

# CURRENT AFFAIRS

## WEEKLY

WEEK: 1  
NOVEMBER  
2021

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- GS-II ■ CHINA PASSES NEW BORDER LAW
- CALL TO CHINA ON UIGHUR RIGHTS
- FATF RETAINS PAKISTAN ON GREY LIST
- CHILD SEX ABUSE: ADDRESSING GAPS IN POC SO DATA
- SC ON FARMER'S 'RIGHT TO PROTEST'
- GOVERNMENT NOTIFIES DRONE TRAFFIC MANAGEMENT POLICY
- AYUSHMAN BHARAT HEALTH INFRASTRUCTURE MISSION
- GS-III ■ INDIAN RAILWAY TO BE NET ZERO EMITTER BY 2030
- SAVE HORNBILLS, FOR THEY ARE THE GARDENERS OF TROPICAL FORESTS: STUDY
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- Successful test of 'Agni 5' and its strategic importance

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## — Disclaimer —

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

# CURRENT AFFAIRS ANALYST

WEEK- 1 (NOVEMBER, 2021)

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**SECTION: A**  
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**CURRENT AFFAIRS**

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## THE SACRED PIPRAHWA RELICS

### CONTEXT:

After 141 years, Buddha's relics excavated in India have been returned from Sri Lanka.

#### ◎ ABOUT THE PIPRAHWA RELICS

- In 1898, archaeologists from the **Archaeological Survey of India (ASI)** excavated a large mound in the estate of British landowner, William Claxton Peppe in Piprahwa, in **Uttar Pradesh's Siddharthnagar district**.
- The site is 160 km from Kushinagar, the final resting place of Buddha, where he attained Mahaparinirvana after his death.
- A part of these Buddha relics were sent to the King of Thailand and another part was sent to the King of Burma.
- Peppe handed another part of the relics, as a token of gratitude, to the then Subhuthi Mahanayake Thero of Waskaduwa Temple.
- The only documented authentic relics of the Buddha in Sri Lanka, the sacred Piprahwa relics are kept at Waskaduwa Viharaya in Sri Lanka's Kalutara.
- The **relic got the status of state guest by the Ministry of Culture**.
- The relics were kept on a casket and were covered with white cloth and were kept on an elevated platform as per the travel rules for relics.

#### Importance with respect to International Relations

- Exposition of The Buddha's relics in each other's countries is an **important component of Buddhist ties**.

- The Kapilvastu relics in India have been taken out of India only six times in the past, **were sent to Sri Lanka on two occasions** – in 1978 and in 2012.

#### What are Buddha's Relics?

- **Shakyamuni Buddha's ashes** are said to have been divided into **eight portions and enshrined in eight countries in stupas** built for them.
- In 1898 relics were discovered at Piprahwa (also spelled Piprava), on the northern border of India, and inscriptions on their receptacle identified them as those of Shakyamuni Buddha.
- Scholars today believe them to be one of the original eight divisions of Shakyamuni's remains, the portion that had been enshrined in Kapilavastu (present-day Piprahwa).
- According to tradition, **King Ashoka erected eighty-four thousand stupas** to house the Buddha's relics.
- In China, **the first stupa dedicated to the Buddha's relics** is believed to have been erected in the third century, and, from the fourth century on, stupas came to be erected at various locations.
- Veneration of the Buddha's relics flourished particularly during the **T'ang (618–907) and the Sung (960–1279) dynasties**.
- From a doctrinal viewpoint, **two kinds of relics are set forth**: the Buddha's physical remains and the teachings that he expounded. The former are called the relics of the physical body, while the latter are called the relics of the Dharma body.

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# CHINA PASSES NEW BORDER LAW

## CONTEXT:

Recently, China's legislature has adopted a new border law that calls on the state and military to safeguard territory and "combat any acts" that undermine China's territorial claims.

## ◎ BACKGROUND

China promulgated new land boundary law in the midst of a 17-month border standoff between the two countries in eastern Ladakh.

The eastern Ladakh border standoff between the Indian and Chinese militaries erupted on May 5 last year following a violent clash in the Pangong lake areas and both sides gradually enhanced their deployment by rushing in tens of thousands of soldiers as well as heavy weaponry.

- India-China over the years have worked out a host of agreements to resolve and handle the border differences. These include the:
  - Special Representatives mechanism
  - Agreement on Political Parameters and Guiding Principles of 2005
  - WMCC (Working Mechanism for Consultation and Coordination on India-China Border Affairs) besides protocols
  - CBMs

India and China have already held 22 rounds of border talks under the framework of the Special Representatives dialogue which was set up to find an early solution to the border dispute.

## ◎ ANALYSIS

### What is in the new law?

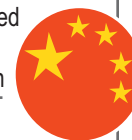
- This is the first time, China has enacted a national law on the "protection and exploitation" of the country's land border areas.
- Aim (as claimed by China):** To better maintain national security and manage border-related matters at the legal level amid regional tensions.
- Sovereignty and Territorial Integrity:** The new law stipulates that the sovereignty and territorial integrity of the People's Republic of China are sacred and inviolable.
  - The state shall take measures to safeguard territorial integrity and land boundaries and guard against and combat any act that undermines territorial sovereignty and land boundaries.

- Responsibilities:** It designates the various responsibilities of the military, the State Council or Cabinet, and provincial governments in managing the security and economic issues in border areas.
  - The People's Liberation Army (PLA)** "shall carry out border duties" including "organising drills" and "resolutely prevent, stop and combat invasion, encroachment, provocation and other acts".
  - The state shall take measures to **strengthen border defence**, support economic and social development as well as opening-up in border areas, improve public services and infrastructure in such areas, encourage and support people's life and work there.
  - The state shall, following the principle of **equality, mutual trust and friendly consultation, handle land border-related affairs** with neighbouring countries through negotiations to properly resolve disputes and longstanding border issues.
- The Law includes a significant **Article 43** that stipulates the **support of the state for the construction of border towns, strengthening supporting capacity for the construction, and improving the functioning of border towns.**

### Border intent | A look at what the new Chinese border law entails

According to observers, the law would formalise some of China's recent actions in disputed regions with India and Bhutan

This includes the People's Liberation



Army stationing troops in areas along the India border and multiple transgressions across the LAC

China has also constructed new "frontier villages" along its border with Bhutan at the disputed Doklam plateau

The law will come into force from January 1, 2022

- In the past years, China has been constructing a number of towns with proper infrastructure close to the border in Tibet that have a significant part in border defence.
- By the end of 2020, there will be more than **600-well-developed high-standard border**

**villages** with accessible roads. **Around 130 border roads** have been built or reconstructed.

### What are the concerns?

- It would formulate some of China's recent actions in disputed territories with both **India and Bhutan**.
  - ▶ The passing of the law coincides with stepped up Chinese activity along the **land borders**, which have mirrored actions in **disputed waters in the East and South China Sea**.
- It includes the PLA's massing of troops in forward areas along the India border and multiple transgressions across the **Line of Actual Control (LAC)**.
- China in recent years has been **strengthening border infrastructure**, including the establishment of **air, rail and road networks**.
  - ▶ It also launched a **bullet train in Tibet** which extends up to **Nyingchi**, the border town **close to Arunachal Pradesh**.
- The construction of new **"frontier villages"** along the border with Bhutan.

### Why is it significant for India?

The new law drew sharp reaction from India as it was passed amid the protracted military standoff between the two sides in eastern Ladakh region.

China claims up to **90,000 square kilometres** in **Arunachal Pradesh** in the eastern sector.

It has illegally occupied **38,000 square kilometres** of **Aksai Chin** in the western sector of Jammu and Kashmir.

While recent tensions in the western sector have been centred on Ladakh, both sides have lately clashed in Uttarakhand as well.

### What's China's take on India's concern?

- China said that its new land border law will not affect the **implementation of existing border treaties**.
- India and Bhutan are the two countries with which China is yet to finalise the border agreements,

while Beijing resolved the boundary disputes with 12 other neighbours.



- **India-China border dispute** covers 3,488-km along the Line of Actual Control
  - ▶ **China-Bhutan row** covers about 400 km



- China has a land boundary of approximately 22,000 km, with 14 countries

### ◎ CONCLUSION

- Though the new law is not meant specifically for the border with India, this could create hurdles in the resolution of the 17-month-long military standoff at LAC.

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# CALL TO CHINA ON UIGHUR RIGHTS

## CONTEXT:

Forty-three countries have called China to ensure full respect for the rule of law for the Muslim Uighur community in Xinjiang province.

### ◎ BACKGROUND:

- Recently, concerns have been raised in the Uighur Autonomous region over the existence of a large number of networks of political **re-education camps** where over a million have been arbitrarily detained.
- There have also been allegations of human right violations against Uighurs, which includes torture, forced sterilisation and using them as forced labour.

### ◎ ANALYSIS:

#### About Uighur Muslims:

- They are a predominately **Muslim minority Turkic ethnic group**, whose origins can be traced to **Central and East Asia**.
- They primarily live in the autonomous region of Xinjiang. It is officially known as **Xinjiang Uighur Autonomous Region (XUAR)**. It shares **boundaries with eight countries, which includes Pakistan, Russia, Afghanistan and India**.
- A significant number of Uighurs live in central Asian countries such as Kazakhstan, Uzbekistan and Kyrgyzstan.
- Before Islam (it came to the region in the 10<sup>th</sup> century), the Uighurs embraced Buddhism, Shamanism, and Manicheism.
- The language that they speak is similar to Turkish and Uighur Muslims find themselves culturally and ethnically closer to Central Asian nations.
- China recognizes them as a regional minority and does not consider them as indigenous groups.
- A declaration has been signed by 43 countries, including the United States, several Asian member states and European members.

#### Key points from the declaration:

- It vehemently accuses China of human right violation and ethnic cleansing against Uighur Muslims.
- A similar declaration was made public in 2019 and 2020 by Britain and Germany in which China has been condemned for its policies in Xinjiang province, and has been accused of carrying out genocide.

- It has asked China to allow immediate and unfettered access to Xinjiang for independent observers, which includes UN High Commissioner and its office.

#### How China is violating Human Rights?

- Diluting and Dissolving Uighur Culture
- Violation of family life
- Extreme Physical and Mental Abuse
- Destruction of Cultural Heritage Sites
- Forced Labour
- Detention without due process
- Forced Sterilisation and intrauterine device insertions
- Forced and gender-based violence



#### Why is China detaining Uyghurs in Xinjiang now?

- Chinese officials see Uighurs Muslims as a person with **extremist and separatist ideas**, and they view the camps as a way of eliminating threats to China's territorial integrity, government, and population.
- President Xi Jinping warned of the "toxicity of religious extremism" and advocated for using the tools of "dictatorship" to eliminate Islamist extremism.

### Economic factors involved:

- Xinjiang region is an important link in China's Belt and Road Initiative. To eradicate any possibility of **separatist activity** in the region to ensure its safe development it resorts to such method.
- Human rights organizations have observed that the economic benefits of resource extraction and development are often disproportionately enjoyed by Han Chinese (**China's ethnic majority**), and Uighur people are increasingly marginalized.
- Arbitrarily detained have been forced to work in factories close to the detention camps.
- A report from **Strategic and International Studies** says that forced labour is an important element of the government's plan for Xinjiang's economic development, which includes making it a hub of textile and apparel manufacturing. China described the policy as "**poverty alleviation.**"

### Response of China:

- China has denounced the declaration and termed it as "lies" and "a plot to hurt China".
- It is on the contrary rejecting all the criticism, rather it has appreciated the progress its people have made in the region.
- Beijing accuses the U.S. of "**ethnic cleansing**" against Native Americans and accused France of committing "**crimes against humanity**" in its former colonies.
- It claims that to cure the extremist thoughts of Uighurs and their radicalisation it has formed 'Educational centres' and 'Vocational Training centre, which imparts vocational skills.
- According to China, its policies towards the Uighurs and other Muslim minorities living in Xinjiang are necessary to "**fight extremism**" and promote upward economic mobility for the impoverished ethnic group.
- China dismisses the charges of mass sterilisations as baseless and allegations of forced labour are completely fabricated.

### Persecution of Uighurs:

- Economic prosperity has come to Xinjiang, but it has brought with it in large numbers the majority Han Chinese.
- They have cornered better jobs and left Uighurs in a state of vulnerability. This resulted in sporadic violence, in 2009 killing 200 people, mostly Han Chinese.
- Uighur Muslims have suffered from abuses which include, persecution, forced detention, intense scrutiny etc.

### Global Response:

- UN officials have demanded access to the re-education camps.
- The European Union has called on China to respect religious freedom and change its policies in Xinjiang.
- Human rights organizations have urged China to immediately shut down the camps and answer questions about disappeared Uyghurs.
- The United States had imposed **visa restrictions** on Chinese officials and blacklisted more than two dozen Chinese companies and agencies linked to abuses in the region.
- The United States **banned cotton and tomato imports** from the region.
- The United Kingdom will fine companies that fail to guarantee their supply chains do not use forced labour.
- The European Union is working with China on an investment agreement that does not include provisions on forced labour.

### ◎ CONCLUSION:

China needs to adopt multiculturalism and give Uighurs Muslims rights at par with its ordinary citizens. It should release the political and religious prisoners from prisons and detention camps. All the countries must urge China to immediately stop the persecution of Uighur Muslims.

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# FATF RETAINS PAKISTAN ON GREY LIST

## CONTEXT:

The Financial Action Task Force (FATF) decided to retain Pakistan on “increased monitoring list”.

“Increased monitoring list” is another name for the Grey List.

## ◎ BACKGROUND

- The **FATF** had issued the **27-point action plan** after placing **Pakistan on the ‘Grey List’** in June 2018. The action plan pertains to curbing money laundering and terror financing.
- During October-2020, due to the Covid-19 pandemic, Pakistan was given an extension for full compliance with the 27-point action plan till February 2021.
  - ▶ It had then **not fully complied with 6 of the 27 directives.**
- In February 2021, FATF acknowledged Pakistan’s significant progress in **combating terrorism**, however it was still to fully comply with three of the **27-point action plan.**
  - ▶ The three points pertained to effective steps in terms of financial sanctions and penalties against the terror funding infrastructure and the entities involved.

## ◎ ANALYSIS

### Why was Pakistan retained in the ‘grey list’?

- The FATF said Pakistan had failed to take appropriate action against **UN-designated terrorists such as 26/11 accused Hafiz Saeed and JeM chief Masood Azhar.** However, Pakistan has completed **26 of the 27 action items.**
- The FATF encourages Pakistan to continue to make progress to address as soon as possible the one remaining **Countering Finance of Terrorism (CFT)-related item** by demonstrating that **Terror Financing investigations and prosecutions target senior leaders and commanders of UN-designated terrorist groups.**
- In addition, the FATF has handed down another 6-point list of tasks mainly on **money laundering actions** to be completed as well.
  - ▶ Pakistan is expected to amend its **Money-Laundering Act**, crackdown on **Designated Non-Financial Businesses and Professions (DNFBPs)** like real estate agencies and gemstone traders, confiscate and freeze assets of money laundering entities and monitor businesses for proliferation financing, with sanctions for non-compliance.

## Significance of the decision

- In Pakistan’s case, the FATF has taken cognisance of the inaction against several banned organisations involved in **raising funds for terror activities** and those linked to global terrorists like **Jaish-e-Mohammad chief Masood Azhar and Lashkar-e-Taiba’s Hafiz Saeed and its operations chief Zaki-Ur Rahman Lakhvi.**
- On several occasions, India has also raised the involvement of elements within Pakistan in a **number of terror cases, including the 26/11 Mumbai and Pulwama attacks.**
- Perpetual containment of Pakistan on the grey list of FATF would further pressurise Pakistan to take adequate measures to prevent such terrorist attacks on India from its soil.
- Unlike the next level **“blacklist”**, grey listing carries no legal sanctions, but it attracts economic structures and **restricts a country’s access to international loans.**
  - ▶ Pakistan’s Foreign Minister had estimated a **loss of \$10 billion annually** to the Pakistani economy for every year Pakistan has been on the grey list.

## Role and Functions FATF

- **As a policy-making body:** works to generate the necessary political will to bring about national legislative and regulatory reforms in these areas.
- The FATF reviews money laundering and terrorist financing techniques and continuously strengthens its standards to address new risks, such as the regulation of virtual assets, which have spread as cryptocurrencies gain popularity.
  - ▶ It also works to stop funding for weapons of mass destruction.
- **Protection:** The role of the FATF is to protect the integrity of the financial system, and enhance its transparency, which contributes towards global security.
- **Monitoring function:** It monitors countries to ensure they implement the FATF Standards fully and effectively and holds countries to account that do not comply.

- **Developed standards / recommendations:** develops and sets global policies, standards, best practices, and guidance to ensure a coordinated global response to prevent organized crime, corruption, and terrorism.
  - ▶ It conducts and publishes expert operational and strategic studies on risks, trends, and methods.
  - ▶ **Coordination:** these standards help authorities coordinate with each other and go after the money of criminals dealing with illegal drugs, human trafficking, and other crimes.

### FATF prepares two lists:

- **Grey List:** Countries that are considered safe-haven for supporting terror funding and money laundering are put in the FATF grey list.
  - ▶ This inclusion serves as a warning to the country that it may enter the blacklist.
  - ▶ Pakistan was retained in the grey list because it was unsuccessful in prosecuting the top leadership of UN Security Council-designated terror groups which include Lashkar-e Taiba, Jaish-e Mohammad, and Al Qaeda.
- **Black List:** Countries known as Non-Cooperative Countries or Territories (NCCTs) are put on the blacklist. These countries support terror funding and money laundering activities.
  - ▶ The FATF revises the blacklist regularly, adding or deleting entries.
  - ▶ Countries like North Korea are included in this list.

### Importance of FATF

- **Prevention:** though the FATF Blacklist carries no formal sanction under international law, in reality, a jurisdiction placed on the FATF Blacklist often found itself under intense financial pressure. Hence, it prevents jurisdictions from prohibited activities under the FATF recommendations.
- **Fighting terror financing and money laundering:** It has been at the forefront of international efforts to fight money laundering and combating finance to terrorism.
  - ▶ Its efforts have been in conjunction with relevant resolutions of the United Nations Security Council (UNSC).
  - ▶ It has made it difficult to access financial resources for terror organizations that are causing these crimes against humanity.

- **Promoting cooperation:** it has intensified cooperation with bodies such as the United Nations, the IMF, the World Bank, and the G-20 Finance Ministers and Central Bank Governors on the issues of terror financing, money laundering, and other corrupt practices.
- **Awareness generation:** FATF has gained credibility as a professional organization, ensuring increased awareness regarding the challenges being faced by the global financial system, and human security issues like terrorism.

### Financial Action Task Force

- The Financial Action Task Force (FATF) is the global money laundering and terrorist financing watchdog.
- It is an **inter-governmental body** established in **1989** during the **G7 Summit in Paris**.
- The FATF assesses the strength of a country's **anti-money laundering and anti-terror financing frameworks**, however it does not go by individual cases.
- Its Secretariat is located at the **Organisation for Economic Cooperation and Development (OECD) headquarters in Paris**.
- FATF AIMS set standards and promote effective implementation of **legal, regulatory and operational measures for combating money laundering, terrorist financing and other related threats** to the integrity of the international financial system.
- The FATF currently has **39 members** including two regional organisations — the **European Commission and Gulf Cooperation Council**. India is a member of the FATF.
- The FATF Plenary is the decision making body of the FATF. It meets **three times per year**.
- **Lists under FATF**
  - ▶ Grey List
  - ▶ Black List

### What is EAG?

- **EAG means Eurasian Group on Combating Money Laundering and Financing of Terrorism.**
- It is an **associate member** of the **FATF**.
- It is a regional body comprising nine countries: **India, Russia, China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Belarus.**

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# CHILD SEX ABUSE: ADDRESSING GAPS IN POCSO DATA

## CONTEXT:

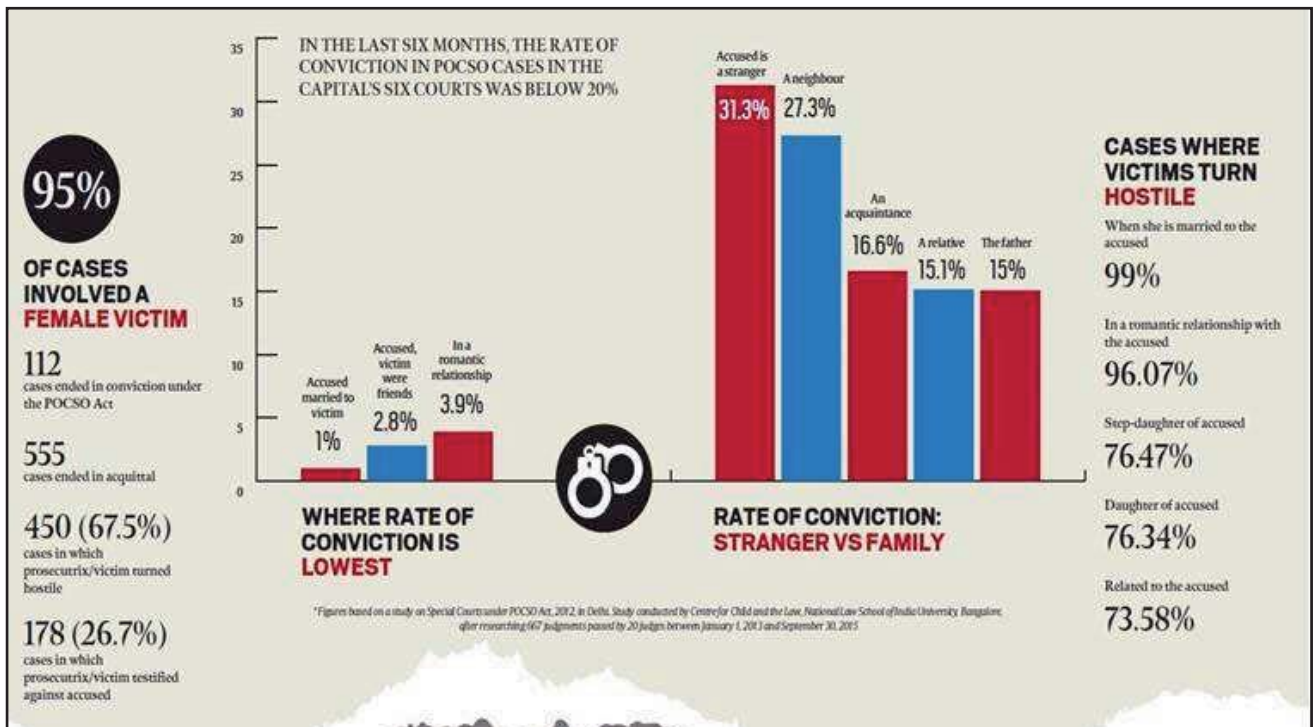
Recently, National Crime Records Bureau (NCRB) published its annual 'Crime in India' report providing statistics on crimes committed in India in 2020.

### ABOUT

- In the last three years, according to its data, 418,385 crimes against children were recorded.
- Of these, child sex abuse offences under the **Protection of Children against Sexual Offences (POCSO) Act, 2012**, alone accounted for 134,383 – or roughly one third – of the recorded incidents.
- Every third crime registered against a child is under POCSO, one would expect the NCRB to collect

and present accurate and detailed data related to POCSO offences.

- 3 In 5 People Trafficked Were Children. However, between 2011 and 2018, the total number of cases of human trafficking recorded in the country, according to NCRB reports, was 35,983.
- This means, only 0.2% of all survivors of human trafficking received the compensation announced by the government in the last eight years.



### What are the constitutional and legal provisions related to human trafficking in India?

- Trafficking in Persons or Persons is prohibited under the Constitution of India under **Article 23 (1)**.
- The **Immoral Traffic (Prevention) Act, 1956 (ITPA)** is the primary law to prevent human trafficking for the purpose of sexual exploitation.
- The **Criminal Law (Amendment) Act 2013** came into force when **Section 370** of the **Indian Penal**

**Code** was replaced by **Sections 370 and 370A IPC** which provides comprehensive measures to combat the risk of human trafficking including child trafficking in any form including- physical abuse or any other form of sexual exploitation, slavery, servitude, or forced mutilation.

- The **Child Sexual Offences Protection Act (POCSO), 2012**, which came into effect on November 14, 2012, is a special law to protect children from abuse and exploitation.
  - ▶ It provides accurate definitions of various types of sexual harassment, including incest and non-sexual assault, sexual harassment.

- There are other specific laws enacted regarding the trafficking of women and children,
  - The Prohibition of Child Marriage Act, 2006 the Bonded Labour System (Abolition) Act, 1976
  - Child Labour (Prohibition and Regulation) Act, 1986
- Governments have also enacted laws to address this issue. (E.g. Punjab Prevention of Trafficking in Persons Act, 2012).

### Data gaps and inaccuracy report:

- The **World Vision report** said existing available data from CSE's second human trafficking sources were not available as the victims were hidden individuals and there was no effective screening method to track them.
- Estimates for women and girls at CSE vary from 70,000 to 3 million in India.
- NCRB data reveals only reported cases that are not all reported cases, simply because the parents are reluctant to report or the parents themselves are involved. "
- Insufficient data hinders the work of organizations such as World Vision India.
- The work of government agencies is also suffering — a lack of data makes it difficult to locate and identify high-risk areas, making it difficult to focus on prevention and law enforcement efforts.
- The lack of data makes it very difficult to track the severity of the situation and small numbers indicate that there is no immediate problem.
- There is a global data gap in trafficking reporting. It is not easy for victims of trafficking to report because most of them come from some of the most vulnerable and disadvantaged sections of society but many details are lost due to the lack of an integrated data collection system.
- Integrated reporting and the use of digital information by the police can lead to a more accurate integration of national data.
- If the first information reports and case papers are included in the digital system, there will be more accurate reports of trafficking crimes.

### The problem of clubbing offences in the NCRB report

- The highest class of offences registered against children, as per the NCRB data, are those related to kidnapping and abduction, punishable under the Indian Penal Code.

- For these offences, the NCRB provides data under ten heads, including missing children deemed as kidnapped, kidnapping for ransom, kidnapping and abduction to compel minor girls for marriage and so on.
- All of these are distinct offences covered by different provisions of law and punished differently.
- For policymakers to understand trends in these offences, design counter strategies and direct resources, such granular data is useful.
- But when it comes to the POCSO Act, which prescribes only a select few offences, different offences are clubbed together for the purpose of reporting, rendering the data unintelligible and devoid of purpose.

#### For instance

- Penetrative sexual assault (Section 4)** is clubbed with its aggravated version (Section 6).
- Sexual assault (Section 8)** is clubbed with aggravated sexual assault (Section 10).
- The difference between penetrative sexual assault and its 'aggravated' version is not simply a function of the degree of penetration or harm caused; the legislature, in all its wisdom, has categorized certain circumstances, or an assault committed by certain people, to be of an aggravated nature.

- In the same manner clubbing of cases from **Section 17-22** deprives citizens of insights related to two important protections afforded under the POCSO Act.
- Section 21** punishes the non-reporting of an offence and can be invoked against the family of a child for trying to suppress incidents of sexual assault by family members or against the police for refusing to record an offence under POCSO.
- Section 22** makes it punishable to falsely implicate a person under any POCSO offence.
- Both these sections, again, are conceptually different and serve unique purposes – discouraging the suppression of offences and discouraging false cases respectively.
- Clubbing them together defeats the purpose of drawing a distinction between these two offences.

### How Clubbing POCSO offences makes the data irrelevant?

- A 2018 study conducted by the Centre for Child and the Law at NLSIU, Bangalore looked at the judgments of special courts established under POCSO in five states.

- In Maharashtra, aggravated charges were not invoked by the police in 51% of cases where the facts revealed aggravated circumstances.
- For Andhra Pradesh, this was seen in 35% of cases where aggravated charges were warranted. Similar trends were observed for Karnataka and Assam.
- The study also noted that, as a precaution, the police may sometimes invoke both simple and aggravated charges in cases where the facts are not clear.
- But by clubbing the reporting of the simple and aggravated sections, the NCRB data makes it impossible to decipher whether the police are clubbing offences while lodging complaints or if aggravated charges are not being invoked where they should be.
- This also becomes problematic when another NCRB dataset is considered, that of the offender's relationship to the child victims under POCSO.
- According to this dataset, the offender is known to the child in 96% of cases under Sections 4 and 6 combined. In 51% of cases, the offender is a family member, friend, employer or a known person.
- This is significant because assault by a person who is related to the child through blood, adoption, marriage or shares a household or is part of the management or staff of an institution where the child studies or resides and so on is an aggravated offence under POCSO.
- This means that the majority of cases reported under Sections 4 and 6 would warrant invoking aggravated charges. However, because the NCRB clubs offences, it is not possible to determine if this is happening.
- In another instance, the NCRB record shows only 244 cases under POCSO in Rajasthan in 2020, of which a considerable majority – 180 – fell under Sections 17-22.

- Due to such clubbing, it is impossible to determine whether these cases pertain to the non-reporting of offences or false complaints.

### **What should be done to prevent Child Abuse?**

- Raising awareness, providing sexual abuse prevention education and building child-safe cultures
- Supporting and empowering victims and survivors
- Enhancing responses to children who display sexual behaviours that are harmful to themselves or others
- Offender prevention and intervention
- Improving the evidence base on what works in child sexual abuse prevention and supporting survivor recovery and healing.

### **◎ WAY FORWARD**

- Even with its limitations, the NCRB data is referred to by policymakers and informs policy decisions. It is imperative that it continues to improve and become more robust. As for POCSO cases, the NCRB must avoid clubbing offences or change its format so as to encourage the police to not club offences and provide granular data on all cases under distinct sections. This will enable the research and analysis of trends and help in identifying operationalization issues that need to be addressed. The discrepancies must be noted and responded to as soon as possible to avoid questions being raised on the veracity and efficacy of data.
- In the fight against the growing menace of child sex abuse, the availability of accurate and timely data could be immensely useful. The national strategy provides a framework for reducing child sexual abuse, empowering survivors and their families, and improving our responses to those who have been harmed.

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## SC ON FARMER'S 'RIGHT TO PROTEST'

### CONTEXT:

Recently, a two-judge bench of the Supreme Court issued a three-page order in which it emphasised its intention to examine if the 'right to protest' is absolute.

### ◎ BACKGROUND

- The seeds of protest were sown deep during our independence struggle, making protest an important and indelible chapter in India's history.
- Protests in India have a long and eminent history. Until 72 years ago, India was a colony ruled by Britishers.
- In the post-independence era, its people became free citizens because of a long series of protests done by our freedom fighters.
- **Mohandas Karamchand Gandhi** aka **Mahatma Gandhi**, taught the Indians citizens, the power of peaceful protest.
- So, be it the **Swadeshi Movement of 1905** or **Satyagraha in 1930** these movements have shaped the history of the nation that was the peaceful protest against the colonial rule.
- Indians fought hard every battle to publicly express their views on colonial policies and to show dissent towards British colonization and to speak to and against the government.

- These reasonable restrictions are imposed in the interests of the sovereignty & integrity of India, the security of the State, friendly relations with foreign States, public order, decency or morality or in relation to contempt of court, defamation or incitement to an offence.

- **Absolute rights** are legally enforceable as written in the constitution and cannot be infringed by any other law or court order.

Article 19 (1)(a) & 19(1)(b)	(But under) Article 19(2) & 19(3) [Reasonable Restriction]
Article 19(1) (a) guarantees the freedom of speech and expression Article 19(1) (b) assures citizens the right to assemble peaceably and without arms.	<ul style="list-style-type: none"> <li>• This right is subject to "reasonable restrictions" in the interest of public order-</li> <li>• If the security of the state is in jeopardy</li> <li>• If the friendly relationship we share with a neighbouring country is at stake</li> <li>• If public order is disturbed</li> <li>• If there is contempt of court</li> <li>• If the sovereignty and integrity of India are threatened</li> </ul>

### ◎ ANALYSIS

#### Understanding the constitutional provisions of 'Right to Protest' in India

- The right to protest, to publicly question and force the government to answer, is a fundamental political right of the people that flows directly from a democratic reading of Article 19.
- The right to peaceful protest is bestowed to Indian citizens by our Constitution.
- It is part of the freedom of speech and expression, which is a fundamental right under Article 19(1) (a).
  - ▶ **Article 19(1) (a)** guarantees the freedom of speech and expression.
  - ▶ **Article 19 (1) (b)** states about the right to assemble peaceably and without arms.
  - ▶ **Article 19 (2)** imposes reasonable restrictions on the right to assemble peaceably and without arms and to freedom of speech and expression and none of these rights are absolute in nature.

#### What are the legal provisions?

The legal provisions and avenue available to police for handling agitations, protests, and unlawful assemblies are covered by-

- the Code of Criminal Procedure (CrPC), 1973
- the Indian Penal Code (IPC), 1860
- the Police Act, 1861

#### The ongoing farmers protest

- Over 40 farmer organizations are protesting against the passage of three laws –
  - ▶ The Farmers Produce Trade and Commerce (Promotion and Facilitation) Act, 2020
- The Essential Commodities (Amendment) Act, 2020
- Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act, 2020



- The farmers have been camping at the borders surrounding Delhi-NCR for months after the agitation was launched in Punjab last year.
- Though the top court had, on January 2, 2021, stayed the three farm laws, but the protesting farmers had refused to accept anything short of a repeal of the laws and had continued to protest.

**Important cases on right to protest:**

- **Shaheen Bagh protests case:** In the Shaheen Bagh protests case, SC stated that the right to protest should not hamper the right to movement of the public.
- **Re: Ramlila Maidan Incident v. Home Secretary, Union Of India & Bears:** SC held that, 'Citizens have a fundamental right to assembly and peaceful protest that cannot be removed from arbitrary executive or legislative action.'
- **Maneka Gandhi v. The Union of India: Justice Bhagwati** stated that, 'if democracy means the government of the people, on the part of the people, it's obvious that every citizen must have the right to participate in the democratic process & allow him to intelligently

- exercise his rights to make a choice, a free & general discussion of public issues is absolutely essential.'

**Why the right to protest is essential?**

- **Essential for all segments:** Protests play an important part in the civil, political, economic, social and cultural life of all societies.
- **Securing human rights:** The right to protest formally involves the exercise of numerous fundamental human rights, and is essential for securing all human rights.
- **Responsible citizenry:** Protests encourage the development of an engaged and informed citizenry.
- **Strengthening democracy:** They strengthen representative democracy by enabling direct participation in public affairs.
- **Transparency and effectiveness:** They enable individuals and groups to express dissent and grievances, to share views and opinions, to expose flaws in governance and to publicly demand that the authorities and other powerful entities rectify problems and are accountable for their actions.

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# GOVERNMENT NOTIFIES DRONE TRAFFIC MANAGEMENT POLICY

## CONTEXT:

The Civil Aviation Ministry has notified a traffic management framework for drones under which public and private third-party service providers will manage their movement in the airspace under 1,000 feet.

### ◎ BACKGROUND

- In September this year, the Union government approved a **production-linked incentive (PLI) scheme** for drones and drone components with an allocation of Rs 120 crore spread over three financial years.
- The ministry had in August notified the **Drone Rules, 2021** that eased the regulation of drone operations in India by reducing the number of forms that need to be filled to operate them from 25 to five and decreasing the types of fees charged from the operator from 72 to four.
- The framework has been issued under the **Drone Rules, 2021**, only.

#### Drone Rules, 2021

- **Applicability:** Individuals owning, possessing, exporting, importing, manufacturing, trading, leasing, operating, transferring, or maintaining a drone in India.
  - ▶ They don't apply to drones used by the armed forces.
- **Issuing authority:** The certificate will be issued by the Quality Council of India or a certification body authorized by the government.
- **Drone Corridor:** The rules also envision a drone corridor that will cater to deliveries and taxis.
  - ▶ A drone taxi, or passenger drone, is a pilotless helicopter that can fly at a speed of around 130 km/hour.
- **Safety features:** Safety features like 'No permission – no take-off' (NPNT), real-time tracking beacon, geo-fencing, etc. to be notified in the future. A six-month lead time will be provided for compliance.
- **Airspace map:** An interactive airspace map with green, yellow, and red zones will be displayed on the digital sky platform.
- **Coverage:** Coverage of drones under Drone Rules, 2021 increased from 300 kg to 500 kg. This will cover drone taxis also.

### ◎ ANALYSIS

#### What is in the new framework?

- The integration of **Unmanned Traffic Management (UTM)** and **air traffic management (ATM)** will be important to continuously separate **manned** and **unmanned** aircraft from each other in the airspace.
- The framework allows **third-party service providers** to give services such as
  - ▶ registration
  - ▶ flight planning
  - ▶ dynamic deconfliction
  - ▶ access to supplementary data like weather, terrain and position of manned aircraft
- Also, a set of supplementary service providers will also be permitted under the framework to provide services such as **insurance and data analytics** to support the UTM ecosystem.
- **Approvals and permissions:** DigitalSky platform shall continue to be the interface for government stakeholders to provide approvals and permissions to drone operators wherever required.
- All drones (except Nano drones operating in the green zone) shall be required to mandatorily share their real-time location through the network to the Centre either directly or through third-party service providers.
- The third-party service providers will first be deployed in small geographical areas that could be increased gradually.
- Moreover, these service providers will be permitted to charge drone operators a service fee and a small portion of it might have to be shared with the **Airports Authority of India (AAI)**, which manages the ATM.

#### What are Drones?

- Drones are unmanned aerial vehicles that can be maneuvered remotely by a pilot. There are three subsets of Unmanned Aircraft:

- ▶ Remotely Piloted Aircraft
- ▶ Autonomous Aircraft
- ▶ Model Aircraft
- Based on their weight, drones can be divided into five categories:
  - ▶ **nano** (weighing up to 250 g)
  - ▶ **micro** (250 g to 2 kg)
  - ▶ **small** (2-25 kg)
  - ▶ **medium** (25-150 kg)
  - ▶ **large** (over 150 kg)

**What's the need?**

- With rapid technological evolution of unmanned aircraft, opening up of new use cases and policy

reforms, the number of such aircraft operating in the Indian airspace is poised to increase rapidly.

- Current air traffic management (ATM) systems have not been designed to handle the traffic from unmanned aircraft.
- Integration of unmanned aircraft in the Indian airspace using conventional means may require unmanned aircraft to be equipped with bulky and expensive hardware, which is neither feasible nor advisable.
- This requires the creation of a separate, modern, primarily software-based, automated UAS (unmanned aircraft system) Traffic Management (UTM) system.
- Such systems may subsequently be integrated into traditional ATM systems.

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# AYUSHMAN BHARAT HEALTH INFRASTRUCTURE MISSION

## CONTEXT:

Prime Minister recently launched the Ayushman Bharat Health Infrastructure Mission, one of India's largest pan-India programs to strengthen health care infrastructure, in his parliamentary constituency Varanasi.

## ◎ ABOUT:

- Ayushman Bharat Health Infrastructure Mission is one of the largest pan-India programs to strengthen health care infrastructure across the country.
- It will provide assistance to 17,788 Rural Health Centres in 10 'highly focused' provinces and establish 11,024 Urban Health and Health Centres across the country.
- In this regard, critical care services will be available in all regions of the country with more than five lakh people in blocks of intensive care units, and the remaining districts will be covered with referral assistance.
- Under this program, one national health centre, four new national virology centres, the WHO (World Health Organization) South East Asia Region regional research forum, nine biosafety level-III laboratories, and five new regional disease control centres will be set.

## Key-features

- **Free diagnostics at district level:** Under PMASBY, 134 different types of testing will be done free at district level, which will not only save costs but also reduce unnecessary inconvenience to poor people.
- **Mobile Hospitals:** For the first time in Asia, two container-based hospitals with complete medical facilities will be maintained at all times under PMASBY. One mobile unit will have 22 containers with 100 beds each.
  - ▶ The mobile hospitals will be set up in New Delhi and Chennai. These hospitals can be quickly assembled by train or air to respond to any disaster or disaster in the country.
- **Strengthening NCDC:** The existing National Centres for Disease Control (NCDC), which has the mandate to stop outbreaks, will be strengthened under PMASBY by adding three new phases.
- This will be the Climate Change Unit, the Occupational Health Unit, and the Disaster Management Unit. Five branches of the NCDC region - one north, south, east, west, and central - will be established. General diagnostic services will also be improved.

## Key Components of the scheme

- **Comprehensive surveillance of infectious diseases:** Under this, health and wellness centres will be opened in towns and cities, where early diagnostic services will be provided. Free services such as free consultation, testing, and medication will be available at these facilities.
- **Comprehensive diagnostic and therapeutic facilities:** This will include the development of diagnostic infrastructure. All 730 national districts will have access to integrated public health labs and 3,000 blocks will have access to public health facilities. In addition, five disease control centres, 20 metropolitan units, and 15 BSL labs will strengthen the network.
- **Extensive epidemic research:** 80 existing virus diagnostic and research laboratories will be strengthened, with the establishment of new National Virology Centres (NIVs) and the National Institute for One Health.

## What are some of the planned programs to improve Indian health care?

- **How to fill the space:** Government also uses a 'Filling Method' with Block, District, State and National standards that are seamlessly connected to affordable and quality health care.
- **Expansion of health and wellness facilities:** About 150,000 health and wellness services that provide a comprehensive range of services, including telephone consultation, will be established in rural and urban areas by 2022. Each such centre will include five rural Indian villages.

PM AYUSHMAN BHARAT HEALTH INFRASTRUCTURE MISSION	
Multi-dimensional and Multi-modal Interventions <ul style="list-style-type: none"> <li>● Focus on critical and primary care</li> <li>● Network of 29,000 Health and Wellness Centers</li> </ul>	Institutional Approach to Holistic Healthcare <ul style="list-style-type: none"> <li>● National Institution for one Health</li> <li>● 4 New National Institutes for Virology</li> </ul>

<ul style="list-style-type: none"> <li>Specialized Critical Care Hospital Blocks in all districts with 37,000 beds with ICUs, ventilators and oxygen support</li> <li>Over 4,000 Block &amp; District level Public Health Units &amp; Labs</li> <li>Full range of diagnostic services in all districts</li> <li>IT-enabled disease surveillance system</li> </ul>	<ul style="list-style-type: none"> <li>Regional Research Platform for WHO South East Asia Region</li> <li>15 Biosafety Level 3 Labs</li> <li>5 New Regional National Centre for Disease Control</li> <li>Public health units at 50 International entry points preventing public health emergencies and disease outbreaks</li> </ul>
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**Objectives:**

- Ensuring a strong public health infrastructure in urban and rural areas, capable of dealing with public health emergencies or outbreaks.
- Establish an IT-enabled diagnostic system through a network of monitoring laboratories at block, regional, regional and national level.
- All public health labs will be connected via the Integrated Health Information Portal, which will be extended to all provinces and UTs.

**Significance:**

- India has long needed a comprehensive health care system. A study ('State of Democracy in South Asia (SDSA) -Round 3') conducted by Lokniti-CSDS in 2019 highlighted how access to public health care remains difficult for those living on the fringes.
- The study found that 70% of sites have public health care services. However, availability was low in rural areas (65%) compared to urban areas (87%).
- Schemes such as Swachh Bharat Mission, JalJeevan Mission, Ujjwala, PoshanAbhiyan, and Mission Indradhanush have saved countless lives. More than 2 million poor people have received free treatment under Ayushman Bharat Yojana and many health related problems are being solved through Ayushman Bharat Digital Mission.

**Brief overview of health care infrastructure in India:**

- Seventy percent of all facilities have public health care services. However, availability was low in rural areas (65 percent) compared with urban areas (87 percent).

- In 45 percent of the areas surveyed, people can access health care services on foot, and 43percent of the areas they need to use for transportation.
- The study also found that proximity to health care services was high in urban areas: 64 percent of urban enumerators found that people could access health care on foot, while only 37 percent in rural areas could.

**What are the expected benefits of Health Infrastructure Mission?**

- Make India's health plan ready for the future:** PM ABHIM aims to produce strong Public Health outcomes, jumping India to one of the most developed countries in the world in terms of managing Public Health outbreaks.
  - Various initiatives under PMASBY such as the National Platform for One Health, regional NIVs, etc., will strengthen India's ability to detect and diagnose new diseases very quickly. Entry points will be strengthened in India-ring-fence against the introduction of new infectious diseases and viruses.
- Make Ayushman Bharat the first step as an umbrella:** Ayushman Bharat- Health & Wellness Centres was established in April 2018 followed by Ayushman Bharat-PMJAY in September 2018. The Ayushman Bharat Digital Mission was launched earlier this year.
- The focus of the new scheme on Health Infrastructure makes the Ayushman Bharat campaign a turning point. Together they offer the following:
  - Provide affordable, quality and accessible health care for all people and reduce out-of-pocket expenses.
  - Provide universal access to basic diagnostic and therapeutic services, and will bring health care closer to rural and urban communities.
  - It covers almost all areas of health.
- Make India self-sufficient:** Set of national, regional, regional, regional and block laboratories supported by a strong I.T. The ecosystem will lead to reliance on diagnosing, preventing and preventing outbreaks.
- Make sure they do not disrupt other resources during events such as the epidemic:** Many non-COVID-19 patients were denied treatment during the violence, as hospitals were overcrowded. Blocks of critical care hospitals will provide care for those with serious infectious diseases without

interrupting other services. In non-epidemic cases, this capability will be used to provide critical care in other cases of disease.

### How can India continuously improve health infrastructure?

- **Encourage provincial participation:** Like other government-funded programs, the Centre will cover 60% of the cost, while governments will have to spend the rest. Therefore, Central Government should encourage international participation in order to make this program a success.
- **Increase health budget:** Parliamentary Standing Committee has recommended that in order to achieve the National Health Policy targets, Government must allocate R1.6-lakh crore for public health this year. This doubles the value of the current average health budget.
  - ▶ Therefore, the institution should increase government funding for health to at least 2.5% of GDP as envisaged in the National Health Policy, 2017 in order to improve health infrastructure and achieve the goals of national health policy.
- **You need more health professionals:** According to government data, India has 1.4 beds per 1,000 people, one doctor for 1,445 people, and 1.7 nurses for every 1,000 people. More than 30,000

MBBS seats and 24,000 medical postgraduate seats have been added since 2014. However, the construction of infrastructure must go hand in hand with additional human resources, so the government must improve the workforce needed.

- **Examine private misconduct:** The Clinical Establishment (Registration and Regulation) Act (CEA) was passed in 2010 to provide for the registration and regulation of all clinical facilities in the country. The law currently applies to only 11 countries throughout India. The central government will still take appropriate steps to encourage the implementation of the CEA.
  - ▶ This has led to widespread misuse of private hospitals, for example, huge hospital bills during the violence. Therefore, the government must ensure the proper implementation of the Act in order to investigate the wrongdoings of private companies.

### ◎ CONCLUSION

In conclusion, programs such as Swachh Bharat Abhiyan, Fit India, Khelo India and Yoga focus on preventing health. Along with other Ayushman Bharat programs, the Health Infrastructure Mission (PMASBY) is another step towards holistic health care in India.

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# INDIAN RAILWAY TO BE NET ZERO EMITTER BY 2030

## CONTEXT:

Recently, Indian Railways (IR) announced that it could be the world's first 'net-zero' carbon emitter by 2030.

### ◎ ABOUT

- The IR is taking a multidisciplinary approach to green and decarbonise - ranging from increasing its Renewable Energy (RE) resources to electrifying its charging network and reducing its energy consumption.
- **Indian Railways:** IR is the fourth largest railway network in the world in terms of size. It is one of the largest consumers of electricity in the country.
  - ▶ **Passenger Services:** 24 million passengers are transported daily on a small continent by 13,000 trains that cover approximately 67,956 kilometres.
  - ▶ **Freight:** 3.3 million tons of goods per day, and thus the demand for fuel is huge.
- **Contribution to Emission:** India's transport sector contributes 12% of the country's greenhouse gas emissions and trains account for about 4% of this emission.
- **Possibly Reducing Opportunities:** Indian Railways could increase its official asset allocation target of 50% by 2030, from its current 33% stake.
  - ▶ By moving goods to the railways and improving the use of trucks, India could reduce transportation costs from 14-10% of Gross Domestic Product and carbon dioxide emissions by 70% by 2050 compared to business conditions as usual.

### Steps taken by Indian Railways:

- **Increased Cargo Rates:** Indian Railways to increase its freight rate from about 35% in 2015 to 45% by 2030 to reduce transportation.
- **Total Electrical Installation:** The full Indian Railways installation is intended for the 2024 financial year. It will be the world's largest 100% electric rail transport system at that time.
- **Solar Energy:** Plans to install 20 GigaWatts (GW) solar panels on both pull and non-pull loads.
  - ▶ A 1.7-MW solar power plant was built in Bina, Madhya Pradesh, in July 2020. It is the world's first solar power plant to power railway lines directly, where trains draw gravity.
  - ▶ 2.5-MW solar project in Diana, Haryana.
  - ▶ The work of the third 50 MW pilot has begun in Bilai (Chhattisgarh).

- ▶ The 16-kW solar power plant has been installed as a shelter at Sahibabad railway station.
- ▶ The railway department has installed solar panels at more than 960 stations and uses solar energy to meet the energy needs of the railway stations.
- **Private Sector Participation:** The Department incorporates the provisions of the Letter of Credit (LC) in the event of a failure to pay for the train, as well as late payment in the bid document modelling of solar energy developers.
  - ▶ This is to encourage private companies to participate in this process.

### Net-Zero Emission

- Refers to the total balance between greenhouse gas emissions and greenhouse gas emissions.
- First, man-made emissions (such as those from mineral and industrial-powered vehicles) should be reduced as close to freezing as possible.
- Second, any remaining GHG should be weighed with an equal amount of carbon removal, for example by reforestation.

### Global Scenario:

- As of June 2020, 20 countries and regions have adopted net-zero targets.
- The Bhutanese state is already carbon-negative, i.e. absorbing more CO<sub>2</sub> than it emits.

### Indian state:

- Individual CO<sub>2</sub> emissions in India - by 1.8 tons per person in 2015 - are about one-third of those in the USA and about a third of the global average of 4.8 tons per person.
- Overall, however, India is now the third largest country in the world with CO<sub>2</sub>, after China and the USA.
- Areas of major energy sources: Energy > Industry > Forestry > Transport > Agriculture > Construction.

### Challenges:

- **Certificate of Open Access (NoC) Certificate** of Open Access to West Bengal, Tamil Nadu,

Chhattisgarh, Odisha, Andhra Pradesh, Kerala and Telangana has not been effective due to the challenges of controlling railways.

- ▶ If access to free access is granted in these provinces, the use of solar energy may increase.
- **Wheel supply and banking:** The full distribution of solar energy will be more effective if the provinces provide tires and banking arrangements.
- **The integration of solar purchases and non-solar purchases:** The integration of solar and non-solar obligations will allow trains to meet their Renewable Purchase obligations.
- **Unlimited net measurement rules:** Unlimited net measurement for solar projects on the roof can speed up the shipment of solar rail plants.

### What can be done to achieve Indian Railway plans?

- According to a study by NitiAayog, by shifting freight to rail and improving truck use, India could reduce travel costs from 14-10% of Gross Domestic Product and carbon dioxide emissions by 70% by 2050 compared to and business status as usual. Therefore, Indian Railways could use operational measures towards end-to-end communications to raise its ambition beyond the legal target of the 50% asset by 2030, from its current 33% stake.

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## ASTRONOMERS SEE WHITE DWARF STAR 'SWITCHING ON AND OFF' IN MAJOR FINDING

### CONTEXT:

Astronomers in the U.K. said this week that, for the first time, they saw a white dwarf star abruptly switch on and off.

### ◎ BACKGROUND

- The star is **TW Pictoris** – 1,400 light-years from Earth – already known as a variable star. But its previous brightness changes were seen to happen over days or months.
- This time, astronomers saw the star suddenly dim and brighten again over the course of just 30 minutes.
- The TW Pictoris system includes a white dwarf, plus a small companion star that the white dwarf "feeds" on. The white dwarf pulls in material from the companion.
- It's this gradual accretion (build up) of material that causes the dwarf to change its brightness.

### ◎ ANALYSIS

#### About Stars

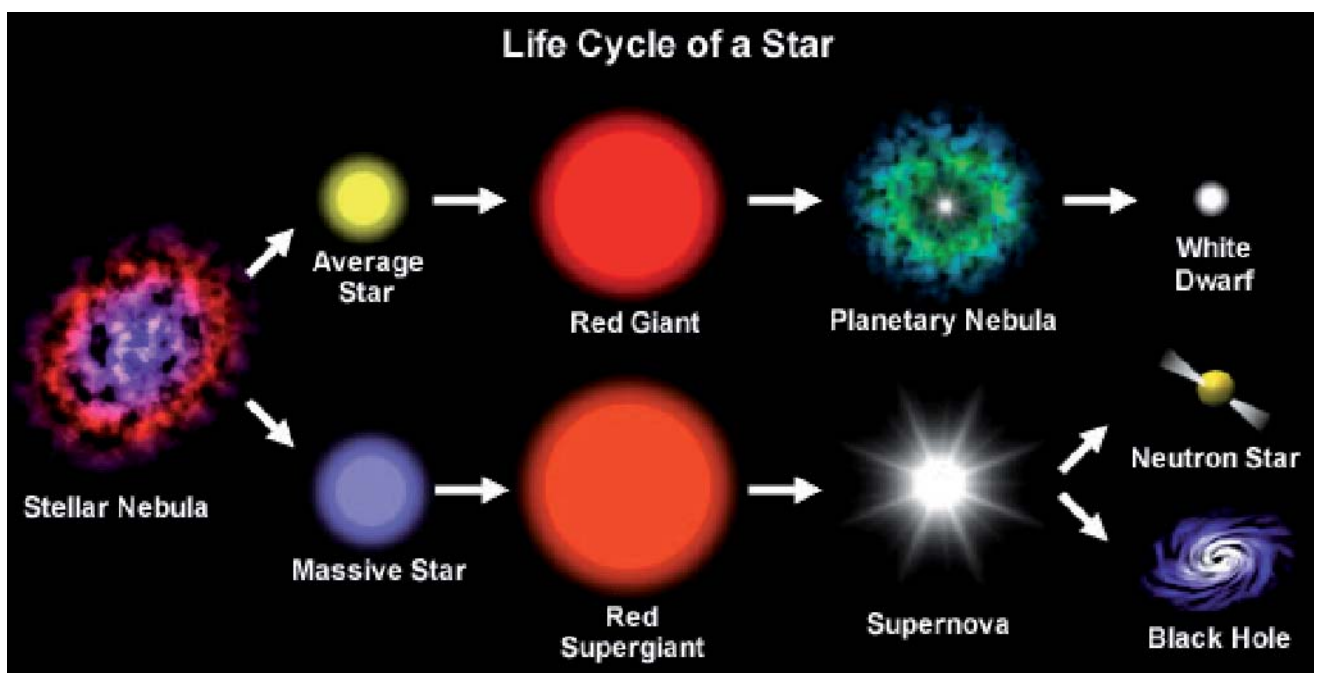
- A star is an **astronomical object** consisting of a luminous spheroid of plasma held together by its own gravity.
- **A star's life begins with the gravitational collapse**

of a **gaseous nebula** of material composed primarily of hydrogen, along with helium and trace amounts of heavier elements.

- The total mass of a star is the main factor that determines its evolution and eventual fate.
- For most of its active life, a star shines due to **thermonuclear fusion of hydrogen into helium in its core**, releasing energy that traverses the star's interior and then radiates into outer space.
- At the end of a star's lifetime, its core becomes a stellar remnant: a white dwarf, a neutron star, or, if it is sufficiently massive, a black hole.
- Stars can form orbital systems with other astronomical objects, as in the case of planetary systems and star systems with two or more stars.

#### Different types of Stars

- **Protostar:**
- A protostar is what you have before a star forms.
- A protostar is a collection of gas that has collapsed down from a giant molecular cloud.
- The protostar phase of stellar evolution lasts about 100,000 years.



- Over time, gravity and pressure increase, forcing the protostar to collapse down.
- All of the energy released by the protostar comes only from the heating caused by the gravitational energy – nuclear fusion reactions haven't started yet.

### T Tauri Star:

- A T Tauri star is a stage in a star's formation and evolution right before it becomes a main sequence star.
- This phase occurs at the end of the protostar phase, when the gravitational pressure holding the star together is the source of all its energy.

### Main Sequence Star:

- The majority of all stars in our galaxy, and even the Universe, are main sequence stars. Our Sun is a main sequence star, and so are our nearest neighbors, Sirius and Alpha Centauri A.
- Main sequence stars can vary in size, mass and brightness, but they're all doing the same thing: converting hydrogen into helium in their cores, releasing a tremendous amount of energy.
- A star in the main sequence is in a state of hydrostatic equilibrium. Gravity is pulling the star inward, and the light pressure from all the fusion reactions in the star are pushing outward.
- The inward and outward forces balance one another out, and the star maintains a spherical shape.
- Stars in the main sequence will have a size that depends on their mass, which defines the amount of gravity pulling them inward.

### Red Giant Star:

- When a star has consumed its stock of hydrogen in its core, fusion stops and the star no longer generates an outward pressure to counteract the inward pressure pulling it together.
- A shell of hydrogen around the core ignites continuing the life of the star, but causes it to increase in size dramatically.
- The aging star has become a red giant star
- When this hydrogen fuel is used up, further shells of helium and even heavier elements can be consumed in fusion reactions.
- The red giant phase of a star's life will only last a few hundred million years before it runs out of fuel completely and becomes a white dwarf.

### White Dwarf Star:

- When a star has completely run out of hydrogen fuel in its core and it lacks the mass to force higher

elements into fusion reaction, it becomes a white dwarf star.

- The outward light pressure from the fusion reaction stops and the star collapses inward under its own gravity.
- A white dwarf shines because it was a hot star once, but there's no fusion reactions happening any more.

### Red Dwarf Star:

- Red dwarf stars are the most common kind of stars in the Universe.
- These are main sequence stars but they have such low mass that they're much cooler than stars like our Sun.
- Red dwarf stars are able to keep the hydrogen fuel mixing into their core, and so they can conserve their fuel for much longer than other stars.
- Astronomers estimate that some red dwarf stars will burn for up to 10 trillion years.

### Neutron Stars:

- If a star has between 1.35 and 2.1 times the mass of the Sun, it doesn't form a white dwarf when it dies. Instead, the star dies in a catastrophic supernova explosion, and the remaining core becomes a neutron star.
- As its name implies, a neutron star is an exotic type of star that is composed entirely of neutrons.
- This is because the intense gravity of the neutron star crushes protons and electrons together to form neutrons.
- If stars are even more massive, they will become black holes instead of neutron stars after the supernova goes off.

### Supergiant Stars:

- The largest stars in the Universe are supergiant stars.
- Unlike a relatively stable star like the Sun, supergiants are consuming hydrogen fuel at an enormous rate and will consume all the fuel in their cores within just a few million years.
- Supergiant stars live fast and die young, detonating as supernovae; completely disintegrating themselves in the process.

### Characteristics of Star

#### Age

- Most stars are between 1 billion and 10 billion years old. Some stars may even be close to 13.8 billion years old—the observed age of the universe.

- The **oldest star** yet discovered, HD 140283, nicknamed **Methuselah star**.
- The more massive the star, the shorter its lifespan, primarily because massive stars have greater pressure on their cores, causing them to burn hydrogen more rapidly.

### Chemical composition

- When stars form in the present Milky Way galaxy, they are composed of about **71% hydrogen and 27% helium**, as measured by mass, with a small fraction of heavier elements.

### Diameter

- Stars range in size from neutron stars, which vary anywhere from 20 to 40 km (25 mi) in diameter, to supergiants like Betelgeuse in the Orion constellation, which has a diameter about 1,000 times that of the Sun with a much lower density.

### Kinematics

- The motion of a star relative to the Sun can provide useful information about the origin and age of a star, as well as the structure and evolution of the surrounding galaxy.
- The components of motion of a star consist of the radial velocity toward or away from the Sun, and the traverse angular movement, which is called its proper motion.

### Magnetic field

- The magnetic field of a star is generated within regions of the interior where **convective circulation occurs**.
- This movement of conductive plasma functions like a dynamo, wherein the movement of electrical charges induce magnetic fields, as does a mechanical dynamo.
- Those magnetic fields have a great range that extend throughout and beyond the star.
- The strength of the magnetic field varies with the mass and composition of the star, and the amount

of magnetic surface activity depends upon the star's rate of rotation.

### Temperature

- The surface temperature of a main sequence star is determined by the rate of energy production of its core and by its radius, and is often estimated from the star's color index.

### Radiation by Stars

- The energy produced by stars, **a product of nuclear fusion, radiates to space as both electromagnetic radiation and particle radiation**.
- The **particle radiation** emitted by a star is manifested as the stellar wind, which streams from the outer layers as electrically charged protons and alpha and beta particles.
- A steady stream of almost massless neutrinos emanate directly from the star's core.
- The color of a star, as determined by the most intense frequency of the visible light, depends on the temperature of the star's outer layers, including its photosphere.
- Besides visible light, stars emit forms of electromagnetic radiation that are invisible to the human eye.
- In fact, stellar **electromagnetic radiation** spans the entire electromagnetic spectrum, from the longest wavelengths of radio waves through infrared, visible light, ultraviolet, to the shortest of X-rays, and gamma rays.

### ◎ CONCLUSION

Most of what we can learn about the Universe is based on observing stars. Fortunately, stars are profoundly important for our Universe, even though they do not dominate its total material (most is in a dark form that we know little about). Not only do they light up the sky, they produce the raw materials that make life possible, and if there is life out there, it is most likely orbiting a star on its planet.

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# SAVE HORNIBILLS, FOR THEY ARE THE GARDENERS OF TROPICAL FORESTS: STUDY

## CONTEXT:

The researchers, from Nature Conservation Foundation (NCF), Mysuru and Centre for Ecological Sciences, Indian Institute of Science, Bengaluru conducted the study on the Hornbill Plateau in Namdapha.

## ◎ BACKGROUND

- Scientists from two organisations studied how fruiting plants and hornbills influenced each other's distribution in the **Namdapha Tiger Reserve**.
- The reserve, located in Arunachal Pradesh, is one of India's most biodiverse protected areas. It is **home to five of India's nine species of hornbills**.
- They conducted the study across twenty-four 1-hectare patches on the Hornbill Plateau.
- They counted 815 hornbills, 157 hornbill food plants, 946 seeds that were dispersed in 1,600 one-metre patches and 5,173 regenerating saplings of multiple large-seeded hornbill food plant species.

### About Namdapha Tiger Reserve

- The Namdapha National Park is located in Arunachal Pradesh's Changlang district.
- It is a biodiversity hotspot in the Eastern Himalayas, with over 1,000 floral and 1,400 faunal species.
- It is India's fourth-largest national park by area.
- Namdapha National Park is nestled between the Patkai and Dapha bum ranges of Mishmi Hills in the Eastern Himalayan Sub-region.
- It is the world's only park with the four feline species of big cat, the Tiger (*Panthera Tigris*), Leopard (*Panthera Pardus*), Snow Leopard (*Panthera Uncia*), and Clouded Leopard (*Neofelis Nebulosa*), as well as a large number of Lesser cats.
- The area is mostly steep mountainous terrain, with few gentle slopes crisscrossed by numerous rivers (Lai, Lati, Lang and Kamlang), rivulets and perennial streams.
- In India it is the best place to see Austen's Brown Hornbill species.

- They are characterized by a long, down-curved bill which is frequently brightly colored and sometimes has a casque on the upper mandible.
- They are **diurnal**, generally travelling in pairs or small family groups
- They are **omnivorous** birds, eating fruit, insects and small animals.

### Hornbill Species in India

- There are approximately 60 hornbill species world-over of which **nine reside in India**.
- Of the nine species, those found in the Western Ghats include:

### The Great Hornbill.

- The great hornbill (*Buceros bicornis*) also known as the great Indian hornbill or great pied hornbill, is one of the larger members of the hornbill family.
- A large majority of their population is found in India with a significant proportion in the **Western Ghats and the Nilgiris**.
- IUCN status: **Vulnerable**
- Indian Protected Areas:** the Anamalai Tiger Reserve and Dandeli National Park (Western Ghats), Corbett Tiger Reserve (north India) and Kaziranga, Pakke, Namdapha and Manas (north-east India).

### The Malabar Grey Hornbill

- The Malabar grey hornbill (*Ocyrceros griseus*) is a hornbill **endemic to the Western Ghats** and associated hills of southern India.
- They are found mainly in dense forest and around rubber, arecanut or coffee plantations.
- IUCN status : **Vulnerable**
- Indian Protected Areas :** Anamalai Tiger Reserve, Tamil Nadu, Periyar and Parambikulam Tiger Reserve, Kerala

### Malabar Pied Hornbill

- The Malabar pied hornbill is a common resident breeder in **India and Sri Lanka**. Its habitat is evergreen and moist deciduous forests, often near human settlements.
- IUCN Status : **Near Threatened**

## ◎ ANALYSIS

### About Hornbills

- Hornbills (Bucerotidae) are a family of birds **found in tropical and subtropical Africa, Asia and Melanesia**.

- **Indian Protected Areas** : Bandipur, Nagarahole, Dandeli in Karnataka, Satpura Tiger Reserve, Madhya Pradesh.
- The other Hornbill species in India include:

### Indian Grey Hornbill

- The Indian Grey Hornbill (*Ocyrceros birostris*) is a fairly common hornbill species **found only in the Indian subcontinent**.
- They are cavity nesters, making use of big hollows in trees as nesting sites.
- IUCN status : **Least Concern**

### Oriental Pied Hornbill

- The oriental pied hornbill is found in the **Indian Subcontinent and Southeast Asia**, ranging across Bangladesh, Bhutan, Brunei, Cambodia, Eastern and Northern India, Indonesia, Laos, North peninsular Malaysia, Myanmar, Nepal, Singapore, Thailand, Tibet, Vietnam and the Sunda shelf islands.
- Its natural habitat is subtropical or tropical moist lowland forests.
- IUCN Status : **Least Concern**
- **Indian Protected Areas**: Rajaji National Park and Corbett Tiger Reserve in north India and in Nameri and Pakke Tiger Reserves and several other Protected Areas in north-east India, also common in forests outside Protected Areas.

### Wreathed Hornbill

- The wreathed hornbill (*Rhyticeros undulatus*), also known as the bar-pouched wreathed hornbill, is a species of hornbill **native to forests in northeast India, Bhutan**, mainland Southeast Asia and the Greater Sundas in Indonesia.
- IUCN status : **Vulnerable**
- **Indian Protected Areas** : **Manas, Nameri, Pakke and Namdapha Tiger Reserves**.

### Rufous-necked hornbill

- The rufous-necked hornbill (*Aceros nipalensis*) is a species of hornbill in **Bhutan, northeastern India**, especially in Arunachal Pradesh, Indian Subcontinent and Southeast Asia.
- It is locally extinct in Nepal due to hunting and significant loss of habitat.
- IUCN status: **Vulnerable**
- **Indian Protected Areas** : Namdapha Tiger Reserve, Eaglenest Wildlife Sanctuary, Pakke Tiger Reserve, Arunachal Pradesh, Mahananda Wildlife Sanctuary and Neora Valley National Park in northern West Bengal.

### Narcondam Hornbill

- It is **endemic to the Indian island of Narcondam in the Andamans**.
- The Narcondam hornbill has the smallest home range out of all the species of Asian hornbills.
- IUCN Status : **Vulnerable**

### Austen's Brown Hornbill

- Austen's brown hornbill (*Anorrhinus austeni*) is a species of hornbill found in forests from **northeastern India and south to Vietnam and northern Thailand**.
- IUCN Status : **Near Threatened**
- **Indian Protected Areas**: Namdapha Tiger Reserve.

### Threats to Hornbills in India

- The hornbills face different threats across the country depending upon the culture, governance and densities of the human population.
- **Hunting and logging** are probably the most relevant threats in north-east India where law enforcement is poor and strong cultural practices are attached to hornbills.
- For example, the Great Hornbill and Rufous necked Hornbills are hunted for their spectacular feathers, casque and beaks to adorn the headdresses and their meat is believed to have medicinal value.
- Another important threat to the hornbill is **loss of habitat and fragmentation** which is accelerating in the north-east regions.
- With traditional shifting cultivation practices being replaced by permanent cash crop plantations, particularly in community-owned lands, leads to permanent loss in natural habitats and little scope for vegetation recovery.
- Also illegal occupation of land due to improper settlement of land rights or poor enforcement by the forest department, along with burgeoning human population pose significant threats to lowland forest habitats across the hornbill habitat.
- As frugivores, the **hornbills need a large forest with ficus trees**. However, **logging of these trees** as well as tree species that provide nesting have led to significant reduction in their population.

### Hornbill Conservation in India

- A citizen-science based initiative, Hornbill Watch which was launched by Nature Conservation Foundation (NCF) and Conservation India (CI) in

2014 records the number of sightings of different hornbill species across India.

### Community-based conservation of Hornbills

- The **Nyishi tribe of Western Arunachal Pradesh** could be taken as an example for their recent significant contribution in the effort to save these majestic birds from extinction.
- The community has been closely working with Nature Conservation Foundation (NCF) in the surrounding areas of **Pakke Wildlife Sanctuary and Tiger Reserve** which is a crucial nesting habitat for hornbills.
- They adopt hornbill nests and help protect them under the **Hornbill Nest Adoption Programme** and also ensure conservation of hornbill habitats outside the protected area of the park.
- Hornbills are hunted for their casques — upper beak — and feathers for adorning headgear. A conservation programme promoting the use of **fibre-glass beaks for headgear** instead of real hornbill casques has helped reduce some threat to it.

### Hornbill: Gardeners of Tropical Forests

- The conservation of hornbills is of prime importance since they **have a symbiotic relationship with several canopy trees** in tropical forests. They are attracted to such trees for food and in turn, they scatter their seeds, creating orchards.
- Hornbills were among the very few birds that could feed on fruits with large seeds, regurgitate and disperse the undamaged seeds away from the mother plant.
- Hornbills as Seed dispersers:
- The Indian Grey Hornbill plays an essential role in the ecosystem as prime dispersers of seeds. In cities, we may find them feeding on fig trees like banyan, Goolar (a variety of fig), usually choosing old tall dense trees for nesting.

### ◎ CONCLUSION

Hornbill conservation must proceed along the twin paths of weaning away tribal hunters through the provision of substitutes, and nursing forest fragments back to health using science.

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## GREENHOUSE GAS BULLETIN: WMO

### CONTEXT:

According to the World Meteorological Organization (WMO) Greenhouse Gas Bulletin, the amount of greenhouse gases in the atmosphere reached a new record last year (2020), with an annual increase of more than the 2011-2020 average.

### ◎ ABOUT

- This is despite a nearly 5.6% decline in CO<sub>2</sub> emissions by 2020 due to the epidemic-related restrictions.
- Earlier, the WMO released a report entitled United in Science 2021. WMO is a United Nations special centre for meteorology (climate and climate), operational hydrology and related geophysical science.
- The WMO Global Atmosphere Watch Program includes systematic monitoring and analysis of greenhouse gases and other atmospheric elements.

### Data Analysis:

- Concentration of Carbon Dioxide (CO<sub>2</sub>), the most important greenhouse gas, reached 413.2 million units by 2020 and is 149 percent pre-industrial level.
- Many countries are now setting their own standards of neutrality and it is hoped that COP26 (Climate Conference) will see a dramatic increase in obligations.
- Methane (CH<sub>4</sub>) is 262% and Nitrous Oxide (N<sub>2</sub>O) is 123% of the levels by 1750 when human activities begin to disrupt the ecological balance of the earth.
- The recession from Covid-19 did not have a significant impact on greenhouse gas emissions and growth rates, although there has been a temporary decline in new emissions.
- From 1990 to 2020, the emission of radiation - the result of global warming - by long-term greenhouse gases increased by 47%, while CO<sub>2</sub> accounted for about 80% of this increase.
- The ability of terrestrial and marine organisms to function as "sinks" may not work properly in the future, thus reducing their ability to absorb carbon dioxide and act as a barrier against global warming.

### Concerns:

- Rising temperatures are expected by the end of this century to significantly exceed the Paris Agreement's target of 1.5 to 2 degrees Celsius above pre-industrial levels.
- Parts of the Amazon rainforest have shifted from being a carbon dioxide-absorbing carbon dioxide source to a CO<sub>2</sub> source due to deforestation and declining humidity in the region.
- Considering the long life of CO<sub>2</sub>, the already observed temperature will continue for a few decades even if the emissions are rapidly reduced to zero. Alongside rising temperatures, this means more extreme climates including extreme heat and rain, melting glaciers, sea level rise and sea acidity, coupled with far-reaching social impacts.

### ◎ WAY FORWARD

- CO<sub>2</sub> is the single most important greenhouse gas and has "major negative repercussions for our daily lives and well-being, for the state of our planet and for the future of our children and grandchildren.
- We need to transform our commitment into action that will have an impact of the gases that drive climate change.
- We need to revisit our industrial, energy and transport systems and whole way of life.
- Carbon sinks are vital regulators of climate change because they remove one-quarter of the CO<sub>2</sub> that humans release into the atmosphere.
- Nitrous Oxide is both a powerful greenhouse gas and ozone depleting chemical that is emitted into the atmosphere from both natural and anthropogenic sources, including oceans, soils, biomass burning, fertilizer use and various industrial processes.
- Multiple co-benefits of reducing methane, whose gas remains in the atmosphere for about a decade, could support the Paris Agreement and help to reach many Sustainable Development Goals (SDGs).

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# HONESTY, ETHICS AND INTEGRITY IN THE NEW WORKPLACE

## CONTEXT:

The problems of honesty, ethics, and integrity in the workplace has undergone mutations, slipping under the radar and leaders need to be able to spot them.

## ◎ ABOUT

- The protracted COVID-19 experience has compelled a pace of nimbleness with regard to behavioural unlearning and learning, as well as the revisitation of policies and procedures, in response to shifting and unpredictable external situations, that'd have been unimaginable in a pre-pandemic ecosystem.
- The ability of whole departments and organizations to transition from WFH to RTO to Hybrid, along the slide-rule of the various modes of working, with the attendant calibrations of crisis management SOPs, safety protocols and employee policies – all these, and more, have now become normalized.
- There is, however, the continued risk that when it comes to honesty, ethics and integrity in the emergent workplace, company leaders are still blind-sighted.
- These three constructs collectively denote an intrinsically motivated need to follow set rules, code of conduct, and ethical principles, that organizations and their employees take a firm stand to adhere by, irrespective of external circumstances.
- A case in point is the mandate of providing equal opportunity to all employees, regardless of caste, creed, socio-economic background, gender and sexual orientation.
- The intention behind this is to create a culture of candour and transparency, enabling individual teammates to share feedback with each other or escalating grievances to the management, without the fear of retribution or being judged.
- And much like the virus, the old issues around honesty, ethics and integrity have also undergone mutations, in the new paradigm – and therefore succeed in slipping under the radar.

## Value of honesty

- Effective leaders are generally viewed as honest by employees. They keep everyone abreast of what is going on within the organization — good and bad. Leaders who cover all sides are much more appreciated than leaders who conceal information that could easily be communicated.

- However, in the long term, honesty carries the day, gains stronger support from employees and allows the right solutions to be applied to resolve problems.
- Another important outcome from honesty is that it builds trust, one of the most critical elements of solid leadership activities. Survey after survey shows that a low trust factor stifles relationship building and follow ship.
- It is displayed and built on personal behaviour, the quality of decisions and open and honest communication by a leader.

## Power of ethics

- One definition of organizational ethics says it is the rules of conduct reflecting character and sentiments of the organization. Ethics then helps to establish standards of honesty, loyalty and fairness within the organization.
- Companies find that ethical business practices increase their competitiveness in their respective industries, helping to further substantiate the notion that a culture of ethics is crucial to sustainable excellence.

## Increased Transparency

- Forced remote working modes of operation and the increasing use of technology in the wake of the pandemic have led to a wide-scale digitization of the workplace and its processes, and with it, undoubtedly, greater transparency.
- For instance, in many organizations, online meetings are recorded, as trail, evidence and future use of the key discussion points and decisions (obviating the need for scribes and wordy minutes), and for reference by people who have missed the session. Given this approach, compared to the in-person meetings in a pre-pandemic scenario, all participants, especially managers, are far more aware of the tone, messaging, and non-verbal aspects of their own communication during such meetings.
- This enhanced transparency notwithstanding, the cumulative result isn't unfortunately an eradication of the age-old problems of nepotism, bullying, harassment and discrimination.



**There are some of the key warning signs that leaders can sensitize themselves towards:**

- Increased absenteeism
- Increased criticism of an employee in meetings or other group settings
- Being singled out on flaws in comparison to others
- Being passed over for upcoming projects or roles, without any rational explanation
- Being put down in front of the team, through derogatory or sarcastic comments
- Being heavily micromanaged
- Consistent underperformance, quite possibly as a direct outcome of stress
- Recurring instances of depression and other mental health issues

**Issues or challenges**

- Pandemic has brought in tremendous amounts of uncertainty, and social disconnect amongst people.
- Enforced remote work, social distancing and isolation, wage cuts, and job insecurity have exacerbated the levels of loneliness, stress, and depression amongst many.
- The very same technology-reliant, new modes of working that have led to greater digitization and transparency, can actually inhibit clear means of detection of issues such as discrimination or bullying.

**Suggestive measures that may help navigate some of these new challenges:**

- Revisit existing company policies and SOPs, especially in the HR domain, and create content to incorporate online behaviours.

- Chart out online work etiquette to be followed across the organization.
- Conduct regular town-hall meets and workshops around online workplace bullying, discrimination, harassment, etc., to bring out about greater awareness of what otherwise would not be considered as unethical.
- Conduct regular courses on online ethical work practices, diversity, equity and inclusion, as mandatory training for all employees.
- Engage psychologists to conduct training to the HR team, to create a greater awareness of mental health issues in the workplace.
- Manage micro aggression by discussing its subtle signs, and encouraging employees to speak up, e.g., through enterprise-wide surveys or an online platform, for people to communicate their concerns and find solutions together, both anonymously.
- Provide mental health services to employees, where they can safely and anonymously address their concerns – this can be through EAPs and curated group and individual counselling programmes.
- Establish a regular cadence of feedback from employees about workplace culture, backed up by a demonstrated commitment to act on serious concerns.

**◎ CONCLUSION**

A new code of good online work practices is essential, if companies are to create a psychologically safe, inclusive, and empathetic work environment in the new paradigm. But this also requires a new mind set for leaders, and new frames of reference through which to view the post-COVID workplace.

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## MULLAPERIYAR DAM

- ◎ **CONTEXT:** Two spillway shutters of the Mullaperiyar dam in Idukki district were opened recently after the water level crossed 138 feet.

### About the Mullaperiyar dam

- The Mullaperiyar Dam is a 126-year-old **composite gravity dam located in the upper reaches of the river Periyar**, which flows into Kerala after originating in Tamil Nadu.
- The reservoir is within the **Periyar Tiger Reserve**.
- The water diverted from the reservoir is first used for power generation in lower **Periyar** (by Tamil Nadu) before flowing into the **Suruliyar**, a tributary of **Vaigai river**, and then for irrigating nearly 2.08 lakh hectares in **Theni** and four other districts farther away.

### History/Background

- **In 1886**, the then Maharaja of Travancore signed the **'Periyar Lease Deed'** with the British government, which considered the Periyar waters useless to Travancore and wanted to divert the water into arid regions of Tamil Nadu.
- After 20 years of resistance, the agreement was signed and the **dam was constructed in 1895**.
- The **Madras government started hydel power generation in 1959**, the capacity of which was increased to 140 MW.
- Kerala brought up the **issue of safety** before the **Central Water Commission** in 1961.
- After a joint inspection by Kerala and Tamil Nadu in 1964, the water level was reduced for the first time, from 155 ft to 152 ft.
- In the following years, Tamil Nadu witnessed public agitations demanding that the level be increased.

### Timeline of the Mullaperiyar Dam Dispute

- **In 2000**, the Centre appointed an expert committee to look into safety and suggest storage levels.
- **In 2006**, the Supreme Court allowed Tamil Nadu to raise the water level to 142 ft.
  - The Kerala Assembly **amended the Kerala Irrigation and Water Conservation Act, 2003, in March 2006**, bringing Mullaperiyar in the schedule of 'Endangered Dams' and restricting its storage at 136 ft. Since then, the issue has shifted to the safety of the dam.
- **In 2007**, the Kerala Cabinet permitted preliminary work on a new dam which was opposed by Tamil Nadu in Supreme Court.
- **In 2010**, the Supreme Court formed an empowered committee to look into the dam's safety.
- In November 2011, Kerala sought the Centre's intervention to bring down water levels to 120 ft after the area witnessed minor tremors.
- **In 2014** came the Supreme Court order allowing Tamil Nadu to fix the water level at 142 ft.

### What is the current dispute?

- In October 2021, the Supreme Court directed that the maximum water level in Mullaperiyar dam should be 139.50 ft.
- The order came out after a **court-appointed supervisory committee** had suggested 139.50 ft as the permissible level and the court ordered both states to comply with the committee's recommendation.
- Tamil Nadu had wanted the level increased to 142 ft as fixed by the Supreme Court in 2014, while Kerala wanted it within 139 ft as per a rule curve fixed.

- Kerala, while seeking a limit of 139 ft, pointed to a Supreme Court directive in August 2018 following the **devastating floods in the state**.
- One of the factors contributing to the floods was sudden discharge from the Mullaperiyar dam, after its water level went beyond 142 ft and **all spillway shutters of the dam suddenly lifted**.
- The excess water from Mullaperiyar had then flowed to downstream **Idukki reservoir, which was also at maximum storage level**. The unexpected flow forced Kerala to increase the discharge, leading to flooding of several parts of central Kerala. **The situation in 2021 is not different**.

### Is there a need for a new dam in place of Mullaperiyar Dam?

- The Mullaperiyar Dam is a **126-year-old** composite gravity dam and that seismic forces were not given consideration while building the dam which, despite strengthening measures having been undertaken taken twice, is in a **deteriorating condition due to its age**.
- The dam has a large catchment area but **only limited storage capacity** which further increases its vulnerability.
- The consequences of any failure of this dam could be **extremely catastrophic and beyond human imagination**.
- In 2008, a flood routing study by IIT Delhi found the dam was unsafe; in 2009, IIT Roorkee reported the dam was in an earthquake-prone area and **would not survive a major quake**.
- Construction of a new dam would also give rise to a **new water-sharing treaty**; at present, only Tamil Nadu has rights over the dam water.

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## FOURTH ASSEMBLY OF ISA

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### ◎ CONTEXT:

The fourth general assembly of the International Solar Alliance (ISA) was held recently.

### Key-Highlights

- On One Sun One World One Grid (OSOWOG)
  - The ISA has given approval to the political proclamation of "One Sun" for the launch of the Green Grids Initiative-**One Sun One World One Grid (GGI-OSOWOG) at COP26**.
    - ▶ **OSOWOG:** In the First ISA Summit in late 2018, the concept of a single global solar grid first came up.
    - ▶ **COP 26 Green Grid Initiative:** The purpose of this program is to help achieve the scale and speed of changes in the market structures and infrastructure needed to support global energy transformation.

### New ISA programs

- On management of battery usage waste & solar PV panels and solar hydrogen programme.
  - To enable the use of solar power to produce hydrogen at a more affordable price than currently available (USD 5 per KG), at a reduced rate of USD 2 per KG, the new Hydrogen system is planned.
- **Solar Investments**
  - Target to achieve USD 1 trillion global investments in solar energy by 2030.
  - At **COP26 (United Nations (UN) Climate Change Conference)**, the Solar Investment Action Agenda and Solar Investment Roadmap will be presented.

- Other Solar Energy Initiatives in India
  - **National Solar Mission has been launched as a part of the National Action Plan on Climate Change) to establish India as a global leader in solar energy, by creating policy conditions for its global distribution as soon as possible.**
  - **Indian Nationally Determined Contributions (INDCs) Mission** has been launched to direct the installation of solar power systems connected to the **100 GW grids by 2022.**
    - ▶ India has set a goal of achieving 40% of the electricity collected from non-petroleum energy sources and reducing its GDP emissions by 33 to 35% from 2005 to 2030.
  - **International Solar Alliance (ISA) and One Sun One World One Grid (OSOWOG)**
  - **Solar Park Scheme, Canal Bank & Canal Top Scheme, Bundling Scheme, grid Connection Solar Rooftop Scheme** and other government schemes have been launched.
  - **The National Thermal Power Corporation Limited (NTPC) Renewable Energy Ltd (REL)** has signed a **Memorandum of Understanding** with the Union Territory of Ladakh to launch the **country's first Green Hydrogen Mobility project.**
    - ▶ Green hydrogen is produced by water electrolysis using renewable energy (such as Solar, Wind) and has a low carbon footprint.

#### International Solar Alliance (ISA)

- ISA, **co-founded by India and France** during the **2015 climate change conference in Paris**
- ISA is an **intergovernmental organization** with a global mandate to promote solar growth by helping to reduce financial and technological costs.
- ISA is a major implementation center for the **One Sun One World One Grid (OSOWOG)**, **OSOWOG** seeks to transfer solar energy generated in one place to supply the electricity needs of others.
- ISA has taken the center of India's efforts to play a leading role in global climate change.
- India has allocated **5 acres of land to ISA on the campus of the National Institute of Solar Energy (NISE), Gurugram** and has donated Rs. 160 crore to create a corpus fund, building infrastructure and meeting day to day recurring expenditure up to 2021-22.
- NISE is an independent center of the Department of Energy and **Renewable Energy (MNRE)** and is a **state-of-the-art National R&D center** in the field of Solar Energy.

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## GOVERNMENT PLANS TO TWEAK LAW FOR NATIONAL DATABASE OF BIRTHS, DEATHS

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- © **CONTEXT:** Ministry of Home Affairs has proposed to amend the Registration of Births and Deaths Act, 1969 to require Registrar General of India to maintain a national database of registered births and deaths. It can be utilized with Centre's approval, to update National Population Register (NPR) prepared under Citizenship Act, 1955.

## What is NPR?

- It is a list of “**usual resident of country.**”
- A “usual resident of country” is one who has been residing in a local area for **at least six months**, or **intends to stay** in a particular location for six months.

## Background

- The data for NPR was first collected in 2010 along with the house listing phase of Census 2011.
- However, with the use of Aadhaar as the key vehicle for transfer of government benefits in the last few years, the **NPR has taken a back seat.**

### Objective of NPR

- The objective of the NPR is to create a comprehensive identity database of every usual resident in the country. The database would contain demographic as well as biometric particulars.
- It is mandatory for every usual resident of India to register in the NPR.

### Advantages

- It will streamline data of residents across various platforms.
- It will help government to formulate policies better and also aid national security.
- It can help to target government beneficiaries in a better way and also reduce paper work and red tape.
- It can help in implementing the idea of “**One Identity Card**” that has been recently floated by government.

## How NRC and NPR related?

- Out of the NPR, a set of all usual residents of India, the government proposes to create a **database of “citizens of India”**.
- Thus, the “National Register of Indian Citizens” (NRIC) is a **sub-set of the NPR**.
- The NRIC will be prepared at the local, sub-district, district and State levels after verifying the citizenship status of the residents.
- The rules say the particulars of every family and individual found in the Population Register shall be verified and scrutinized by the Local Registrar.

### Questions in NPR



- In 2020 NPR, the respondent will have to specify the “name of State and district” if the place of birth of father and mother is in India and mention the country’s name if not born here.
- The form will collect details on 14 parameters of all family members.

- The sub-heads include passport number, relationship to head of the family, whether divorced/widowed or separated, mother tongue, if non-worker, cultivator, labourer, government employee, daily wage earner among others.
- The form also has a column on Aadhar, mobile phone, Voter ID and driving license number, which are to be provided if available with the respondent.

## ADB GRANTS LOAN FOR MIZORAM

◎ **CONTEXT:** Recently, to support urban mobility in Mizoram, the Asian Development Bank (ADB) and the Government of India has signed a USD 4.5 million Project Readiness Financing (PRF) loan.

### Key-Points

- Due to **rapid and unplanned urban migration**, the migration of people from the cities of Aizawl, the center of the Mizoram administration and services industry has been severely delayed.
  - This has a detrimental effect on road safety and has caused traffic congestion, poor mobility, and environmental sustainability.
- Being developed through project readiness financing, the ensuing project seeks to resolve the city's transport problems by adopting sustainable urban mobility solutions.
- It will help in developing the capacities of the Department of Urban Development and Poverty Alleviation prior to implementation and project preparation activities.
- The **Comprehensive Mobility Plan (CMP)** will improve urban economic competitiveness by improving the order and access to services, basic services, education, etc. and facilitate the efficient use of funds for inappropriate programs.
- The PRF will develop Aizawl's CMP which outlines an urban transport development strategy and builds partnerships with urban development planning in the state, and promotes climate resilience and disaster risk, as well as gender inclusion in its interventions.

### Asian Development Bank

- Asian Development Bank is a regional development bank established on **19th December 1966**.
- **Headquarter:** Manila, Philippines.
- **68 members, 49 from within Asia.**
  - ▶ **India** is one of the members.
- Among the five largest shareholders are **Japan and the United States (each with 15.6% of total shares), the People's Republic of China (6.4%), India (6.3%), and Australia (5.8%)**.
- The aim of ABD is to promote social and economic development in Asia and the Pacific.
- Asian Development Outlook (ADO): Series of annual economic reports on the Developing Member Countries (DMCs) of the Asian Development Bank (ADB).



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## NET ZERO TARGET OF SAUDI ARABIA

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◎ **CONTEXT:** Saudi Arabia, one of the world's largest oil producers, has recently announced that it will reach "net zero" greenhouse gas emissions by 2060.

### Key-Points

- The announcement was made at the start of the **first-ever Saudi Green Initiative (SGI) Forum** of the kingdom.
  - The aim is the SGI to increase **crop coverage, reduce carbon emissions, fight pollution, and land degradation, and preserve marine life.**
- Saudi Arabia will join a global campaign to reduce methane emissions by 30% from 2020 levels by 2030, in accordance with **Global Methane Pledge** pressed by the European Union (EU) and the United States.
- While maintaining its leading role in **strengthening the security and stability of global oil markets**, the aim of SGI is to achieve **zero-net emissions by 2060** under its global carbon economy plan.
  - That approach focuses on unreliable pictures technology and carbon storage over efforts to **reduce global dependence on fossil fuels.**

### About the Net Zero Target

- Net-zero is a condition in which emissions are compensated for by the absorption and removal of greenhouse gases from the atmosphere. Reaching net-zero emissions is akin to achieving "climate neutrality."
- Gross zero would mean stopping all emissions, which isn't realistically attainable across all sectors of our lives and industry. Net zero looks at emissions overall, allowing for the removal of any unavoidable emissions, such as those from aviation or manufacturing.
- Removing greenhouse gases could be via nature, as trees take carbon dioxide from the atmosphere, or through new technology or changing industrial processes.

### Concerns

- Announcing the Net Zero Carbon Targets in a recent report by Oxfam International, Strengthening the Net, could be a dangerous obstacle to prioritizing reducing carbon emissions.
  - More than 100 countries have set or considered net-zero or neutral target releases.

### India's scenario

- **India is now the fourth largest emitter of greenhouse gases after China, the United States, and the European Union**, and according to the IPCC Sixth Review Report, it will be among the countries most severely affected countries.
- India will simply focus on advancing the goals of transition to green energy and it is unlikely that it will follow the highly recommended net-zero system.
- India is committed towards having **175-gigawatt renewable energy** by 2030 under the **2015 Paris Climate Treaty** and **reducing carbon intensity of the Gross Domestic Product (GDP) by 33-35% by 2030.**
- The principle that India believes in is of '**common but separate responsibility**', as developed countries should take the first steps to reduce their exports significantly.
  - In addition, developed countries should compensate poor countries for the damage done to the environment as a result of their previous emissions.
- A recent study by the Think tank Council for Energy Environment and Water Projects revealed that, for India to reach the net-zero target even by 2070, coal consumption,

especially electricity generation, will need to be peak by 2040 and drop by 99 per cent between 2040 and 2060 and the consumption of crude oil across sectors would also need to peak by 2050 and fall substantially by 90 per cent between 2050 and 2070.

## US'S LAKE TAHOE IMPACTED BY CLIMATE CHANGE

### ◎ CONTEXT:

The Lake Tahoe in the US has dropped below its natural rim and halted flows into the Truckee River due to drought fueled by climate change. It is a historically cyclical event that's occurring sooner and more often than it used to.

### Key-points

- **Lake Tahoe** is the **largest alpine lake** in **North America** and the second deepest lake in the US after **Crater Lake** in Oregon.
  - **Alpine lakes** are dams or ponds at higher altitude, usually above tree line or sea level.

### Important Lakes in North America

- Great Lakes, chain of deep freshwater lakes in east-central North America comprising Lake Michigan, Superior, Ontario, Erie and Huron.
  - ▶ The lakes provide a natural border between Canada and the United States, except for **Lake Michigan**.

### Impact of Climate Change on Lakes

- **Less ice Covered:** If the air temperature rises by 4 ° C, more than 1,00,000 lakes and pools with less ice cover are at risk of ice free winters.
- **LSWT Rising:** Overhead Lake Water Templates have grown worldwide, equal to or higher than the air temperature.
- **Increased evaporation rate:** It is projected that the global evaporation rate will increase by 16% by 2100, with regional variations depending on factors such as ice cover, stratification, wind speed and solar radiation.
  - The tendency for the lakes to form separate and distinct thermal layers during warm weather is called Stratification of the lake.
- Affecting Lake Water Storage: Global lake water storage is sensitive to climate change, but with substantial regional variability, and the magnitude of future changes in lake water storage remains uncertain.

## ABHYAS: HIGH-SPEED EXPENDABLE AERIAL TARGET

### ◎ CONTEXT:

The Abhyas High-speed Expendable Aerial Target (HEAT) has been successfully flight- tested by Defence Research and Development Organisation (DRDO) from the Integrated Test Range in Chandipur, off the Bay of Bengal coast in Odisha recently.

### Key-points

- The ABHYAS has been **designed and developed** by **Aeronautical Development Establishment (ADE)** of DRDO.
  - ADE is involved in the construction and development of state-of-the-art **Unmanned Aerial Vehicles (UAV)** and **Aeronautical Systems** and technologies to meet the needs of **Indian Armed Forces (IAF)**.

- It is a leading **Aeronautical Systems Design laboratory** under the **DRDO**.
- **Features:** To support a long-lasting aircraft at subsonic speed, it is powered by a gas turbine engine.
  - The vehicle is designed for fully automatic aircraft and its check-out is performed using a laptop-based **Ground Control Station (GCS)**.
  - Based on **Inertial Navigation System (INS)** navigation and **Flight Control Computer (FCC)**, it is installed with **MEMS (Micro-Electro-Mechanical Systems)** for guidance and control.
- **Utility:** It will provide a realistic scenario that threatens the practice of weapons systems and will be used as a test target for various missile systems.

#### Other Recent Developments by DRDO

- In October 2020, the DRDO conducted a successful flight test of the **Supersonic Missile Assisted Release of Torpedo (SMART)** from Wheeler Island off the coast of Odisha.
- In February 2021, India successfully test-fired indigenously-developed anti-tank guided missile systems '**Dhruvastra**' and '**Helina**'.
- In June 2021, a new generation **nuclear capable ballistic missile Agni-P (Prime)** was successfully test-fired by the DRDO.
- In July 2021, DRDO launched the **Man Portable Anti Tank Guided Missile (MPATGM)** and the **Akash-NG (New Generation)**.
- In September 2021, the DRDO tested a new version of the **Akash Missile – 'Akash Prime'** – from the Integrated Test Range (ITR), Chandipur, Odisha.

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## SUCCESSFUL TEST OF 'AGNI 5' AND ITS STRATEGIC IMPORTANCE

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- ◎ **CONTEXT:** **India successfully test-fired 'Agni-5', a surface-to-surface ballistic missile, from APJ Abdul Kalam Island off Odisha coast.**

#### Important facts about the missile

- The successful test of Agni-5 is in line with India's stated policy to have '**credible minimum deterrence**' that underpins the commitment to '**No First Use**'.
- The missile is already inducted into services and is operated by the **Strategic Forces Command (SFC)**.
  - SFC is a key tri-services formation that manages and administers all the strategic forces and falls under the purview of the **Nuclear Command Authority of India**.
- The successful testing of Agni-5 marked an important milestone in defence capabilities of India.
- It uses a three-stage solid-fuelled engine, was carried out recently, signifying India's defence capabilities.
- The missile is capable of carrying nuclear warheads and can strike targets at ranges up to **5,000 km** with a high degree of accuracy.

#### Nature

- Canistered **surface-to-surface ballistic missile**
- Canisterization reduces the time required for launch & improving storage & ability

## Background

- The first test of the Agni-5 missile was carried out in April 2012. Last test was conducted around three years ago in 2018.
- They are the mainstay of **India's nuclear launch capability**.

## How it puts India's strategic stance in the region?

- **Strategic signaling:** This test being conducted is being looked at strong strategic posturing towards China in the context of a 17-month long stand-off.
- **China's capabilities:** In the context of a test of nuclear-capable hypersonic glide vehicle conducted by China in August this year that circled the globe before speeding towards its target.

### Nuclear Triad

- A nuclear triad comprises land-based ICBM (inter-continental ballistic missile), SLBM (**INS Arihant**) and strategic bomber aircraft (sukhoi-30 and Mirage-2000) .
- These tests are a strong reminder to the adversaries about our capabilities.

### Agni Missile Family

- The name Agni originates from the Sanskrit word for fire and is taken in the context of Agni being one of the five primary elements of Panch Mahabhutas.
  - ▶ **Agni I:** Range of 700-800 km
  - ▶ **Agni II:** Range more than 2000 km
  - ▶ **Agni III:** Range of more than 2,500 Km
  - ▶ **Agni IV:** Range is more than 3,500 km and can fire from a road mobile launcher
  - ▶ **Agni-V:** The longest of the Agni series, **an Inter-Continental Ballistic Missile (ICBM)** with a range of over 5,000 km

### No-first use policy

- India maintains the 'Non-use of nuclear weapons against non-nuclear-weapon states', the doctrine states that 'in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons.'

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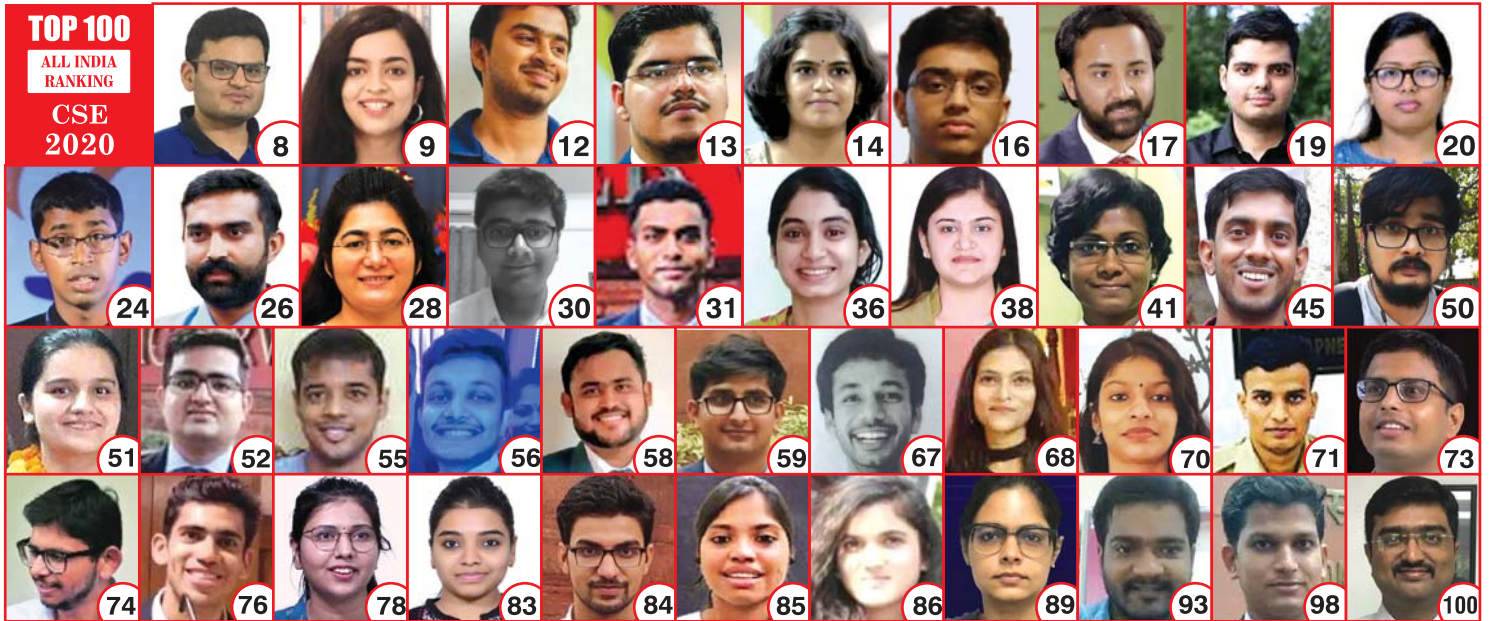


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