ECOLOGY

GEARING UP FOR CHANGE

CONTEXT: The India Meteorological Department, marking its 150th year, originally focused on unraveling the southwest monsoon's mysteries during colonial times.

BACKGROUND: Conceived during colonial times, the Indian Meteorological Department (IMD) initially focused on unraveling the mysteries of the southwest monsoon to aid British administration in predicting harvest-influencing weather patterns. Over the years, IMD amassed vast meteorological data, crucial for forecasting monsoons and addressing practical concerns about revenues and agricultural outcomes.

News Highlights: Recent research by the Council on Energy, Environment, and Water reveals that 55% of India's tehsils have witnessed an increase in monsoon rainfall from 1982 to 2022. Conversely, 11% experienced a decline, with 68% of them facing reduced rainfall throughout all four monsoon months, affecting crucial periods for kharif crop cultivation. The impacted tehsils are primarily in the Indo-Gangetic plains, northeastern India, and the Indian Himalayan region, significant contributors to over half of India's agricultural production.

- Rainfall Extremes: 30% of Indian districts face deficient, and 38% face excessive rainfall, impacting historical dry areas.
- Changing Patterns: Traditional dry regions like Rajasthan and Gujarat are experiencing increased rainfall, altering historical weather patterns.
- Northeast Monsoon Shift: Northeast monsoon rain has risen by over 10% in the past decade, affecting Tamil Nadu, Telangana, and Andhra Pradesh.
- Monsoon Dynamics: Southwest monsoon contributes 76% of India's annual rainfall, while northeast monsoon contributes 11%, showing the significance of monsoons.
- Climate Change Impact: Monsoons' increasing variability is studied to distinguish between natural variability and global warming effects.
- Need for Regional Plans: Advocates for region-specific climate resilience plans and resource allocation, emphasizing local forecasts over national predictions for effective governance.

Indian Meteorological Department (IMD)

- Professional Mandate: The India Meteorological Department (IMD) is a professional meteorological agency responsible for weather forecasting, climate monitoring, and seismic activity.
- Under Ministry of Earth Sciences: IMD operates under the Ministry of Earth Sciences, emphasizing its focus on comprehensive Earth-related research and services.
- Historical Roots: Established in 1875 during British rule, IMD's origins trace back to the British desire for accurate weather information to facilitate trade and agriculture.
- British Era Contributions: In the colonial era, IMD played a crucial role in providing weather forecasts for shipping, helping reduce maritime accidents and improve navigation safety.
- Modern Era Advancements: In the modern era, IMD employs cutting-edge technology, satellite data, and computer models to deliver accurate and timely weather forecasts, aiding diverse sectors like agriculture, aviation, and disaster management.

SCIENCE AND TECHNOLOGY

THE PROBLEM WITH INDIA'S SCIENCE MANAGEMENT

CONTEXT: India's limited R&D spending (0.7% of GDP) requires strategic allocation for impactful projects amid global disparities (US 3.5%, China 2.4%).

BACKGROUND: Despite past achievements, India's scientific administration faces challenges. The Indian Space Research Organisation (ISRO) lags in global rankings, ranking eighth in 2022 for launch numbers. Nuclear energy advancements, particularly in small modular reactors and thorium, have been delayed. In critical domains like genomics, robotics, and artificial intelligence, India's science direction appears inconsistent and ill-suited for its pivotal role in the future.

HIGHLIGHTS: India's scientific landscape, largely controlled by the public sector, grapples with bureaucratic hurdles, including delayed approval of time-sensitive funding and uneven decision-making across funding tiers. Moreover, a critical

deficiency lies in the failure to sustain long-term funding for vital projects amid occasional setbacks, a crucial element for a resilient science management system.

AN OUTSIZED ROLE BY SCIENTISTS

India's science administration is significantly shaped by senior scientists who engage in diverse activities ranging from international-level academia to micromanaging institutional finances and navigating legal battles. Often involved in numerous committees and aspiring for administrative roles, these scientists, rather than government bureaucrats, bear accountability for the shortcomings in India's science administration.

- Assumption Flaw: Belief in scientists as effective administrators is flawed; administration requires distinct skills conflicting with scientific attributes.
- Skill Set Mismatch: Administering complex institutions demands skills like tact, realism, and flexibility, contrary to scientists' individualistic traits.
- Training Gap: Scientists lack comprehensive training in selecting appropriate metrics, leading to inefficiencies, project derailments, and wasted resources.
- Conflict of Interest: Academic-administrative overlap breeds conflicts, promoting red tape, plagiarism, and compromised quality control, affecting scientific integrity.
- Malicious Impacts: Egotism and competition harm careers and projects; lack of transfer systems fuels institutional capture and factionalism.
- Call for Change: Urges a reevaluation of the paradigm, advocating for administrators with specific training and minimizing conflicts for effective science governance.

Post-Independence, the concentration of advanced equipment in a few institutions, notably the Indian Institutes of Technology, created gatekeepers who wielded influence and power. This monopoly led to a system where young scientists had to appease these gatekeepers, perpetuating a cycle of indebtedness and stifling genuine scientific progress, causing significant harm to careers and outcomes.

THE SYSTEM IN THE U.S.

- Global Practice: Robust science establishments worldwide separate administrators and scientists, with the U.S. selecting and training science administrators early.
- Early Selection: In the U.S., science administrators focus solely on administrative tasks after early career selection, avoiding active scientific roles.
- Benefits of Separation: Clear advantages for stakeholders, challenging entrenched norms; India needs to reconsider scientists' involvement in administrative tasks.
- Middle-Way Proposal: Suggests an American-style approach – an all-India pool for science administration, offering training and selecting scientists for administrative roles.
- Enhanced Bargaining Power: Advocates for greater influence for university leaders with appropriate training, fostering stronger negotiation with bureaucracy and ministries.

India must recognize the need for a dedicated administrative focus in its scientific institutions, akin to the establishment of MBA courses in business in 1908. Separating administration from the subject matter is crucial for effective management, as the administrative structure serves as the central nervous system for complex entities, including science establishments. Failure to address these fundamental issues may hinder India's economic and strategic aspirations in the realm of science.

POLITY AND GOVERNANCE

A CASE OF ESTABLISHED LAW LAGGING BEHIND NEW TECH

CONTEXT: The New York Times (NYT) has filed a lawsuit against OpenAI and Microsoft for copyright infringement, which could have major implications for the future of AI and intellectual property rights.

BACKGROUND:

New York Times alleges:

- OpenAI and Microsoft used NYT content to train large language models (LLMs) and generative AI (GenAI) systems without permission or payment.
- This usage reduces readers' need to visit the NYT website, potentially harming advertising and subscription revenue.
- Many ChatGPT and Bing Chat outputs appear to be verbatim copies of NYT articles with no attribution.

OpenAI argues:

- Using copyrighted content for GenAI training is a "transformative purpose" protected by fair use.

SIGNIFICANCE:

- First major US media house suing Big Tech for copyright infringement in the GenAI era.
- Raises questions about intellectual property rights in the digital age.
- Could set legal precedents and influence GenAI development globally.
- Potential implications for the business models of both traditional media and AI companies.

OTHER CASES:

- Similar lawsuits filed by authors and artists against various AI companies.
- Getty Images sued Stability AI for copyright infringement.
- Universal Music Group urged music streaming services to prevent data scraping for AI music generation.

FUTURE:

- The outcome of the NYT lawsuit could significantly shape GenAI's future.
- Copyright laws might need to be updated to address AI-specific issues.
- Data is crucial for GenAI training, but its use needs to be balanced with content creators' rights.

ADDITIONAL INFORMATION:

- NYT compared its lawsuit to the record companies' case against Napster, which led to the file-sharing service's decline.
- Union Minister Rajeev Chandrasekhar called the NYT

lawsuit "very important" and urged attention.

- Apple reached multi-year deals with news outlets to license their archives for AI training.
- OpenAI has agreements with Associated Press and Axel Springer for content sharing.

WHAT HAPPENED TO NAPSTER?

Rise and Fall (1999-2001):

- Launched in 1999, Napster revolutionized music sharing by allowing users to directly download MP3s from each other, bypassing traditional channels.
- It quickly gained immense popularity, attracting millions of users and raising alarm bells within the music industry.
- Record companies and artists sued Napster for copyright infringement, claiming it facilitated widespread music piracy.
- Legal battles ensued, culminating in a court order forcing Napster to shut down its core file-sharing service in 2001.
- Beyond the Shutdown (2002-present):
- Napster filed for bankruptcy in 2002 but its brand and assets were later acquired by various companies.
- The name has changed hands several times, being used by music services like Rhapsody and Pressplay.
- Currently, "Napster" is owned by a consortium led by a blockchain company and operates as a paid music streaming service with over 110 million songs.

Legacy of Napster:

- Although short-lived, Napster's impact was immense. It:
  - Popularized peer-to-peer file sharing, setting the stage for future platforms like BitTorrent.
  - Forced the music industry to adapt to digital distribution, paving the way for online music stores like iTunes.
  - Sparked a debate about copyright and fair use in the digital age, a discussion that continues today.

While Napster itself didn't survive in its original form, its legacy lives on in the way we access and interact with music and other digital content. It serves as a reminder of the disruptive potential of technology and the challenges of adapting to ever-evolving landscapes.

ESTABLISHED LAW:

- Copyright laws were primarily designed for the physical world, covering things like books, music, and films.
- These laws focus on clear-cut concepts like copying and distribution, often relying on human intent and direct infringement.
- They haven't been explicitly updated to address the nuances of AI models trained on massive datasets, where "copying" might be unintentional and the lines between creation and transformation blur.

NEW TECH CHALLENGES:

- AI models like ChatGPT and Bing Chat use vast amounts of text data from various sources, including news articles, to train their algorithms.
- This can lead to instances where outputs produced by these models contain verbatim copies of copyrighted material without attribution.
- Determining "fair use" becomes complex, as AI models operate differently from humans and don't necessarily hold malicious intent.

THE NYT LAWSUIT:

- The NYT argues that its content is being used without permission or compensation, potentially damaging their business model.
- They claim that verbatim copied passages and AI "hallucinations" attributed to them create confusion and undermine their journalistic credibility.
- This lawsuit could set a precedent for how copyright law applies to AI-generated content in the future.

IMPLICATIONS:

- This case raises important questions about intellectual property rights in the digital age.
- It could force a reevaluation of copyright laws to consider the specificities of AI and its use of data.
- The outcome of the lawsuit could significantly impact the business models of both AI companies and traditional media outlets.

Examples of similar lagging law:

- Music streaming services faced legal battles for using scraped data to train AI music generation models.
- Visual artists sued AI companies for incorporating their artwork into generated images without consent.

CONCLUSION: the "established law lagging behind new tech" scenario highlights the need for adapting legal frameworks to keep pace with technological advancements, ensuring fairness and protection for content creators while fostering responsible AI development.

SCIENCE AND TECHNOLOGY

NASA SPACECRAFT PINGS CHANDRAYAAN-3 LANDER ON THE MOON

CONTEXT: NASA's Lunar Reconnaissance Orbiter pings and establishes communication with India's Chandrayaan-3 lander using a laser beam on the moon.

HIGHLIGHTS: NASA's Lunar Reconnaissance Orbiter (LRO) achieved a significant milestone by successfully employing a laser altimeter to precisely locate targets on the moon's surface. The experiment, conducted on December 12, 2023, involved sending laser pulses from LRO to the Vikram lander 62 miles away. Detection of reflected light from a NASA retroreflector on Vikram confirmed the success of the innovative technique.

SO FAR: NASA has successfully employed laser pulses to locate a retroreflector on the moon's surface, a technique commonly used for Earth-orbiting satellites. The breakthrough opens the possibility for routine use in future missions. Xiaoli Sun, leading the NASA team, aims to enhance the technique. ISRO noted that Chandrayaan-3's Laser Retroreflector Array (LRA) near the lunar South Pole now serves as a location marker.

NASA'S Lunar Reconnaissance Orbiter

- Launch and Purpose: NASA's Lunar Reconnaissance Orbiter (LRO) launched in 2009 to explore the Moon, mapping its surface and studying lunar conditions.
- Mapping and Imaging: LRO meticulously captures high-resolution images, creating detailed maps of the lunar surface, aiding scientific research and future exploration.
- Resource Identification: LRO identifies potential resources like water ice on the Moon's surface, crucial for sustaining future lunar habitats and deep space exploration.
- Monitoring Lunar Changes: LRO continuously monitors lunar conditions, studying temperature variations and detecting changes, providing valuable data for understanding the Moon's dynamic environment.
- Supporting Artemis Missions: LRO contributes critical data for NASA's Artemis program, assisting in selecting safe landing sites for crewed missions and enhancing our understanding of lunar geology.

INTERNATIONAL RELATIONS

PAKISTAN AND IRAN AGREE TO 'DE-ESCALATE' AFTER AIR STRIKES

CONTEXT: Pakistan and Iran "agreed to de-escalate" tensions Friday, Islamabad said, after trading deadly airstrikes on militant targets in each other's territory this week.

SUMMARY: Tensions soared after Pakistan and Iran bombed each other's border region. Both recalled ambassadors and blocked their return, sparking concerns. UN and US urged restraint, while China offered to mediate. Finally, a phone call between foreign ministers calmed things down. They agreed to work together on counter-terrorism and de-escalate the situation. Pakistan reaffirmed its commitment to protecting its territory.

CONCLUSION: Calming down of flame sin the region is good indication that situation may not escalate in the immediate neighbourhood of India.

GEOGRAPHY

WARMER WINTER IMPACTS ICE HOCKEY, CHADAR TREK IN COUNTRY'S COLDEST REGION OF LADAKH

CONTEXT: Unusually warm winter affects extreme sports in Ladakh, impacting ice hockey and the challenging Chadar trek known for extreme cold.

BACKGROUND: In Ladakh's Kargil town, organizers used electric fans to improve ice surface formation on hockey rinks due to subpar conditions, ensuring safety for players. The intervention made the rinks playable and safe, addressing concerns about potential dangers during ice hockey practice and matches. Leh, however, did not experience significant disruptions in ice hockey activities.

NEWS HIGHLIGHTS: In Ladakh's Kargil town, electric fans were used on ice hockey rinks to address poor ice surface formation, ensuring safety for players. The warmer weather this year has affected ice formation, impacting practice availability in Nurla and Alchi. The councillor expressed concerns about decreased local participation and economic impact, attributing the warm weather to a deviation of four to eight degrees from normal temperatures in Ladakh.

- Chadar Trek Impact: Unusual weather shortens the 105-km Chadar trek on the frozen Zanskar river, affecting global trekkers.
- Delayed Start: Formation of ice sheaths delayed the trek, starting on January 14 instead of January 8, affecting its usual duration.
- Safety Measures: Only 14 to 16 km allowed this year due to weak ice formation, prioritizing tourists' safety.
- Extreme Sport Conditions: Chadar trek, an extreme sport, requires -30 to -35 degree Celsius temperatures; this year, Leh recorded milder temperatures.
- Low Snowfall: Leh experiences minimal snowfall in November-December, with temperatures ranging from -8 to 4 degrees Celsius.
- Historical Records: Leh recorded the highest snowfall in 2013; Drass, the second coldest place globally, witnesses temperatures below -50 degrees Celsius.

Head Office:
Vedhik IAS Academy
Mercy Estate,
MG Road, Ravipuram,
Ernakulam-682 015,

Corporate office:
Vedhik IAS Academy
Samkalp Bhawan, Plot No.15,
Sector 4, Rama Krishna Puram,
New Delhi,Delhi-110022

Regional office
Vedhik IAS Academy
202, Raheja Chambers, 12,
Museum Road. Bangalore -
560001. Karnataka, India.

GCC Office:
Bobscoedu,
Bobsco Trading & Contracting Co. W. L . L
Office 22, Dream Tower 1,
Road: 2701, Adliya, Kingdom of Bahrain
www.bobscoedu.com