

BIODIVERSITY AND ENVIRONMENT

Undersea Tunnel to Save Mangroves

Context-A seven-km undersea tunnel will be constructed for the bullet train project to save mangrove forests in Maharashtra.

- **About:** A seven-km undersea tunnel will be constructed for the bullet train project in a bid to save mangrove forests in Maharashtra's Thane creek. The tunnel will be a single tube tunnel to accommodate both up and down tracks.
- **Significance:** The tunnel construction is aimed towards conserving nearly 12 hectares of mangroves in the creek. The tunnel will ensure the protection of the bird sanctuary and mangroves around Thane creek.
- **Challenges:** The undersea tunnel will escalate the construction cost of the Mumbai-Ahmadabad High-Speed Rail Corridor project's 21-km long stretch from Bandra Kurla Complex Station to Shilphata, from ₹100 crore to ₹10,000 crores
- **Mumbai-Ahmadabad High Speed Rail Corridor (MAHSR)-MAHSR is an under-construction** high-speed rail line connecting India's economic hub Mumbai with the city of Ahmadabad. The total length of the corridor is 508 km, of which 156 km of construction will be in Maharashtra. It is slated to cut the shuttle time between Mumbai and Ahmadabad from over 6 hours to between 2 and 2.5 hours.

More about Mangroves

- Mangroves are small trees and shrubs which grow along the coastlines. These trees thrive in salty water and form unique forests on the edge of land and the sea. They also grow in swamps.
- **Features:** These forests have the ability to store up to 10 times more carbon per hectare than terrestrial forests. Mangrove forests can survive extreme weather conditions and require low oxygen levels to survive.
- **Distribution:**
 - **Globally:** Mangroves are distributed in the tropical and subtropical regions of the world and are found in 123 countries. Asia has the largest coverage of the world's mangroves, followed by Africa, North and Central America, Oceania and South America. Approximately 75% of the world's mangrove forests are found in just 15 countries.
 - **India:** India contributes to nearly half of the total mangrove cover in South Asia. West Bengal has the highest percentage of mangrove cover in India. Sundarban in West Bengal is the largest mangrove forest in the world. It is followed by Gujarat and Andaman, and Nicobar islands. Maharashtra, Odisha, Andhra Pradesh, Tamil Nadu, Goa and Kerala too have mangrove.
- **Significance of Mangrove**
 - **Natural defense:** With notable adaptive features, mangroves are natural armed forces of tropical and subtropical nations. Mangrove thickets maintain water quality by filtering pollutants and trapping sediments originating from land.
 - **Checking Global Temperature:** Mangrove's unique ability to capture and store carbon is increasingly catching the attention of the world, which is desperately looking for ways to keep global temperature in check.
 - **Fighting against Climate Change:** They are the best option to fight against consequences of climate change such as sea level rise and increasing frequency of natural calamities like cyclones and storm surges.
 - **Maintaining ecology:** Mangrove ecosystems are home to a variety of fish. Mangroves are also important resources for timber and fuel wood, when collected sustainably.
- **Major Threats**
 - **Developmental projects:** Coastal development, including the construction of shrimp farms, hotels, and other structures, is the primary threat to mangroves.
 - **Conversion of land:** Mangrove forests are cleared to make room for agricultural land and human settlements.
 - **Exploitation:** In India's Sunderbans, salinisation, population pressure, and overexploitation are the primary threats to mangroves and the area's biodiversity.
 - **Indirect threats:** Indirect threats to mangroves include change in sedimentation rates and patterns, rising sea levels, and increase in pollutants, and these are often exacerbated by human actions. Scientists estimate that at least one-third of all mangrove forests has been lost during the last few decades.

Government's initiatives for Mangroves protection

- **Conservation and Management of Mangroves and Coral Reefs:** The promotional measures are being implemented through a Central Sector Scheme under the National Coastal Mission

Programme on 'Conservation and Management of Mangroves and Coral Reefs'. Under this programme, the annual Management Action Plan (MAP) for the conservation and management of mangroves is formulated and implemented in all the coastal States and Union Territories.

- **Magical Mangroves campaign:** The World Wide Fund for Nature, (WWF), and India has enjoined citizens in nine states, which include Maharashtra, Goa, Gujarat, Andhra Pradesh, Tamil Nadu, Kerala, Odisha, West Bengal and Karnataka on mangrove conservation through the Magical Mangroves campaign.
- **Scheme for Conservation & Management of Mangroves:** The Government under Centrally sponsored scheme for conservation & Management of Mangroves extend assistance to Coastal State/UTs for implementation of action plans including survey and demarcation, alternation and supplementary livelihood, protection measures and education and awareness activities.
- **MISHTI:** The Union Budget for 2023-24 announced an initiative for mangrove plantation along the coastline and on salt pan lands, under MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes). MISHTI will be implemented through convergence between the MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme), CAMPA (Compensatory Afforestation Fund Management and Planning Authority) Fund and other sources.

INDIAN POLITY

Ladakh and Sixth schedule

Context: Recently, the Ministry of Home Affairs (MHA) constituted a high-powered committee for the Union Territory of Ladakh to “ensure protection of land and employment” for the people of Ladakh.

- The MHA informed a parliamentary standing committee recently that the objective for inclusion of tribal population under the sixth schedule is to ensure their overall socio-economic development, which the UT administration has already been taking care of and that sufficient funds are being provided to Ladakh to meet its overall developmental requirements.
- Sonam Wangchuk wanted to draw attention to Ladakh's fragile ecology and to include the region under the Sixth Schedule of the Constitution

About Ladakh:

- It is estimated that more than 90% of Ladakh's population is tribal. The primary Scheduled Tribes (STs) in Ladakh are Balti Beda, Bot (or Boto), Brokpa (or Drokpa, Dard, Shin), Changpa, Garra, Mon and Purigpa.
- Thereby several distinct cultural heritages of these communities in Ladakh region needs to be preserved and promoted.
- Ladakh was established as a union territory of India on 31 October, 2019, by the Jammu and Kashmir Reorganisation Act. Prior to that, it was part of the Jammu and Kashmir state. Ladakh is both the largest and the second least populous union territory of India.

What is the Sixth Schedule?

- **About the Sixth Schedule:** It protects tribal populations and provides autonomy to the communities through creation of autonomous development councils that can frame laws on land, public health, agriculture and others. As of now, 10 autonomous councils exist in Assam, Meghalaya, Tripura and Mizoram. This special provision is provided under Article 244(2) and Article 275(1) of the Constitution.
- **Article 244:** The Sixth Schedule under Article 244 provides for the formation of autonomous administrative divisions -Autonomous District Councils (ADCs) -that have some legislative, judicial, and administrative autonomy within a state.
- **Key provisions:** The governor is empowered to organize and re-organize the autonomous districts. If there are different tribes in an autonomous district, the governor can divide the district into several autonomous regions.
- **Composition:** Each autonomous district has a district council consisting of 30 members, of whom four are nominated by the governor and the remaining 26 are elected on the basis of adult franchise.
- **Term:** The elected members hold office for a term of five years (unless the council is dissolved earlier) and nominated members hold office during the pleasure of the governor.
- **District Council:** Each autonomous district has a district council consisting of 30 members, of whom four are nominated by the Governor and the remaining 26 are elected on the basis of adult franchise. The elected members hold office for a term of five years (unless the council is dissolved earlier) and nominated members hold office during the pleasure of the governor. Each autonomous region also has a separate regional council.

- **Powers of the Council:** The district and regional councils administer the areas under their jurisdiction. They can make laws on certain specified matters like land, forests, canal water, shifting cultivation, village administration, the inheritance of property, marriage and divorce, social customs and so on. But all such laws require the assent of the Governor.
- They can constitute village councils or courts for trial of suits and cases between the tribes. They hear appeals from them. The jurisdiction of the high court over these suits and cases is specified by the governor. The district council can establish, construct or manage primary schools, dispensaries, markets, ferries, fisheries, roads and so on in the district. They are empowered to assess and collect land revenue and to impose certain specified taxes

Why does Ladakh want to be part of the Sixth Schedule?

- **Tribal populations:** According to the 2011 Census, the tribal population in the UT of Ladakh is 79.61% of the total population.
- **Local aspirations:** There was much enthusiasm initially, mostly in Leh, after the repeal of Art. 370 which created two new UTs.
- **Negligence in erstwhile J&K state:** Buddhist-dominated Leh district had long demanded UT status because it felt neglected by the erstwhile state government.
- **Denial of Legislature:** The enthusiasm waned as it was understood that while the UT of J&K would have a legislature, the UT of Ladakh would not.
- **Inadequate representation:** The administration of the region is now completely in the hands of bureaucrats with only 1 MP.
- **New domicile criteria:** The changed domicile policy in Jammu and Kashmir has raised fears in the region about its own land, employment, demography, and cultural identity.
- **Statehood demands:** A coalition of social, religious, and political representatives in Leh and Kargil has demanded full statehood for Ladakh.
- **Cultural significance of Ladakh:** Ladakh is historically perceived as a cosmopolitan region with centuries of multiple cultural settings. It was an Asian pivot – the people here traversed diverse cultural boundaries and engaged with ideas.

Can Ladakh be included in Sixth Schedule?

- **NCST Recommends:** In September 2019, the National Commission for Scheduled Tribes recommended the inclusion of Ladakh under the Sixth Schedule.
- **Distinct culture:** It was predominantly tribal (more than 97%), people from other parts of the country had been restricted from purchasing or acquiring land there, and its distinct cultural heritage needed preservation.

PRELIMS

1. International Day of Women and Girls in Science:

- ✓ Celebrated every year on February 11, the International Day of Women and Girls in Science is observed by the United Nation to promote the full and equal access and participation of women in Science, Technology, Engineering and Mathematics (STEM) fields.
- ✓ It is implemented by UNESCO and UN-WOMEN, in collaboration institution and civil society partners that aim to promote women and girls in science.
- ✓ It will be the eighth International Day of Women and Girls in Science and the theme is **IDEAS** (Innovate, Demonstrate, Elevate, Advance, and Sustain). The aim is to build a bridge between the international community and women in science by linking their knowledge and expertise and its applications in a systematic, critical way for the 2030 agenda and its 17 global goals.
- ✓ On March 14, 2011, the Commission on the Status of Women adopted a report that aimed to encourage the participation of women and girls in education, training and science and technology.
- ✓ This year, the aim is to connect the international community to women and girls in science, strengthening the ties between science, policy, and society for strategies oriented towards the future. The United Nations will showcase best practices, strategies, applied solutions in addressing SDGs challenges and opportunities. It will also include a science workshop for blind girls and a session from the blind fellow scientists on “Science in Braille: Making Science Accessible.” This workshop and session will be held for the first time.

2. Small Satellite Launch Vehicle

- ✓ In its second development flight, the Small Satellite Launch Vehicle (SSLV-D2) will place the Indian Space Research Organisation (ISRO) earth observation satellite EOS-07 and two co-

passenger satellites — Janus-1 and AzaadiSat2 — developed by start-ups in a 450-km circular orbit around the Earth.

About the vehicle:

- ✓ The new vehicle was developed to capture the emerging small and micro satellite commercial market, with launches offered on demand.
- ✓ The rocket can be assembled by a small team in only a few days, compared to the six months and around 600 people it takes for ISRO's workhorse PSLV.
- ✓ The launch vehicle uses three solid stages followed by a liquid-fuel-based Velocity Trimming Module (VTM) to place satellites in orbit.

Janus-1

- ✓ Janus-1 is a technology demonstrator satellite built by United States-based Antaris and its Indian partners XDLinks and Ananth Technologies.
- ✓ Janus-1, which weighs only 10.2 kg, is a six-unit cube satellite with five payloads on board.

AzaadiSat2

- ✓ AzaadiSAT-2 is a satellite by SpaceKidzIndia which will carry 75 small experiments weighing 50 grams like camera, microcontroller, various sensors etc.
- ✓ These experiments were used to teach students how space systems work and to promote STEM education. Six months is its expected mission life. The payloads have been built by 750 girl students from across India. The satellite will also carry the G20 logo to space and the NCC song to celebrate 75 years of the organisation.

3. Bru refugees

- ✓ Over 14,000 of the Bru tribe displaced from Mizoram have been registered to vote in Tripura since their rehabilitation process began in April 2021.

About the Brus:

- ✓ Brus, also referred to as Reangs, are a tribal community indigenous to northeast India. They have historically resided in parts of Mizoram, Tripura, and Assam. In the state of Tripura, the Brus are a designated Particularly Vulnerable Tribal Group (PVTG). A particularly vulnerable tribal group or PVTG is a sub-classification of Scheduled Tribe or section of a Scheduled Tribe, that is considered more vulnerable than a regular Scheduled Tribe.

Issues faced by the Brus:

- ✓ Most Brus residing in Tripura have suffered more than two decades of internal displacement, fleeing ethnic persecution primarily from the neighboring state of Mizoram. In 1995, the Young Mizo Association and the Mizo Students' Association demanded that Brus be eliminated from Mizoram's electoral rolls as they were not indigenous inhabitants.
- ✓ Being ethnically distinct from the majority Mizos, the Brus are often referred to as "Vai" in the state, meaning outsiders or non-Mizos. Tensions escalated and Reangs migrated from Mizoram to neighboring Tripura in 1997. Today, roughly 35,000 Reangs continue to reside in north Tripura's Kanchanpur camp as refugees.

The Bru agreement:

- ✓ All Bru currently living in temporary relief camps in Tripura will be settled in the state, if they want to stay on. The Bru who returned to Mizoram in the eight phases of repatriation since 2009, cannot come back to Tripura. To ascertain the numbers of those who will be settled, a fresh survey and physical verification of Bru families living in relief camps will be carried out.
- ✓ The Centre will implement a special development project for the resettled Bru. This will be in addition to the Rs 600 crore funds announced for the process, including benefits for the migrants.
- ✓ **Each resettled family will get:** 0.03 acre (1.5 ganda) of land for building a home, Rs 1.5 lakh as housing assistance, and Rs 4 lakh as a one-time cash benefit for sustenance. They will also receive a monthly allowance of Rs 5,000, and free rations for two years from the date of resettlement. All cash assistance will be through Direct Benefit Transfer (DBT). The state government will expedite the opening of bank accounts and the issuance of Aadhaar, permanent residence certificates, ST certificates, and voter identity cards to the beneficiaries.

ANSWER WRITING

Q. To what extent did trade play a role in disseminating Indian culture abroad in ancient times? Illustrate.

- India established trade relations with outside world since as early as during the Indus Valley civilization in the third millennium BC. Spread of Indian culture through trade has been called as

remarkable because it didn't involve forceful imposition of culture or violence, rather was voluntary adopted between parties.

Role played by trade in disseminating Indian culture abroad in ancient times in the following manner:

- Strategic location of India and vicinity near the ancient silk route gave India the advantage of being a centre for cultural admixture Kuchi, a kingdom in central Asia witnessed flourishing of Indian culture. The trading of silk, jade, horses was accompanied with transmission of Indian culture in the form of ancient stupas, temples, monasteries, paintings and images found there.
- Khotan, another ancient trading centre contained ancient coins bearing Prakrit text in Kharoshti script, Sanskrit manuscripts and Buddhist texts.
- Traders from Kashi, Mathura, Ujjain, Pataliputra and port cities of Mammalapuram, Kaveripattanam and Puri travelled extensively in South East Asia in search of trade opportunities, especially to Indonesia, Java, Malaya, Sumatra, Cambodia.
- Indonesia and surrounding regions came to be known as Suvarnadweep as traders travelled in search of gold there. Indonesia housed many Shaivite and Vaishnavite temple. Mahabharat and Ramayan also became quite popular over there which was later represented in the form of Wayung puppetry.
- Similarly, Malaysia too adopted Ramayana and Jataka stories in their folklore. Brahmi script was modified and adopted as script of Malaysia in ancient times.
- The Hindu temples and Buddhist sculptures were also found in Cambodia and Vietnam, eg. The temple of Angkor Vat.
- Traders of Kalinga established cultural links with Srilanka and helped in disseminating Buddhist culture. Apart from south East Asia, travelers like Suleman, Al Masudi, Ibn Hauqual and Al Idrisi attest the flourishing trade relations of India with Arab world.
- Arab traders took home astronomical and mathematical treatises by Aryabhata and Varahamihira, translating it into Arabic. Decimal system, notation and use of zero was widely spread and popularized by Arab traders.
- Merchants from south India traded with Roman Empire in items like pepper, betel, spices, scents and precious stones. The Tamil kings even employed 'yavanas' (people belonging to Western Asia and the Mediterranean) as guards. The Yavanas settles in parts like Kaveripattinam and absorbed Indian culture as well spread their culture with the indigenous people.

Other factors that led to spread of Indian culture abroad in ancient times:

- The universities were the most important centres of cultural interaction. They attracted large numbers of students and scholars. Students and teachers from such universities carried Indian culture abroad along with its knowledge and religion.
- Nalanda, Valabhi, Vikramshila and Odantapuri (Bihar) universities were quite active in cultural transmission. The Chinese pilgrim Huien-tsang has given ample information about his visit to Nalanda and Valabhi universities.
- Along the silk route, there were resting places for monks and missionaries, for pilgrims and merchants and later these became famous centers of Buddhist learning. These monasteries and resting places like Khotan (present day China) transmitted religion and philosophy, ideas and beliefs, languages and literature, and art and culture.
- Indian rulers like King Ashoka made great efforts to propagate Buddhism outside India. He sent his son Mahendra and daughter Sanghamitra to Sri Lanka to spread the message of the Buddha.

Conclusion:

- Cultural exchange was a two way process with India adopting foreign culture such as cooking styles, apparels (Shakas and Kushans introduced turbans, tunics and trousers), coins by Indo Greek and soon. The exchange of culture between India and outside world helped in diversification and development of many cultural aspects like language, food, religion, architecture styles and so on.

MCQs

1. Consider the following statements:
 1. India may soon be self-sufficient due to inferred lithium deposits found in J&K.
 2. Lithium discovered in J&K shows high confidence in terms of quality, grade and mineral content.Select the incorrect answer using the code given below:
 - (a) 1 only
 - (b) Both 1 and 2
 - (c) 2 only
 - (d) Neither 1 and 2

2. Which of the following elements in periodic table are not considered as rare earth elements?
(a) Scandium (b) Gadolinium
(c) Lithium (d) Europium
3. Consider the following statements:
1. Recently joint exercise called Tarkash was conducted between India and UK.
2. It aims to develop preparedness amidst rising threat of chemical and biological threat.
Select the correct answer using codes given below
(a) 1 only **(b) 2 only**
(c) Both 1 and 2 (d) neither 1 nor 2
4. Consider the following statements:
1. Satish Dhawan space centre is the only space port in India.
2. It is located off the coast of Odisha.
Select the correct answer:
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) neither 1 nor 2
5. Consider the following statements about the collegiums system:
1. It is the system of appointment and transfer of judges made by an Act of Parliament.
2. The Supreme Court collegiums are headed by the Chief justice of India and comprises four other senior-most judges of the court.
3. High court collegiums are led by its Chief Justice and four other senior-most judges of that court.
Which of the statements given above is/are correct?
(a) 1 and 2 only **(b) 2 and 3 only**
(c) 1 and 3 only (d) 1,2 and 3
6. Identify the correct statements in context of Nord Stream pipeline:
1. Before Ukraine war Nord stream was Russia's biggest gas pipeline to Europe.
2. Nord Stream pipeline met more than half of the energy needs of Europe before the Ukraine war.
Select the correct answer using codes given below
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2
7. Identify the correct statements in context of ISRO's Small Satellite launch Vehicle SSLV D-2:
1. It has been launches after the successful test of SSLV-D1
2. It has 2 satellites on board
3. It will place the satellite into low earth orbits
Select the correct answer using codes given below
(a) 1 and 3 Only
(b) 1 and 2 only
(c) 3 only
(d) 1,2 and 3
8. 'Fugitive Emissions', a term is sometimes seen in the news, are related to which of the following?
(a) Natural emissions caused in active volcanoes
(b) Unintended leakages of gasses from industrial activities
(c) Release of greenhouse gases from natural habitats such as swamps and marshes
(d) Sum total of all greenhouse gases released due to anthropogenic reasons.
9. Which of the following scheme is dedicated to Public health infrastructure?
(a) PM-KUSUM (b) **PM-ABHIM**
(c) PMEGP (d) PMMS
10. 'Keeladi Civilization' was recently seen in the news. It is associated with which of the following Indian state?
(a) Kerala (b) Karnataka
(c) Tamil Nadu (d) Andhra Pradesh