

UPSC CURRENT AFFAIRS NOTES 08-02-2024

World Sustainable Development Summit (WSDS) 2024

The Vice-President inaugurated the World Sustainable Development Summit in New Delhi recently.



About World Sustainable Development (WSDS) Summit

- It is the annual flagship event of The Energy and Resources Institute (TERI).
- Instituted in 2001, the Summit series has a legacy of over two decades of making 'sustainable development' a globally shared goal.
- It is the only independently convened international summit on sustainable development and environment, based in the Global South.
- WSDS strives to provide long-term solutions for the benefit of global communities by assembling the world's most enlightened leaders and thinkers on a single platform.
- WSDS 2024 is the 23rd edition of the summit.
- WSDS 2024 will take place on the theme 'Leadership for the Sustainable Development and Climate Justice'.

Key Facts about The Energy and Resources Institute (TERI)

- TERI is a leading think tank dedicated to conducting research for sustainable development of India and the Global South.

- It is an independent, multi-dimensional organization, with capabilities in research, policy, consultancy, and implementation.

History:

TERI was established in 1974 as an information centre on energy issues.

Research activities, initiated towards the end of 1982, were rooted in TERI's firm conviction that efficient utilization of energy and sustainable use of natural resources would propel the process of development.

It's work across sectors is focused on

Promoting efficient use of resources

Increasing access to and uptake of sustainable inputs and practices

Reducing the impact on environment and climate

It is headquartered in New Delhi.

Sustainable Development Goals (SDG's)

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The 17 SDGs are integrated—they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.

EdCIL Vidyanjali Scholarship Programme





Union Minister of Education and Skill Development & Entrepreneurship launched the EdCIL Vidyanjali Scholarship Programme in New Delhi.

The EdCIL Vidyanjali Scholarship Programme: Empowering Education Opportunities

Aligned with the National Education Policy 2020, the EdCIL Vidyanjali Scholarship Programme **aims to revolutionize access to quality education and higher education institutions.**

The initiative goes beyond mere enrollment, ensuring access to high-quality learning systems and facilitating a seamless transition from secondary to higher education.

It provides financial support to meritorious students from Navodaya Vidyalayas who lack means, thereby promoting educational equity and inclusion.

Financial Support and Inclusivity

The programme extends financial assistance to economically marginalized and meritorious students of Navodaya Vidyalayas, enabling them to pursue higher education without financial constraints.

By supporting students from underprivileged backgrounds, it aims to bridge the gap in educational opportunities and promote socio-economic mobility.

Government-Private Sector Collaboration for Education

In addition to government funding, the initiative encourages involvement from the private sector through Corporate Social Responsibility (CSR) initiatives.

This collaboration between the government and corporates aims to ensure that no child is left behind in the pursuit of education.

By joining forces, both sectors contribute towards building a more educated India, fostering national development and prosperity.

Scholarship Presentation Ceremony

During the launch ceremony, the Minister presented scholarship letters to six students from Navodaya Vidyalayas, symbolizing the government's commitment to supporting educational excellence and inclusivity.

Such initiatives highlight the importance of recognizing and nurturing talent across diverse socio-economic backgrounds, paving the way for a brighter future for all students.

JIGARTHANDA



The Indian Institute of Technology Kanpur (IITK) has achieved a significant milestone by establishing and testing India's first Hypervelocity Expansion Tunnel Test Facility, named S2.

Details

Capabilities of S2:

The S2 facility is capable of generating flight speeds between 3-10 km/s.

It simulates hypersonic conditions encountered during various scenarios, including atmospheric entry of vehicles, asteroid entry, scramjet flights, and ballistic missiles.

The facility is essential for ongoing missions of ISRO and DRDO, including Gaganyaan, RLV, and hypersonic cruise missiles.

Location and Nickname:

S2, nicknamed 'Jigarthanda', is situated at IIT Kanpur's Hypersonic Experimental Aerodynamics Laboratory (HEAL) within the Department of Aerospace Engineering.

The 24-meter-long facility is a testament to indigenous design and development over three years.



Support:

Funding and support were provided by the Aeronautical Research and Development Board (ARDB), the Department of Science and Technology (DST), and IIT Kanpur.

Introduction to Sonic Speeds

Sonic speed, also known as the speed of sound, is the rate at which sound waves propagate through a medium.

It is a fundamental property influenced by the properties of the medium, such as its density, elasticity, and temperature.

Factors Affecting Sonic Speed:

- **Medium:** The speed of sound varies depending on the medium through which it travels, such as air, water, or solids.
- **Temperature:** In gases, the speed of sound increases with temperature due to increased molecular motion, while in liquids and solids, it generally increases with temperature but to a lesser extent.
- **Pressure:** Changes in pressure affect the density and compressibility of the medium, thus impacting the speed of sound.
- **Humidity:** Moisture content in the air can affect its density and thus influence the speed of sound.

Significance and Effects of Sonic Speeds:

- **Aeronautics:** Understanding sonic speeds is crucial in aviation for determining aircraft performance, including takeoff, landing, and the formation of shock waves during supersonic flight.
- **Meteorology:** Sonic speeds influence atmospheric phenomena such as the propagation of sound waves, the formation of thunderstorms, and the behavior of weather fronts.
- **Underwater Acoustics:** In underwater environments, the speed of sound affects communication, navigation, and the detection of underwater objects.
- **Material Testing:** Sonic speeds are used in non-destructive testing techniques like ultrasonic testing to detect flaws or defects in materials.



- **Medical Imaging:** Ultrasonic imaging techniques utilize the speed of sound to create images of internal body structures in medical diagnostics.

Applications of Sonic Speeds:

- **Supersonic and Hypersonic Flight:** Sonic speeds play a crucial role in the design and operation of supersonic and hypersonic aircraft, including military jets and experimental spaceplanes.
- **Sonar Systems:** Underwater sonar systems utilize the speed of sound to detect and locate objects underwater, including submarines, marine life, and geological features.
- **Ultrasonic Cleaning:** Ultrasonic cleaners use high-frequency sound waves to remove dirt and contaminants from surfaces in industrial and household applications.
- **Acoustic Levitation:** Sonic speeds are used in acoustic levitation techniques to suspend and manipulate objects without physical contact, with applications in materials science and microgravity research.

Speed of Sound in Air:

- The speed of sound in air varies with temperature, humidity, and pressure.
- At room temperature (around 20°C or 68°F), the speed of sound in dry air is approximately 343 meters per second (m/s) or 1,235 kilometers per hour (km/h).
- As temperature increases, the speed of sound in air also increases, due to the increased molecular motion.

Speed of Sound in Water:

- The speed of sound in water is much faster than in air, as water is denser and more elastic.
- At room temperature, the speed of sound in water is about 1,480 m/s (approximately 5,350 km/h), which is about four times faster than in air.
- The speed of sound in water also varies with factors such as temperature, salinity, and pressure.

Speed of Sound in Solids:



Sound travels even faster through solids due to their higher density and elasticity.

The speed of sound in solids varies depending on the material.

In steel, the speed of sound can range from about 5,900 m/s (21,240 km/h) to 6,700 m/s (24,120 km/h).

In diamond, it can be as high as 12,000 m/s (43,200 km/h) or more.

Supersonic Speed:

- Supersonic speed refers to speeds faster than the speed of sound in the medium.
- In air at sea level conditions, this is typically speeds greater than about 343 m/s (approximately 1,235 km/h).
- Aircraft traveling at supersonic speeds generate shock waves and can produce a characteristic "sonic boom."

Hypersonic Speed:

- Hypersonic speed refers to speeds significantly faster than the speed of sound.
- In the context of atmospheric flight, hypersonic speeds are generally considered to be speeds greater than Mach 5 (five times the speed of sound) or about 1,715 m/s (approximately 6,174 km/h).
- Hypersonic flight presents significant engineering challenges due to extreme temperatures, aerodynamic heating, and shock wave interactions.

Transonic Speed:

- Transonic speed refers to speeds near the speed of sound, where airflow around an object begins to approach and exceed the speed of sound.
- In aerodynamics, transonic flight occurs in the range of Mach numbers from about 0.8 to 1.2.
- At transonic speeds, airflow phenomena such as shock waves, compressibility effects, and drag divergence become significant.

THE HEALTHY INDIAN PROJECT (THIP)



The Healthy Indian Project (THIP) has joined the Vaccine Safety Net of the World Health Organization (WHO) to offer reliable and verified information on vaccine safety to the people of India and contribute to the global effort to provide accurate details on immunization.

Details

- The Healthy Indian Project (THIP), a leading health information platform in India, has achieved a significant milestone by becoming a member of the World Health Organization's Vaccine Safety Net (VSN). This reflects THIP's unwavering commitment to delivering credible and verified vaccine safety information to the Indian population.
- VSN is a global network of websites established by the WHO, providing trustworthy and verified information on vaccine safety. Currently encompassing 110 websites from 45 countries and offering information in 43 languages.

Implications of THIP Joining VSN

Increased Reliability and Trust: THIP's inclusion in VSN enhances the credibility of its vaccine safety information. Adherence to strict standards and regular evaluations ensure the accuracy and trustworthiness of THIP's content.

Wider Reach and Impact: Membership in VSN provides THIP access to a broader audience, facilitating the dissemination of accurate vaccine information across diverse populations in India. Addresses varying levels of healthcare literacy in different regions.

Enhanced Public Health Efforts: THIP, as a VSN member, becomes a pivotal player in promoting public health initiatives in India. Empowering individuals

with evidence-based vaccine information contributes to informed decision-making, potentially improving vaccination rates and public health outcomes.

Current Trends and Considerations

Misinformation and Hesitancy: Global challenges include vaccine hesitancy and misinformation, prevalent even in India. THIP's role in VSN positions it to counter misinformation by providing reliable information for informed decision-making.

Importance of Local Context: VSN offers global frameworks, but THIP's understanding of the Indian healthcare system and cultural nuances is crucial. Tailoring information to the local context ensures accessibility and relevance for the diverse Indian population.

Evolving Landscape: The field of vaccine safety is dynamic, with the continuous emergence of new research and data. THIP, along with VSN, needs to stay updated and adapt information to maintain accuracy and relevance.

THIP's inclusion in VSN is a positive development signaling its commitment to providing accurate vaccine safety information in India. This collaboration has the potential to significantly contribute to improved public health outcomes, addressing challenges such as misinformation, hesitancy, and varying healthcare literacy levels.

TEAK PRODUCTION IN INDIA



India is one of the largest producers of teak wood in the world, but many teak plantations are underperforming due to a number of factors, including the use of



misleading advertisements, a lack of thinning practices, and the absence of comprehensive best practices for cultivation.

Some of the major concerns that are harming India's teak plantations

Misleading claims and lack of knowledge: Farmers are often lured by unrealistic promises of high returns from teak plantations, but lack the knowledge and guidance on proper cultivation practices. This leads to disappointment and poor yields.

Improper spacing and thinning: Teak trees need proper spacing and thinning to grow well. However, many farmers plant them too close together and neglect thinning, resulting in stunted growth and lower-quality wood.

Absence of comprehensive best practices: There's a lack of readily available information and manuals on best practices for teak cultivation in India. Farmers often rely on unreliable sources or guesswork, leading to suboptimal results.

Deceptive marketing and fraudulent practices: Some private entities promote misleading schemes and sell poor-quality planting material, further disadvantaging farmers.

Challenges in marketing and fair pricing: Despite being a major teak producer, India imports a significant amount of teak due to complex regulations and a lack of effective marketing channels. Farmers often struggle to get fair prices for their trees.

Recommendations for improvement

Sensitize farmers: Educate farmers about realistic expectations, proper cultivation techniques, and the long-term commitment involved in teak plantations.

Promote best practices: Develop and disseminate comprehensive manuals and guidelines on teak cultivation, including spacing, thinning, pruning, and soil management.

Address misinformation: Counter misleading claims and promote reliable information sources to empower farmers.

Ensure quality planting material: Encourage the use of certified planting material from reputable sources to ensure good quality trees.



Improve marketing and pricing: Facilitate transparent and efficient marketing channels for farmers to get fair prices for their teak wood.

Provide support and extension services: Offer technical assistance and extension services to farmers throughout the teak cultivation process.

Teak Production in India

Teak (*Tectona grandis*) is one of the most valuable hardwood timber trees in the world. **It is native to India and Southeast Asia, where it grows naturally in the peninsular region below 24°N latitude.** Teak is also widely cultivated in plantations across tropical and subtropical regions, especially in Africa and Latin America.

Teak wood is highly prized for its durability, strength, stability, workability and aesthetic qualities. It is used for making furniture, doors, windows, ships, boats, flooring, wall panels and various other products.

Teak wood has a golden-brown colour that darkens with age and exposure to sunlight. It has a straight grain and a coarse texture. It contains natural oils that make it resistant to termites, fungi, rot and fire.

History of Teak Production in India

Teak has a long history of use and cultivation in India. It is mentioned in ancient Sanskrit texts as "saka" or "sagwan". **It was also known as "tegon" or "teku" by the local tribes.**

Teak was used for building temples, palaces, forts, ships and bridges by various dynasties and empires in India. It was also exported to other countries such as China, Persia, Arabia and Europe.

The British colonial rulers recognized the value of teak and established teak plantations in India in the 19th century. They also imposed strict regulations on the felling and export of teak from natural forests. They developed scientific methods of silviculture and management of teak plantations. They also introduced improved varieties of teak from other countries such as Burma, Java and Thailand.

After independence, India continued to expand its teak plantations and conserve its natural teak forests. India also became a major exporter of teak



wood to the international market. Today, India is one of the world's largest producers and consumers of teak wood.

Importance of Teak Production in India

- **Livelihood and Economic Impact:** Teak cultivation, harvesting, processing, and marketing provide livelihoods for millions of individuals, including farmers, forest dwellers, workers, and traders. The teak industry contributes significantly to the income of these stakeholders, supporting rural economies and fostering economic growth.
- **Government Revenue Generation:** Teak production generates revenue for the government through taxes and royalties. This income contributes to public funds, which can be reinvested in forestry management, conservation efforts, and social development projects.
- **Ecological and Environmental Benefits:** Teak plantations play a crucial role in soil conservation, helping prevent erosion and maintaining soil quality. The roots of teak trees aid in water regulation, and teak plantations contribute to carbon sequestration, helping mitigate climate change. Teak forests serve as habitats for diverse wildlife species, contributing to biodiversity conservation. Additionally, teak plantations provide a source of non-timber forest products, including honey, fruits, nuts, and medicinal plants.
- **Social and Cultural Values:** Teak holds cultural and social significance in India, symbolizing prestige and prosperity for many communities. The wood is associated with religious and spiritual beliefs and practices, and it is often used in rituals, ceremonies, and festivals by various religions and ethnic groups. The cultural importance of teak contributes to its preservation and sustainable management, fostering a connection between communities and their natural resources.

Current Status

India was once the world's leading producer of teak, boasting vast natural teak forests across the central and southern regions. Uncontrolled deforestation and increasing demand led to a decline in natural teak reserves. The government imposed bans on clear-felling in the 1980s, promoting plantation-based teak production.



Today, India is no longer a major teak producer, relying on imports to meet domestic needs. While plantations contribute to some production, they haven't fully bridged the gap.

Madhya Pradesh, Maharashtra, Karnataka, Kerala, and Tamil Nadu are the leading states in teak production, contributing a significant share to the national output.

Teak production in India faces several challenges such as:

- **Declining Productivity and Quality:** Poor site selection, inadequate planting material, improper silvicultural practices, pests, diseases, climate change, and fire contribute to a decline in the productivity and quality of teak plantations.
- **Competition from Other Timber Species:** Teak faces increasing competition from other timber species such as eucalyptus, acacia, poplar, and bamboo. These species often exhibit faster growth, higher yield, and lower cultivation costs.
- **Land Availability Constraints:** The availability of suitable land for teak plantations is shrinking due to urbanization, industrialization, agricultural expansion, and infrastructure development.
- **Rising Costs:** The cultivation, harvesting, and processing of teak face rising costs associated with labour, inputs, and transportation, which may affect the economic viability of teak production.
- **Stringent Regulations:** Stringent regulations and policies on the felling and export of teak from natural forests may pose challenges in terms of compliance and the ability to meet market demand.
- **Lack of Awareness and Knowledge:** There is a lack of awareness and knowledge among farmers, forest dwellers, workers, and traders about the benefits and best practices of teak production. This may lead to suboptimal management practices and reduced productivity.
- **Low-Value Addition and Innovation:** The processing and marketing of teak wood and products suffer from low-value addition and innovation. This limits the scope for diversification and development of high-value teak-based products.



Way Forward

- **Increasing Demand for Teak Wood:** The high quality, durability, beauty, and prestige associated with teak wood contribute to a growing demand both in domestic and international markets. This demand provides opportunities for expanding teak cultivation and trade.
- **Improved Varieties of Teak:** The availability of improved teak varieties with faster growth, higher yield, and disease resistance offers opportunities to enhance productivity and meet market demands more efficiently.
- **Advanced Technologies:** The use of advanced technologies such as tissue culture, genetic engineering, remote sensing, and GIS can significantly enhance the productivity and quality of teak plantations. These technologies offer opportunities for efficient management and monitoring.
- **Government and Private Sector Support:** Various schemes and incentives from both the government and private sector support the development and promotion of teak production. These initiatives can encourage investment, research, and sustainable practices in the teak industry.
- **Information Exchange Platforms:** The availability of platforms and networks facilitates the exchange of information, knowledge, skills, and resources among stakeholders involved in teak production. This collaborative environment can foster innovation and best practices.
- **Diversification into Value-Added Products:** Teak wood provides opportunities for the production of various value-added products, including biofuel, charcoal, paper pulp, plywood, and veneer. Diversifying into these products can enhance the economic viability of teak cultivation.
- **Environmental and Agroforestry Benefits:** Teak plantations offer environmental benefits such as carbon sequestration, biodiversity conservation, and soil conservation. These aspects contribute to the potential for teak to be integrated into agroforestry systems.
- **International Cooperation:** Collaboration with international markets and organizations can open up opportunities for export and partnerships, contributing to the global reputation and market presence of Indian teak.

Ajanta and Ellora Caves



The Ministry of Tourism recently included the UNESCO World Heritage sites of Ajanta and Ellora caves in Chhatrapati Sambhajnagar in its Swadesh Darshan Scheme II.

About Ajanta and Ellora Caves

- Ajanta and Ellora caves, considered to be one of the finest examples of ancient rock-cut caves, are located near Aurangabad in Maharashtra.
- The Ajanta and Ellora cave complex is adorned with beautiful sculptures, paintings, and frescoes and includes Buddhist monasteries, Hindu and Jain temples.
- The Ajanta caves are 29 in number and were built between the 2nd century BC and the 6th century AD, whereas the Ellora caves are more spread out and 34 in number and date to the period between the 6th and 11th Centuries AD.
- Ajanta Caves are mostly Buddhist sites and were used as a retreat by Buddhist monks.



The caves consisted of cells for meditation, assembly halls for discussions, and stupas for rituals.

- Ellora has a better mix of Hindu, Jain, and Buddhist structures.
- The caves are adorned with sculptures that reflect the spiritual beliefs of the time.

The sculptures range from depictions of deities, celestial beings, and mythological scenes to portraits of royalty and everyday life.

- The Kailash Temple in Ellora is an architectural marvel. It is one of the largest monolithic structures in the world.

The structure is carved vertically from a single rock. It took 18 years to carve out the temple.

- They are designated as UNESCO World Heritage Sites.

Key Facts about Swadesh Darshan Scheme

- It was launched in 2015 by the Ministry of Tourism, Government of India, to develop sustainable and responsible tourism destinations in the country.
- It is 100% centrally funded scheme.
- Under the scheme, the Ministry of Tourism provides financial assistance to State governments, Union Territory Administrations, or Central Agencies for development of tourism infrastructure in the country.
- Operation & Maintenance (O&M) of the projects sanctioned under the Swadesh Darshan Scheme is the responsibility of the respective State Government/UT Administration.

Swadesh Darshan 2.0:

The Ministry of Tourism has revamped its Swadesh Darshan scheme as Swadesh Darshan 2.0 (SD2.0) for the development of sustainable and responsible tourist destinations, covering tourism and allied infrastructure, tourism services, human capital development, destination management, and promotion, backed by policy and institutional reforms.

The objective of the Swadesh Darshan 2.0 scheme envisages increase in private sector investment in tourism and hospitality.



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It may help in increasing Public Private Partnerships (PPP) in the field of tourism and operation and maintenance of the assets created under the scheme.

UNESCO World Heritage Sites

A World Heritage Site (WHS) is a landmark or area with legal protection by an international convention administered by UNESCO under the UNESCO World Heritage Convention, established in 1972. These sites are designated by UNESCO for having cultural, historical, scientific or other forms of significance.