

## UPSC CURRENT AFFAIRS NOTES 08-11-2023

### Geoglyph

A geoglyph in the form of a circle said to be 3,000 years old has been recently unearthed on the outskirts of Mudichu Thalapalli in the Medchal-Malkajgiri district of Telangana.

It is a large design or motif (generally longer than 4 metres) produced on the ground and typically formed by clastic rocks or similarly durable elements of the landscape, such as stones, stone fragments, gravel, or earth.



A geoglyph is created by arranging or moving objects within a landscape.

There are two types of geoglyphs, namely positive and negative geoglyphs.

**Positive geoglyph:** It is formed by the arrangement and alignment of materials on the ground in a manner akin to petroforms (which are simply outlines created using boulders).

**Negative geoglyph:** It is formed by removing part of the natural ground surface to create differently coloured or textured ground in a manner akin to petroglyphs.



There is another variation of a geoglyph that involves seeding plants in a special design. The design usually takes years to see since it depends on the plants growing. This type of geoglyph is called an arbour glyph.

Another type of geoglyph often referred to as 'chalk giants' are those carved into hillsides, exposing the bedrock beneath.

### **Geoglyphs in History:**

From ancient times, the most widely known geoglyphs are the Nazca Lines of Peru, which have been a mystery to this day.

Other geoglyphs from the past include the Megaliths in the Urals, the Uffington White Horse, the Long Man of Wilmington, and many others.

### **Features of the geoglyph unearthed from Telangana:**

Etched on a low-lying granitoid hillock, the geoglyph spans 5 metres in diameter and has a perfect circular shape.

Surrounding the circle is a 30-centimetre-wide rim, and within the circle are two triangles.

**It is dated to the Iron Age, specifically around 1000 BCE.**

It is suggested that this circle might have served as a model for megalithic communities in planning their circular burial sites.

## **Union Finance Minister launches 12 GST Seva Kendras in Vapi, Gujarat**

Union Minister for Finance and Corporate Affairs today launched 12 Goods and Services Tax (GST) Seva Kendras at Gyandham School, Vapi, in Gujarat.

The Union Finance Minister also gave away prizes to 6 customers with a cheque award of Rs 10 lakh to who participated in Mera Bill Mera Adhikaar scheme. The winners had uploaded their valid GST bills on the app after making a purchase.

Speaking on the occasion, the Finance Minister said these state-of-the-art centres will help in increasing the Ease of Doing Business in the country. While congratulating Gujarat in taking lead in establishing such centres, the Finance Minister said it will prove to be a role model for other states to follow. The Finance Minister of Gujarat was present on the occasion.



Speaking about the Mera Bill Mera Adhikaar scheme, the Finance Minister said that the common citizen of the country can make a valuable contribution to the development of the nation by asking for a bill from the trader or shopkeeper while making a purchase. It is the right of the consumer to take the bill and it is the duty of the trader-shopkeeper to pay the bill.

The Finance Minister said that such incentives will encourage more and more people to take bills and upload bills on the portal for participate in the scheme.

Mera Bill Mera Adhikaar (MBMA) is a scheme was launched by the CBIC on 1st Sept. 2023 to promote the culture of generating bills/invoices during sale purchase transactions. A campaign in support of the MBMA scheme to create awareness among the people is already going on.

## Ministry of Tourism, Government of India participates in World Travel Market (WTM) 2023, London from 6 - 8 November 2023.

Ministry of Tourism, along with various stakeholders including tour operators and state tourism departments is participating in WTM London from 6 - 8 November 2023. The Ministry of Tourism has taken a space of 650 square meters for the Incredible India Pavilion at WTM 2023, London to showcase varied tourism products and series of transformative experiences for travellers to India under the theme 'Incredible India! Visit India Year 2023'.



After the inauguration, the Indian delegation and participants went around the Indian Pavilion and booths of various participating states and other stakeholders. Throughout the day, Incredible India organized various Cultural Performances, henna and Yoga Sessions. The Secretary, Ministry of Tourism attended the UNWTO – WTTC Tourism Ministers Summit on 'Transforming Tourism through Youth and Education' held at Elevate Stage. Throughout the day, the Secretary Tourism met important tour operators, media and important stakeholders in the UK market.

During its participation the Ministry of Tourism would like to use WTM 2023, London as a platform to bring together professionals from various sectors of the travel and tourism industry. The platform would be used for networking, business opportunities, and the exchange of ideas and information as the event attracts a diverse range of attendees, including travel agencies, tour operators, airlines, hoteliers, cruise lines, travel technology providers, tourism boards, and other professionals in the travel and hospitality sector.

## OHIO CLASS SUBMARINE

A US nuclear-powered Ohio-class submarine is in the Middle East to help prevent the Israel-Hamas war from spiraling into a broader conflict.

The Ohio class submarine is a class of nuclear-powered submarines currently in service with the United States Navy.





These submarines are designed for extended underwater operations and are equipped with advanced technology to support various missions, including strategic deterrence, surveillance, and special operations.

## History and Development

The Ohio class submarines were developed during the Cold War to provide the United States with a robust and survivable sea-based strategic deterrent.

The first Ohio class submarine, USS Ohio (SSBN-726), was commissioned in 1981, and a total of 18 submarines were built between 1976 and 1997.

## Design and Specifications

**Dimensions:** The Ohio class submarines are approximately 560 feet (170 meters) long and have a submerged displacement of around 18,750 tons.

**Propulsion:** They are powered by a nuclear reactor, providing virtually unlimited range and the ability to remain submerged for extended periods.

**Armament:** Originally designed as ballistic missile submarines (SSBNs), the Ohio class was later modified to carry conventional cruise missiles, making them capable of conducting a variety of missions, including precision strike and intelligence gathering.

## Mission Capabilities

**Strategic Deterrence:** Ohio class submarines play a crucial role in the United States' nuclear triad, serving as a platform for submarine-launched ballistic missiles (SLBMs) armed with nuclear warheads. These submarines contribute to the nation's strategic deterrence posture and serve as a critical component of national security.

**Conventional Capabilities:** With their ability to carry and launch a variety of conventional cruise missiles, Ohio class submarines have the flexibility to engage in non-nuclear missions, including precision strikes, intelligence gathering, and surveillance operations.

## Strategic Importance

Given their capacity for extended deployments and their role in strategic deterrence, Ohio class submarines are a critical component of the U.S. Navy's global force projection and national security strategy.

They contribute to maintaining a credible nuclear deterrent and provide the United States with a significant strategic advantage in ensuring the security and stability of international waters.

## FUNDAMENTALS OF ELECTRICITY TRANSMISSION

Electricity transmission plays a critical role in the power system by facilitating the movement of electrical energy from power plants to distribution networks.

Electric power transmission is complex due to its reliance on multiple phases of electric current and factors like voltage, impedance, and frequency.

This complexity underlines its significance, as electricity transmission serves as a foundational element for the development of modern nations, as emphasized by India's first Prime Minister Jawaharlal Nehru during his visit to the Bhakra Nangal Dam site in 1954.

### Introduction to Electricity Transmission





Electricity transmission is the process of moving electrical power from generating sources, such as power plants or renewable energy installations, to distribution networks that supply electricity to homes, businesses, and industries.

### **Components of Electricity Transmission:**

**Transmission Lines:** These are the conductors that carry electrical energy from the generation source to the distribution networks. They can be overhead lines or underground cables.

**Substations:** These facilities help control the voltage levels and facilitate the transfer of electricity between different transmission networks.

**Transformers:** These devices are used to increase or decrease the voltage of electricity for efficient transmission and distribution.

**Switching Equipment:** These devices enable the control of the flow of electricity within the transmission network.

### **Transmission Network Structure:**

The electricity transmission network is structured into various hierarchical levels, including extra-high-voltage (EHV) transmission systems that carry bulk power over long distances and lower voltage systems that distribute power locally to consumers.

Transmission towers are essential for supporting transmission lines over long distances.

Equipped with insulators, circuit-breakers, arresters, and dampers, these towers ensure the safety and stability of the transmission system.

Substations, including collector, converter, and distribution substations, manage the flow, frequency, and voltage between different transmission lines, enabling smooth and controlled electricity transfer.





AC (Alternating Current) and DC (Direct Current) Transmission:

### **DC Transmission:**

Direct current transmission has gained prominence due to its lower line losses over long distances and its ability to connect asynchronous grids and integrate renewable energy sources.

### **AC Power Transmission:**

Alternating current is the most common form of electricity transmission, used for long-distance transmission due to its ability to be easily converted to different voltage levels.

Three-phase AC is the most prevalent form of power transmission, where the voltage changes polarity cyclically.

The AC frequency determines the rate at which the voltage changes polarity in the three-phase AC system.

In this system, each wire carries an AC current in a different phase, ensuring efficient power transfer to consumers.

For instance, the world's largest wide-area synchronous grid covers Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, and Russia, underlining the significance of interconnected transmission networks on a global scale.

### **Transmission System Operation and Control:**

**Load Flow Analysis:** This helps ensure that the power generated matches the power consumed at any point in the system.

**Voltage Control:** Maintaining voltage levels within acceptable limits is crucial to ensure the reliable operation of the transmission system.

**Frequency Control:** Maintaining a stable frequency is essential for the proper functioning of the interconnected power system.



## Grid Operations and Management

National grids incorporate power production, transmission, and distribution to meet the diverse energy needs of various regions.

Storage facilities and backup power sources are crucial for managing surplus energy and meeting demand during emergencies.

Grids ensure synchronous operation among connected generators, maintaining consistent AC frequency to prevent widespread power failures and disruptions in the electricity supply.

The robust operation of these grids, such as the North Chinese State Grid with a connected capacity of 1,700 GW, underscores the importance of effective grid management on a large scale.

### Challenges in Electricity Transmission

**Grid Congestion:** Limited transmission capacity can lead to congestion and restrict the flow of power.

**Grid Stability:** Ensuring the stability of the transmission network, especially with the integration of renewable energy sources, presents a significant challenge.

**Grid Resilience:** Addressing the vulnerability of the transmission network to natural disasters, cyber-attacks, and physical damage is crucial for ensuring continuous power supply.

### Transmission Efficiency and Loss

Transmission efficiency is optimized when current is reduced and voltage is increased, as energy loss during transmission increases with the square of the current but corresponds linearly with the voltage.

Transformers are instrumental in achieving this, stepping up voltage for transmission and stepping it down before distribution.



Cables used in transmission still experience some resistance, leading to energy loss, which can be mitigated by using thicker cables, albeit at a higher cost.

Additionally, longer transmission distances contribute to lower transmission costs.

### **Recent Developments and Future Trends**

**Integration of Renewable Energy:** The transmission system is adapting to accommodate the increasing penetration of renewable energy sources such as solar and wind power.

**Smart Grid Technologies:** Advanced monitoring and control technologies are being implemented to enhance the efficiency and reliability of the transmission system.

**Energy Storage Integration:** The incorporation of energy storage systems into the transmission network is becoming increasingly important for grid stability and balancing variable energy sources.

## **WHO GLOBAL TB REPORT**

The WHO Global TB Report for 2022 highlights a concerning trend in the fight against tuberculosis. Despite progress made in the past years, the impact of COVID-19 disruptions on healthcare systems has hampered efforts to combat the disease effectively.

In 2022, there were 7.5 million newly diagnosed cases of TB globally. This marked the highest number since the WHO began monitoring TB cases in 1995.

In 2020, there were 5.8 million TB cases globally.

In 2021, the number of TB cases increased to 6.4 million.

The COVID-19 pandemic strained healthcare systems worldwide, diverting resources, personnel, and infrastructure away from routine health services, including TB diagnosis and treatment.



Lockdowns, travel restrictions, and fear of exposure to COVID-19 deterred individuals from seeking medical care, resulting in delayed access to healthcare facilities for TB screening and diagnosis.

The surge in COVID-19 cases overwhelmed healthcare facilities, making it challenging for them to maintain the same level of TB diagnosis and treatment services, leading to a backlog.

Disruptions in global supply chains affected the availability of TB diagnostic tests and medications, making it even more difficult to provide timely care to TB patients.

Many healthcare workers were reassigned to COVID-19-related tasks, leaving a shortage of personnel for TB diagnosis and treatment services.

The fear of contracting COVID-19 in healthcare settings made many individuals reluctant to visit hospitals or clinics, resulting in delayed diagnosis and treatment of TB cases.

Mass screening and active case-finding programs were scaled back or halted during the pandemic, allowing TB cases to go undetected.



Some TB patients face interruptions in their treatment due to lockdowns, quarantine requirements, or difficulties in obtaining medication, which can lead to drug resistance and prolonged illness.

Economic challenges resulting from the pandemic made it harder for individuals to afford healthcare services, further delaying TB diagnosis and treatment.

Efforts and resources focused on COVID-19 took precedence, leading to a temporary neglect of TB control and prevention measures, exacerbating the TB backlog.

### **Global TB Targets**

Despite efforts to combat TB, global targets set by the WHO have either been missed or are off track.

The net reduction from 2015 to 2022 was 8.7%, falling far short of the WHO's End TB Strategy milestone of a 50% reduction by 2025.

### **High Impact Countries**

India, Indonesia, and the Philippines, which had previously made significant progress in reducing TB cases, experienced setbacks in 2022.

These countries collectively accounted for nearly 60% of the reduction in newly diagnosed TB cases in 2020 and 2021 but saw an increase in cases in 2022.

### **Impact on Mortality**

TB caused an estimated 1.30 million deaths in 2022, approaching the level seen in 2019.

COVID-19 disruptions are estimated to have resulted in nearly half a million excess deaths from TB between 2020 and 2022.

### **Treatment Success Rates**

Despite challenges, there was an improvement in treatment success rates.

88% of people treated for drug-susceptible TB and 63% of people with multidrug-resistant TB (MDR-TB) or rifampicin-resistant TB (RR-TB) had successful outcomes.



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## Call to Action

The report emphasizes the need for translating the commitments made at the 2023 UN high-level meeting on TB into action to effectively combat the global TB epidemic.