NATO member states reached \$1341 billion or 55% of world spending.
 - ⊖ **World military expenditure**, driven by Russia's invasion of Ukraine and geopolitical tensions, reached to an **all-time high of \$2443 billion**.



Mount Erebus

- Mount Erebus is expelling pockets of gas containing crystallised gold everyday which is worth around \$6,000.
 - ⊖ Other volcanoes are known to emit gold, Mount Erebus is the **only one to emit it in a metallic form**.
- **About Mount Erebus**
 - ⊖ It is an **Active volcano in Antarctica** and **World's southernmost active volcano**.
 - ⊖ It is one of several volcanoes forming **Ross Island** off the coast of West Antarctica.
 - ⊖ It is a **stratovolcano composed** of alternating layers of solidified ash, hardened lava, and rocks ejected by earlier eruptions.



50th year of Aryabhata Launch

- ISRO celebrated Satellite Technology Day (STD) commemorating the **50th year of the Aryabhata Launch** in 1975.
- **About Aryabhata**
 - ⊖ It was **India's first satellite**, named after the famous Indian astronomer in the 5th century.
 - ⊖ It was **built by the ISRO** and launched by a **Soviet Kosmos-3M rocket from Kapustin Yar (Russia)**.
 - ⊖ It aimed to conduct **experiments in X-ray astronomy, aeronomics, and solar physics**.



Neptis Philyra

- Rare butterfly species **Neptis philyra** was recently discovered for the first time in India.
- **About Neptis Philyra**
 - ⊖ It has been discovered in **Tale Valley wildlife sanctuary** in lower Subansiri district of **Arunachal Pradesh**.
 - ⊖ It is commonly known as **long-streak sailor**
 - ⊖ It has **serrated wings with rich brownish-black on the upper side** and yellow brown on the underside
 - ⊖ It is **generally found in east Asia**, including eastern Siberia, Korea, Japan, central and southwest China.
 - ⊖ **Habitat-** evergreen forests, riverine vegetation, and rocky streams.



Centre for Cellular and Molecular Platforms (C-CAMP)

- C-CAMP has joined the **Blockchain for Impact Biome Virtual Network** Program to accelerate transformative healthcare solutions through biomedical innovation.
- **About C-CAMP**
 - ⊖ It was **conceptualised by Department of Biotechnology in 2009** as an enabler or catalyst of cutting-edge research and innovation in life sciences.
 - ⊖ It is also a **member of Bangalore Life Science Cluster (BLiSC)**.
 - ⊖ **Mandate:** Promoting **entrepreneurship and innovation**, through its involvement in Seed Funding Schemes for Startups, Entrepreneur Mentorship program and Bio-Incubation facility.



State of Global Climate Report 2023

- **Released by:** World Meteorological Organization (WMO)
- **Key Findings**
 - ⊖ **2023 was the warmest year on record**, with the global average near-surface temperature at **1.45 degree Celsius above the pre-industrial baseline**.
 - ⊖ **Extreme climate conditions exacerbated humanitarian crises**, with millions experiencing acute food insecurity and hundreds of thousands displaced from their homes.
 - ⊖ **Greenhouse gas levels, surface temperatures, ocean heat and acidification**, etc reached record high.

Personality in news



Pandita Ramabai (1858-1922)

- 166th birth anniversary of **Pandita Ramabai Sarasvati** was celebrated recently.
- **About Pandita Ramabai**
 - ⊖ She was a **social reformer, educator, and freedom fighter**.
 - ⊖ She was one of the **ten women representatives at the 1889 Congress**.
- **Key Contribution**
 - ⊖ Established **Sharada Sadan** in 1889.
 - ⊖ **Testified before the Hunter Commission** on Women's Education,
 - ⊖ Published '**Stree Dharma Niti**', or '**Morals for Women**'.
 - ⊖ Awarded the **Kaiser É Hind Medal** in 1919.
- **Values:** Compassion, patriotism, Humanity, etc.

