VISIONIAS INSPIRING INNOVATION

NEWS TODAY

29th & 30th OCT, 2023

National Highway Authority of India (NHAI) monetises highways via toll, operate, transfer (TOT) model

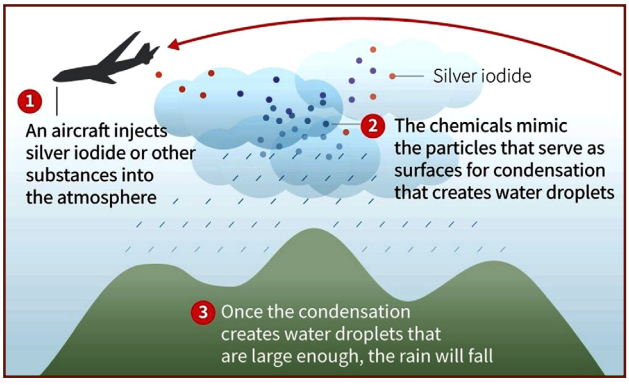
- Centre plans to generate **revenue of approximately $24.1 billion by monetising highways in the coming years.**
  - Till now, **NHAI has monetised approx. 1,614 km** of projects for approximately **$3.2 billion.**
  - **Road Sector** will contribute **more than 27% of asset monetization** target out of Rs **6 lakh crore target under National Monetisation Plan** till **FY25**.
- Government is using **Infrastructure Investment Trust (InvIT)** and **TOT model** to **generate revenue** from **these assets.**
  - Previously in 2016, the Cabinet **had approved TOT Model** and **authorized NHAI** to **monetize public funded National Highways projects,** such as **EPC/BOT (Annuity) projects.**
- **About TOT model:**
  - Under the ToT model, **the Centre gives toll collecting rights** to **private operators** for a **specific period.**
  - **Operation** and **Maintenance (O&M) obligation** of projects is with the **concessionaire**.
  - Project under TOT model is treated as **Public-private-partnership (PPP) projects.**
  - Around **75 operational NH projects** have been **identified for potential monetization using the TOT Model.**
- **Significance:**
  - Ensure **efficient management of constructed and operational NH projects** through **proper O&M.**
  - Arrange for **additional funds, required for achievement of targets under Bharatmala Programme.**
  - facilitate **efficient toll realization** through the private sector.
- **Issues:** High refinancing risk, Large interest payments; Risk of performance guarantee etc.

About Infrastructure Investment Trust (InvITs)

- It is **collective Investment Scheme similar to a mutual fund,** which enables direct investment of money from individual and institutional investors in infrastructure projects to earn a small portion of the income as return.
- Any dividend or interest income that one gets from an InvIT is **completely taxable under Income Tax.**

Indian Institute of Tropical Meteorology (IITM) Pune demonstrates cloud seeding (CS) can reduce rain uncertainty

- The **Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX phase-4), was under the Ministry of Earth Sciences** in 2018 and 19.
- **Result of the experiment**
  - Was able to **achieve 18% relative enhancement** in rainfall over **100 sqkm area.**
  - **CS alone** cannot mitigate droughts
  - **Approximate cost** of producing water was 18 paisa per liter.
- **About CS**
  - **Clouds** are formed when **water vapor condenses** around **a tiny particle of dust or salt (called ice nuclei) floating in the atmosphere.**
  - CS encourages **precipitation** by **injecting artificial ice nuclei** to **induce rain** from **rain-bearing clouds.**
  - Most CS operations use **silveriodide (AgI).**
    - **Other Chemicals used:** Potassium Iodide, CO^2 in the form of dry ice, Propane, Calcium Carbide, Ammonium Nitrate, Sodium Chloride, and Urea compounds.
  - **Applications:** increasing rainfall, weather regulation, mitigating hail damage, etc.
  - **Challenges:** Potentially Harmful Chemicals, expensive process, Unknown impact in long-term.



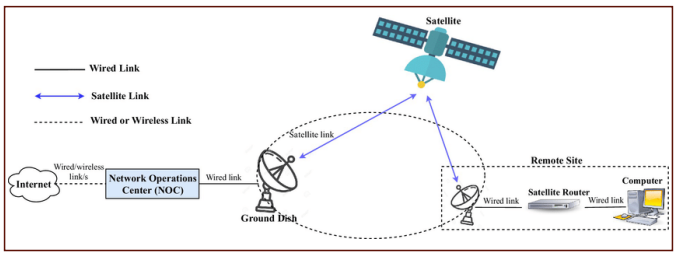
- **Type of cloud seeding**
  - **Hygroscopic cloud seeding:** disperses salts through flares or explosives in the lower portions of clouds.
  - **Dynamic cloud seeding:** boosts vertical air currents encouraging more water to pass through the clouds.
  - **Static cloud seeding:** involves spreading a chemical like AgI into moisture-laden clouds.

Ministry of Coal asks the Department of Financial Services to classify coal under Infrastructure sector

- Inclusion of coal in the master list of Infrastructure sub-sectors will help:
  - **Secure financial assistance** to commercial coal mines.
  - Make the coal sector more investor-friendly.
  - **Allow banks and financial institutions to formulate policies** more effectively.
- **Ministry of Finance** notifies **Harmonized Master List of Infrastructure sub-sectors (HMLIS)** which was initially approved in 2012.
  - It was introduced to **guide financial institutions and agencies responsible for supporting infrastructure** in various ways.
  - **Assessment for inclusion** is based on importance for economic development, ability to contribute to human capital, etc.
  - Its inclusion allows easier **access to long-term funding at lower interest rates.**
  - **5 Broad categories:**
    - **Transport and Logistics** (Roads and bridges, ports, etc.)
    - **Energy** (Electricity generation, transmission and distribution, etc.)
    - **Water and Sanitation** (Solid Waste Management, Irrigation, etc.)
    - **Communication** (Telecom towers, telecom services, etc.)
    - **Social and Commercial Infrastructure** (Educational infrastructure, Sports infrastructure, Affordable housing, etc.)
  - In Oct 2022, government notified inclusion of **Data Centers and Energy Storage Systems** in the updated HMLIS.

Reliance Jio demonstrated India's first satellite-based gigabit internet service

- Jio is partnering with Luxembourg-based satellite communications company SES to provide **Medium Earth orbit (MEO) satellite internet.**
- Usually, satellite internet involves **constellations of low-Earth orbit (LEO) satellites** as used in Starlink and OneWeb.
- **The advantage of using MEO over LEO:** can cover a larger area of the globe with much fewer satellites.
  - **Disadvantages:** higher latency ((latency is the time that data takes to transfer across the network), and requirement of a larger satellite dish.
- **About Satellite Internet:** It provides an online connection powered by satellites.
  - Internet service providers **launch multiple satellites** into space that orbit around Earth.
  - It works by using **radio waves** to communicate with satellites.
  - Data is sent and retrieved through a **communication network.**
    - The communication network includes a **modem,** satellite dish, and a centralized **Network Operations Centre (NOC)** for monitoring the entire system.
  - **Advantages:** connecting people from remote or rural areas, multi-device access, etc.
  - **Disadvantages:** higher latency and expensive compared to ground-based internet, Severe weather conditions can interrupt transmission, etc.



Use of Technology in Judicial Institutions

- Researchers from the University of Liverpool used **Large Language Models (LLMs)** to generate legal arguments from case facts.
  - LLMs are **machine learning models** that can **comprehend and generate human language text.**
- **Findings of the study**
  - **Generated arguments using GPT 3.5** achieved an average **overlap of 63% with benchmark annotations.**
  - **The use of technology and AI** has the potential to reduce the **backlog of the Indian Judiciary** which is more than 5 crores.
- **Significance of using technology in judiciary**
  - **Enhanced efficiency due to** operational ease, better maintenance, and transmission of documents, etc.
  - Reduced **cost of litigation.**
  - Improved **transparency** and **judicial responsiveness.**
- **Challenges:** Structural (digital divide), Behavioral (lack of awareness), Operational (issues of privacy), etc.
- **Initiatives taken for technology in the judiciary**
  - **eCourts Mission Mode Project**
    - As part of eCourts project, 7 platforms have been created to provide real-time information on case status, cause lists, judgments, etc.
  - **National Judicial Data Grid (NJDG):** Database of orders, judgments, and cases.
  - **Live Streaming, Virtual Courts, e-filing system,** etc.
  - **National Service and Tracking of Electronic Processes (NSTEP)** for serving and issuing summons.

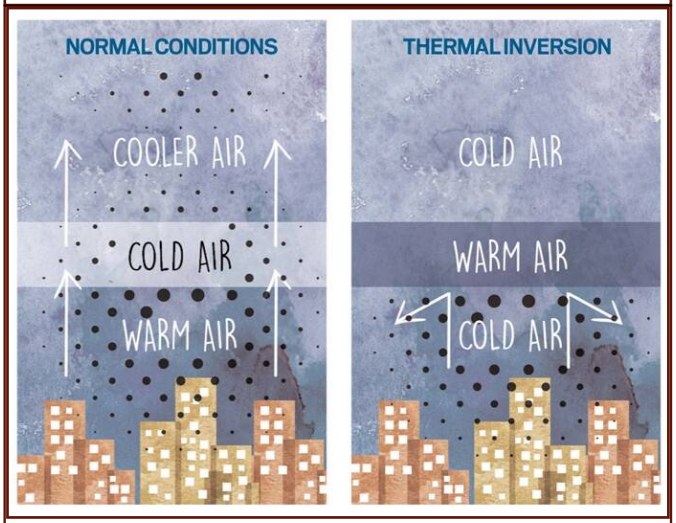
Related news

- **Online Dispute Resolution (ODR)**
  - **Department of Consumer Affairs** organized a conference on global ODR Platforms for seamless resolution of cross-border eCommerce disputes.
  - It refers to the **process of using technology** for dispute avoidance, containment, and resolution outside the traditional court system.
  - **Benefits:** Cost-effective, convenient, customizable processes, etc.
  - In 2021, NITI Aayog released **"the ODR Policy Plan for India"** and gave recommendations for increased ODR adoption in India.

Ministry of Earth Sciences (MoES) issues advisory for sensitive groups as Delhi's air quality deteriorates

- Advisory said, elderly, children, and those with respiratory conditions must avoid all outdoor physical activity.
  - Delhi's 24-hour average air quality index (AQI) was **very poor** as per bulletin of Central Pollution Control Board.
- **Reasons for rise in air pollution every winter in Delhi**
  - As monsoon withdraws, predominant **direction of winds changes** to **north westerly** which **brings dust** from **Rajasthan** and sometimes from Pakistan & Afghanistan.
  - Temperature Inversion (see infographic)
  - High-speed winds are very effective at dispersing pollutants, and **winters bring a dip in wind speed.**
  - **Other sources of pollution:** Farm fires to get rid of paddy stubble; Dust and vehicular pollution, pollutive industrial clusters.
- **Steps taken**
  - **Graded Response Action Plan (GRAP)** is an **emergency response mechanism** based on AQI level. It identifies graded measures.
  - **Commission for Air Quality Management in NCR & Adjoining Areas** (CAQM) has been constituted for co-ordination, research, resolution of problems of air quality.
  - **Other measures:** Regular inspections of construction sites to prevent dust, spraying PUSA bio-decompose in farmlands, water sprinklers, mandating Pollution Under Control Certificates etc.

Temperature Inversion



- As **temperature dips**, inversion height, which is layer beyond which pollutants cannot disperse into the upper layer of the atmosphere, is lowered.
- The concentration of pollutants in the air increases when this happens.

Also in News

Science & Technology Clusters (STCs)

- **The Principal Scientific Adviser (PSA)** to the Government of India Chaired the first joint meeting of STC.
- **About STCs**
  - Launched in 2020, it is a flagship initiative of the Office of the PSA.
  - These are established as **formal umbrella structures for S&T organizations** in various cities for better synergy while retaining autonomy.
  - It will **create strong linkages between** academic institutions, research laboratories, and other stakeholders.
- The Office of the PSA was placed under the **Cabinet Secretariat in August 2018.**

Seismic/ Earthquake Swarms

- Iceland has been hit by more than 5500 small earthquakes.
- **About Seismic swarms**
  - These are **sequences of many earthquakes** that occur in a **relatively short period without a specific main shock.**
  - It **can last weeks** and produce many **thousands of earthquakes** within a relatively **small volume.**
  - These are observed in **volcanic environments, hydrothermal systems, and other active geothermal areas.**
    - **Iceland is Europe's largest and most active volcanic region** due to its presence on the Mid-Atlantic Ridge.

Panamalai Paintings (Tamil Nadu)

- 1,300-year-old paintings at **Talagirishwara temple are fading,** as per reports.
- The painting shows Lord Shiva with eight hands dancing, known as **Latathilagabhani,** being watched by Goddess Parvathi.
- These **mural paintings** were created after covering stonewalls with a **paste made of limestone and sand.**
- The paintings bear a close **resemblance to paintings in Ajantha and Chithannavasal.**
- The temple was constructed by **Pallava king Narasimhavarman II,** popularly known as Rajasimha.
  - Rajasimha's **Sanskrit epigraphs** are found here.

Norman Pritchard (First Olympic medalist for India)

- India took part in its first-ever modern Olympic Games during the **second edition of the Summer Olympic Games** held in **Paris in 1900.**
- **Norman Pritchard was the only athlete representing India** at the Olympic Games in 1900 who competed in the Men's 200-meter and 200-meter hurdles.
- He **finished second in both the events** and **won India its first medals ever in Olympic Games** history.
- However, he is considered a "**controversial**" Olympian as he is **claimed by both Britain and India.**

Pichwai (pichvai) Painting

- Chennai hosts an art exhibit showcasing Pichwai, some dating back 350 years.
- **About Pichwai Painting:**
  - The style originated over **400 years ago,** in the town of **Nathdwara near Udaipur in Rajasthan.**
  - The word **Pichwai** comes from **'pichh'** meaning **back**, and **'wai', meaning textile hanging.**
  - Made on **cloth** and **depicts** tales from **Lord Krishna's life.**
    - Other common subjects found are **Radha, gopis; Festivals such as Sharad Purnima, Raas Leela, Diwali and Holi.**
- They are made by members of the **Pushti Marg sect**, founded by Shri Vallabhacharya in the 16th Century.

Tiangogn space station

- China successfully launched the youngest crew to its Tiangogn space station.
- **About Tiangogn Space Station**
  - It was built by the **Chinese Manned Space Agency (CMSA)** to orbit in low Earth orbit.
    - It launched three modules that make up the station between 2021 and 2022.
  - It houses up to **three astronauts.**
  - It is expected to have an **operational lifespan of over 15 years.**
  - It is **much smaller than the International Space Station** with only three modules, compared with 16 modules on the ISS.

United Nations General Assembly (UNGA) Resolution on Israel-Gaza crises

- UNGA adopted a **non-binding resolution calling for a ceasefire in Gaza.**
- **India along with 45 countries abstained in a UNGA vote** on this resolution titled **"Protection of civilians and upholding legal and humanitarian obligations"** on Israel-Palestine crisis.
- Resolution called for an **"immediate, durable and sustained humanitarian truce leading to a cessation of hostilities"** and **unhindered humanitarian access to the Gaza Strip.**
  - It was drafted by a group of 22 Arab countries and was proposed by Jordan.
- **India's stand:** Resolution did not include **"explicit condemnation" of the October 7 terror attacks in Israel.**

Subsurface Water Ice Mapping (SWIM) project

- **NASA funded SWIM project** (led by University of Arizona) has released its fourth set of maps, providing detailed **view of Mars' subsurface ice.**
  - These maps are **crucial for future Mars missions** as they identify most likely locations to find Martian ice.
  - This ice will provide **drinking water and a key ingredient for rocket fuel.**
  - Mars has both **water ice and carbon dioxide ice (dry ice).**
- SWIM project **combines data from several NASA missions,** including Mars Reconnaissance Orbiter, 2001 Mars Odyssey, and Mars Global Surveyor.

Places in News

Venezuela (Capital: Caracas)

- US agreed to ease sanctions against Venezuela's oil, gas and mining industries.
- **Political boundaries:**
  - Bounded by **Caribbean Sea and Atlantic Ocean** (North), Guyana (East), Brazil (South), and Colombia (Southwest & West).
  - Administers a number of **Caribbean islands and archipelagos,** like Margarita Island, La Blanquilla, La Tortuga, Los Roques, and Los Monjes.
- **Geographical features**
  - **Andes Mountains and Maracaibo Lowlands** in northwest; central plains (llanos); Guiana Highlands in southeast.
  - Home to one of the **world's largest oil reserves.**
  - **Highest point:** Pico Bolivar 4,978m
  - **Major Rivers:** Rio Negro; Orinoco River
  - **Major Lake:** Lake Maracaibo.

Errata: In News Today **Dated 10th & 11th September 2023**, under **'Banglar mati, Banglar jol' article** of Also in News, it was incorrectly mentioned that Tagore composed Vande Mataram (national song of India).

Correct information is " **'Jana Gana Mana' (National Anthem of India) was composed by Rabindranath Tagore.** Bankim Chandra Chatterjee composed Vande Mataram (National Song of India)."