

Global overturning circulation — the equatorward transport of cold, deep waters and the poleward transport of warm, near surface waters — controls ocean heat distribution and atmospheric carbon dioxide levels, thus playing a critical role in global climate. It is thought that tectonic changes might have led to the formation of two separate water bodies — northern component water in the North Atlantic and Antarctic Bottom Water (AABW) in the Southern Ocean.

It is now clear that all warnings in the Mishra Committee report almost 50 years back went unheeded in the race to develop Joshimath by successive governments since 2001. It was clearly pointed out that Joshimath township is situated on debris of earlier landslides and would slip someday. But development continued at a rapid pace with heavy construction activities such as initiating small hydro power projects at Tapovan and Rishi Ganga, tunnelling, road widening and mushrooming of buildings with scant regard to safety to accommodate increased tourist inflow, and disappearance of the green cover in the region. All elements of a disaster were primed and only a trigger was needed to initiate the crisis.

Astronomers from the University of Missouri have used data from NASA's James Webb Space Telescope (JWST) Early Release Observations and discovered 87 galaxies that could be the earliest known galaxies in the universe. The finding moves the astronomers one step closer to finding out when galaxies first appeared in the universe — about 200-400 million years after the Big Bang.

"Finding such a large number of galaxies in the early parts of the universe suggests that we might need to revise our previous understanding of galaxy formation," Haojing Yan from the University of Missouri said in a release. "Our finding gives us the first indication that a lot of galaxies could have been formed in the universe much earlier than previously thought." The astronomers searched for potential galaxies at "very high redshifts." The concept of redshifts allows us to measure how far away distant objects are in the universe by looking at how the colours change in the waves of light that they emit.

After the Indian Space Research Organisation (ISRO) said in a report that Joshimath sank 5.4 cm between December 27 and January 8, the National Disaster Management Authority (NDMA) on Friday directed all departments and organisations involved in survey and data collection in the Uttarakhand town hit by land subsidence not to interact with the media or share data on social media. "Various government institutions are releasing data related to the subject matter (Joshimath) on social media and are interacting with media with their own interpretations. It is creating confusion not only among the affected residents but also among citizens of the country," the NDMA said.

GREEN STEEL

1. Intergovernmental organisation International Energy Agency has released a document saying that most net-zero emission (NZE) routes for steel and cement production are not yet commercially available including for 'green steel'.
2. **What is Green Steel?** Green Steel is the manufacturing of steel using renewable or low-carbon energy sources such as hydrogen, coal gasification, or electricity instead of the traditional carbon-intensive manufacturing route of coal-fired plants.
3. **What does the document of IEA say?** Key technologies such as carbon capture, utilisation and storage for cement and steel industries and hydrogen-based steel manufacturing are still in prototype and demonstration stages. Experience shows that the innovation process usually takes 20 to 70 years from prototype to commercialization. Solar and wind energy units require more steel, aluminium and in some cases, cement per unit of capacity than fossil fuel-based generating technologies.
4. Energy resources being concentrated in one geographical area pose a threat to the world's energy security. Currently, China is the dominant producer of solar panels, wind, Electric Vehicle (EV) batteries, electrolyzers, and heat pumps. Lithium, a key metal for producing electronic vehicles, is mostly concentrated in Australia, Chile, and China. Meanwhile, 70 per cent of the world's cobalt is produced in the Republic of Congo.
5. **Government programmes for green steel:** National Hydrogen Energy Mission (NHM) capitalizes on hydrogen for a cleaner alternative fuel option. Petroleum and Natural Gas Ministry launched Pradhan Mantri Urja Ganga Project in Eastern India in 2019 to provide gas to all steel plants located in the area.

DISASTER RISK REDUCTION: CEA RELEASES DISASTER MANAGEMENT PLAN FOR POWER SECTOR

1. **The Central Electricity Authority (CEA)** has released the disaster management plan (DMP) for the power sector in a bid to evolve a proactive and integrated approach to strengthen disaster mitigation, preparedness, emergency response and recovery efforts.
2. **Background:** The Power Sector is one of the most important infrastructures of the country, as the growth of this sector is directly correlated with the economic growth of the country. Any disruption in the power sector due to disaster creates a hardship for human beings, as every aspect of human life is directly or indirectly associated with electricity. The DMP comes as the Government is investigating instances of land subsidence in the UK's Joshimath, the gateway to pilgrimage sites, such as Badrinath and Hemkund Sahib.
3. The DMP is also in conformity with the 10-point agenda articulated by the PM at the Asian Ministerial Conference on disaster risk reduction in 2016. It includes – Investing in risk mapping globally. Creating a network of universities working on disaster-related issues. Leveraging social media and mobile technologies for disaster risk reduction (DRR). Building local capacities for disaster management, reduction and relief, etc.
4. **Highlights of the DMP:** It provides a framework and direction to the utilities in the power sector for all phases of the disaster management cycle. It is intended to guide all agencies within the sector with a general concept of potential emergencies and roles and assignments before, during, and following emergency situations. To estimate threats to power infrastructure, it is pertinent that fragility and vulnerability analysis is carried out for civil structures like buildings and foundations in transmission and distribution facilities.
5. **Significance of DMP:** Accurately assessing climate risks is difficult, hence, electric utilities can manage risks by considering different climate scenarios and potential impacts on their assets. This will ensure a reliable power supply and quick restoration even in times of extreme weather events and natural disasters. This will be helpful for policy and decision-makers to evaluate strategies and measures for critical infrastructure planning and protection.

KOLLAM

1. 2,200 trainees: As part of the ambitious campaign, around 16.3 lakh people in the district above the age of 10 have been educated on various aspects of the Constitution and the strenuous process involved 2,200 trainers called 'senators'.

Before the arrival of humans, islands in the Western Indian Ocean were home to giant tortoises that dominated their ecosystems. By examining ancient DNA, researchers have estimated how these animals migrated out of Africa to colonise Madagascar and many islands that are now lost to the seas. As per radiocarbon dating, tortoise specimens existed between 1,262 and 1,069 years before the present; the species likely originated from a dispersal from Africa in the late Eocene or Oligocene epoch.

The longevity of rockfishes, some of which can live more than 100 years, comes from genes tied to insulin signalling and flavonoid metabolism. The study also evaluated the influence of equivalent genes on human aging. Multiple shifts in rockfish longevity have occurred independently, and in a short evolutionary time frame. The longevity of rockfishes ranges from 11 to over 205 years. Through genome sequencing, researchers examined 23 rockfish species with average lifespans ranging from 22 to 108 years.

The forces generated by the January 2022 Tonga eruption created globally observable atmosphere waves, according to a new study using remote seismic data. The eruption of the volcano was the largest volcanic explosion in more than 30 years. Researchers used remote seismic data recording ground motions produced by the eruption and indirectly by the resulting atmospheric waves to estimate the overall force the eruption imposed onto the Earth as it vented over time.

We humans walk with two legs (called 'bipedal') and use two hands. The evolution of bipedalism began in our ancestors, the primates, about 4 million years ago. The primates not only gave us our blood groups, but our two feet and two hands as well. Primates exhibit characteristics that distinguish them from less evolved mammals. These include adaptations to live in trees (as monkeys do), big brains, heightened sense of vision, opposable thumbs to grasp the four fingers in each hand, and more flexibility in shoulder movements.

Amid chants of Bharat Mata ki jai, 23 year old Anju Devi lifts a .303 bore rifle. Braving the cold and incessant rain, she and 50 other women and men have assembled at a Central Reserve Police Force (CRPF) camp at Sunderbani, close to Pakistan occupied Kashmir (PoK), in Jammu to learn how to fire a weapon in self-defence.

2. During the seven-month campaign, the senators visited schools, offices, auto stands and tribal councils to spread awareness. As part of the campaign, the Preamble of the Constitution has been distributed in all households and installed at government, quasi-government and private institutions and schools.
3. Kollam will be officially declared India's first Constitution literate district by Chief Minister Pinarayi Vijayan.

REWARD PROJECT

1. Impressed with Karnataka's performance in the implementation of the Rejuvenating Watershed for Agricultural Resilience through Innovative Development (REWARD) scheme, the World Bank has decided to get agricultural officers from Sub-Saharan countries to visit the State to learn from its experience. Karnataka has been identified as a "lighthouse partner" by the World Bank in developing the science-based watershed model.
2. It is the first State to develop a Land Resource Inventory portal (the portal will contain the details on the appropriate measures to be taken for different types of land with respect to agriculture, groundwater, crop, and soil health) that has details of 14 lakh hectares of land coming under the project.
3. **REWARD Project**-The project aims to help national and state institutions adopt improved watershed management practices to help increase farmers' resilience to climate change, and promote higher productivity and better incomes. REWARD is being implemented in three to four Indian States for 6 years for: prevention of soil run-off, regeneration of natural vegetation, rainwater harvesting, and recharging of the groundwater table. Enabling multi-cropping and the introduction of diverse agro-based activities.

VIDISHA BECOMES THE FIRST-EVER DISTRICT IN INDIA FOR THE ON-GROUND DEPLOYMENT OF INNOVATIVE 5G USE CASES OFFERED BY START-UPS

1. Vidisha, an aspirational district of Madhya Pradesh became the first-ever district in India for the on-ground deployment of innovative 5G use cases offered by start-ups – a joint initiative by Vidisha District Administration and Centre for Development of Telematics (C-DOT), Department of Telecommunications (DoT) under the guidance of Additional Secretary (Telecom) & Administrator USOF.
2. **5G use case promotional pilot**: the following 5G/IoT use cases were demonstrated by start-ups in collaboration with C-DOT: Superceuticals-5G/4G Enabled smart health kiosk for measuring vitals & performing tests almost instantaneously with.
3. **Ambupod**: 5G/4G Enabled Auto Ambulance with basic life safety support & measurement of vitals with remote doctor support. Logy AI: Cataract Eye Screening application using the smartphone for quick & effective screening of cataract disease Easiofy: AR/VR-3D visualization application for Lung & Brain scans (CT/XRAY etc.) for effective diagnosis. TechXR: AR/VR- 3D immersive experience kit for students for enhanced learning & teaching tool for innovative teaching methods.
4. **BKC Aggregators**: Fasal Salah App- personalized crop advisory for farmers to take informed decisions and connect with Mandis/Traders, state subsidies/insurance for crops Dvara- Surabhi: Unique Biometric muzzle identity of cattle to be used by the state department and insurance companies, and predicting health status of cattle to be used by dairy farmers C-DOT (R&D Arm of DoT): One-stop platform integrating all the health suits enabling Tele consultation and e-learning solution suits.



"Today is the most powerful,
as it was available yesterday and
I bet it will be available tomorrow as well."

DR. KHAN
(KSG)