



National Quantum Mission

For Prelims: National Quantum Mission, Quantum Technology

For Mains: National Quantum Mission and its role in developing Quantum Technology, Quantum Technology: Potential advantages and disadvantages.

Why in News?

Recently, the union cabinet chaired by the Prime Minister has approved the National Quantum Mission (NQM) to aid scientific and industrial research and development in quantum technology.

What is National Quantum Mission?

▪ About:

- It'll be implemented by **the Department of Science & Technology (DST)** under the Ministry of Science & Technology.
- The mission **planned for 2023-2031** aims to seed, nurture, and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in **Quantum Technology (QT)**.
- With the launch of this mission, **India will be the seventh country to have a dedicated quantum mission** after the US, Austria, Finland, France, Canada and China.

▪ Salient features of NQM:

- It will target developing **intermediate scale quantum computers with 50-100 physical qubits in 5 years** and **50-1000 physical qubits in 8 years**.
 - Just like bits (1 and 0) are the basic units by which computers process information, **'qubits' or 'quantum bits' are the units of process by quantum computers.**
- The mission **will help develop magnetometers** with high sensitivity for precision timing (atomic clocks), communications, and navigation.
- It will also support design and synthesis of quantum materials such as **superconductors, novel semiconductor structures** and topological materials for **fabrication of quantum devices**.
- The mission will also help developing:
 - **Satellite based secure quantum communications** between ground stations over a range of 2000 km within India.
 - **Long distance secure quantum communications** with other countries
 - **Inter-city quantum key distribution** over 2000 km
 - **Multi-node Quantum network** with quantum memories
- **Four Thematic Hubs (T-Hubs)** would be set up in top academic and National R&D institutes on the domains of Quantum Technology:
 - **Quantum computation**
 - **Quantum communication**
 - Quantum Sensing & Metrology
 - Quantum Materials & Devices

▪ Significance:

- This will **accelerate QT led economic growth** and make India one of the leading nations in the development of Quantum Technologies & Applications (QTA) ranging from healthcare and diagnostics, defence, energy and data security.
- It will work towards **indigenously building quantum-based computers which are far more powerful** and are able to solve the most complex problems in a highly secure manner.

What is Quantum Technology?

- **Quantum technology** is a field of science and engineering that deals with the principles of quantum mechanics, which is the study of the behaviour of matter and energy at the smallest scale.
 - Quantum mechanics is the branch of physics that describes the behavior of matter and energy at the atomic and subatomic level.

What are the Advantages of Quantum Technology?

- **Increased Computing Power:** Quantum computers are very much **faster than the computers we today have**. They also have the capability to solve complex problems that are currently beyond our reach.
- **Improved Security:** Because they rely on principles of quantum mechanics, **quantum encryption techniques are much more secure** than traditional encryption methods.
- **Faster Communication:** Quantum communication networks **can transmit information faster and more securely** than traditional networks, with the potential for completely unhackable communication.
- **Enhanced AI:** Quantum machine learning algorithms can potentially enable **more efficient and accurate training of [Artificial Intelligence models](#)**.
- **Better Sensing and Measurement:** Quantum sensors can detect extremely small changes in the environment, making **them useful in areas such as medical diagnostics, environmental monitoring, and geological exploration**.

What are the Disadvantages of Quantum Technology?

- **Expensive:** The technology requires specialized equipment and materials which make it more expensive than the traditional technologies.
- **Limited Applications:** Currently, quantum technology is **only useful for specific applications** such as cryptography, quantum computing, and quantum communication.
- **Sensitivity to Environment:** Quantum technology is **highly sensitive to environmental interference**, such as temperature changes, magnetic fields, and vibrations.
 - Qubits are easily disrupted by their surroundings which can cause them to **lose their quantum properties and make mistakes in calculations**.
- **Limited Control:** It is difficult to control and manipulate quantum systems. **Quantum-powered AI could create unintended consequences**.
 - Quantum-powered AI systems could potentially arrive at conclusions that are unexpected or difficult to explain as they operate on principles that are fundamentally different from classical computing.

Conclusion

Overall, while quantum technology has enormous potential, there are still many challenges that must be overcome before it can be widely adopted.

[Source: TH](#)

Civil Union and Marriage

For Prelims: Right to privacy, right to marriage, Sec 377 IPC, Special Marriage Act.

For Mains: Legalization of same sex marriages in India and the challenges.

Why in News?

The Centre has contested the hearing of petitions seeking legal recognition of [same sex marriage](#) by the [Supreme Court](#) on the grounds of judiciary's right to confer legal recognition on the "socio-legal institution" of marriage.

- In his response to the Centre's objections, the [CJI](#) clarified that the hearing's scope would be limited to developing a notion of a "civil union" that finds legal recognition under the [Special Marriage Act, 1954](#).

What is a Civil Union?

- **About:**
 - A "civil union" is a **legal status that grants same-sex couples certain rights** and responsibilities that are normally given to married couples.
 - Although a civil union resembles a marriage and brings with it employment, inheritance, property, and parental rights, there are some differences between the two.
- **Civil Union vs Marriage:**
 - Civil Union is a marriage like legal sanction provided to two individuals generally of same sex.
 - Marriage is a religious institution recognized by law that allows two individuals (a man and woman) to marry.
 - Since same sex marriage is outside the scope of religion-based definition of marriage, **Civil Union is a tool devised to grant similar legal protection to the couples who opt for the same sex marriage.**
- **Other Countries that Allow Civil Unions:**
 - **USA:** In the year 2015, the Supreme Court of the United States (SCOTUS) legalised same-sex marriages across the nation with its landmark ruling in "**Obergefell v. Hodges**".
 - Prior to 2015, a majority of states in US had Civil Union laws that allowed same sex couples to marry.
 - **Sweden:** Before 2009, LGBTQ couples could apply for civil unions and enjoy benefits such as the right to adopt. Sweden legalised same sex marriages in 2009.
 - Similarly, **countries like Brazil, Uruguay, and Chile had also recognised the right of same sex couples** to enter into civil unions, even before they formally recognised their legal right to marriage.

What is the Status of Same Sex Marriages in India?

- Although, the Supreme Court in [Navtej Singh Johar vs Union of India \(2018\)](#) case decriminalised homosexuality under [Sec 377 of IPC](#), but **same sex marriages are yet to get legal status in India.**
- Since then, several petitions have been filed before the SC and the judiciary has started hearing of such petitions and **looking up for the scope of Civil Unions under the Special Marriage Act, 1954.**
 - A marriage under the Special Marriage Act, 1954 **allows people from two different religious backgrounds to come together in the bond of marriage** which is not allowed under personal/religious laws.
- **Important SC Judgements on LGBTQ Rights:**

- **KS Puttaswamy v Union of India, 2017:** In this judgement on Right to privacy, the Supreme Court held that **Sexual Orientation of any individual comes under his/her Right to Privacy**.
 - This Landmark judgement became the basis of declaring Sec 377 of IPC – under which Homosexuality was a crime – unconstitutional.
- **Navtej Singh Johar vs Union of India, 2018:** The Supreme Court struck down the **Sec 377 of IPC** to the extent it criminalized homosexuality.
 - It was also opined that there cannot be discrimination in law based on sexual orientation and gender.
- **Deepika Singh vs Central Administrative Services, 2022:** In this case, the SC expanded the definition of a family and observed that **familial relationships may also include unmarried partnerships or queer relationships** and these atypical families should enjoy equal protection and benefits under the law.
- Moreover, the Supreme Court in various judgements such as **Lata Singh vs State of UP (2006), Safin Jahan vs Ashokan (2018), Shakti Vahini vs Union of India (2018) and Laxmibai Chandarangi vs State of Karnataka (2021)** has held that choosing a life partner is a Fundamental Right under Article 21.

What are the Arguments Regarding Legalising Same sex marriage?

▪ Arguments in Favour:

- **'Gender' has a Wider Definition:** The SC has said that here is no absolute concept of a man or a woman. It is far more complex than just their physical anatomy.
- **Change is Fundamental Law:** Society keeps on evolving with time and laws should also evolve with the change in society.
- **Lesser Legal Complicacies:** The personal laws need not be amended, just a wider interpretation of Special Marriage Act, 1954 would be enough to legalize same sex marriage.
- **Upholding Equality:** Homosexual couples must also be given privacy and freedom and they must enjoy the same rights available to heterosexual couples.
 - Also, they should not be treated as lesser mortals and asked to remain content just because homosexuality has been decriminalised.

▪ Arguments Against:

- **Societal Acceptance:** It is argued that society may not accept that same-sex marriages ought to be on par with heterosexual marriages.
 - Acceptance of any relationship by society is never dependent on legislations or judgments.
- **Issues with Widening the Scope: Conferring wider definition to the term 'Gender could be problematic;** if a man having a biological attribute of a man starts recognizing himself as a woman, it will be problem for the authorities **whether to treat him as a man or woman under the law**.
- **Legal Complications:** Legalizing same sex marriage **could lead to several legal hurdles**. Like the National Commission for the Protection of Child Rights (NCPDR) has argued that granting legal status would go against Juvenile Justice Act, 2015.
 - For example, Sec 5(2)A of the act prohibits a single male to adopt a girl child. This could also be problematic for a gay couple to adopt a child.
 - Moreover, **marriage is under the concurrent list**, legalisation would require lots of laws to be amended.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. Which Article of the Constitution of India safeguards one's right to marry the person of one's choice? (2019)

- (a) Article 19
- (b) Article 21
- (c) Article 25
- (d) Article 29

Ans: (b)

[Source: IE](#)

Heatwaves

For Prelims: [Heatwaves](#), [Indian Meteorological Department \(IMD\)](#), [global warming](#), [urban heat island effect](#), [El Nino](#), [Sendai Framework for Disaster Risk Reduction 2015-30](#), [Nature-based solutions](#), [Intergovernmental Panel on Climate Change \(IPCC\)](#), [Passive cooling technology](#).

For Mains: Criterion for Declaring Heat Wave in India, Impacts of Heat Waves.

Why in News?

Recently, casualties were observed from an apparent heat stroke while attending a **government award function in Navi Mumbai**. This incident highlights the **potential risks from [heatwaves](#)**, which are **expected to increase in intensity and frequency due to climate change**.

- Several factors, such as **long-distance travel**, **underlying health conditions**, and lack of access to drinking water and medical attention in large gatherings, can **increase vulnerability to [heat strokes](#)**.

What are Heat Waves?

- **About:**
 - Heatwaves are **prolonged periods of excessively hot weather** that can cause adverse impacts on **human health, the environment, and the economy**.
 - India, being a tropical country, is **particularly vulnerable to heatwaves**, which have become more frequent and intense in recent years.
- **Criteria for Declaring Heat Wave in India:**
 - **Plains and Hilly Regions:**
 - Heat wave is considered if the **maximum temperature of a station reaches at least 40°C or more for Plains** and at least 30°C or more for Hilly regions.
 - **Based on Departure from Normal Heat Wave:** Departure from normal is **4.50°C to 6.40°C**.
 - **Severe Heat Wave:** Departure from normal is >6.40°C.
 - **Based on Actual Maximum Temperature Heat Wave:** When actual maximum temperature $\geq 45^\circ\text{C}$.
 - **Severe Heat Wave:** When actual maximum temperature $\geq 47^\circ\text{C}$.
 - If the above criteria are met in at least 2 stations in a Meteorological subdivision for at least two consecutive days, it is declared so on the second day.
 - **Coastal Areas:**
 - When maximum temperature departure is **4.50°C or more from normal**, a heat wave may be described provided the actual **maximum temperature is 37°C or more**.
- **Fatality:**
 - High temperature in itself is not fatal but the combination of **high temperature and high humidity**, referred to as the [wet bulb temperature](#), is what **makes heatwaves deadly**.

- **High moisture content in the atmosphere makes it difficult for the sweat to evaporate and bodies to cool down**, as a result of which the internal body temperature increases sharply and is often fatal.
- **Causes:**
 - **Global Warming:** One of the primary causes of heatwaves in India is [global warming](#), which refers to the long-term increase in Earth's average temperature due to human activities such as burning [fossil fuels](#), **deforestation, and industrial activities**.
 - Global warming can result in higher temperatures and changes in **weather patterns**, leading to heatwaves.
 - **Urbanisation:** Rapid [urbanisation](#) and the growth of concrete jungles in cities can lead to the phenomenon known as the ["urban heat island effect."](#)
 - Urban areas with high population density, buildings, and concrete surfaces absorb and retain more heat, **leading to higher temperatures, particularly during heatwaves.**
 - **El Nino Effect: During an [El Nino](#) event**, the warming of the Pacific Ocean can affect **global weather patterns, causing changes in temperature, rainfall, and wind patterns around the world.**
 - The summer of the year 2023 is predicted to be **excessively hot because of the [end of the strong La Nina phase in equatorial Pacific Ocean](#) and the earlier-than-expected occurrence of **El Nino** event.**
- **Impacts:**
 - **Impact on Health:**
 - Rapid rises in heat gain can **compromise the body's ability to regulate temperature** and can result in a cascade of illnesses, including heat cramps, heat exhaustion, heatstroke, and hyperthermia.
 - Deaths and hospitalizations from heat can occur extremely rapidly or have a lagged effect.
 - **Impact on Water Resources:** Heatwaves can **exacerbate [water scarcity](#) issues in India**; drying up of water bodies, reduced water availability for agriculture and domestic use, and increased competition for water resources.
 - This can lead to **conflicts over water, affect irrigation practices, and impact water-dependent industries.**
 - **Impact on Energy:** Heatwaves can **increase electricity demand for cooling** purposes, leading to strain on power grids and potential blackouts.
 - This can disrupt economic activities, **affect productivity, and impact vulnerable populations** who may not have access to reliable electricity for cooling during heatwaves.

Way Forward

- **A Heat Waves Action Plan:** The adverse impacts of heat waves indicate that **effective disaster adaptation strategies** and more robust disaster management policies are required in **heatwave zones** to lessen the impact of heatwaves.
 - As deaths due to heatwaves are preventable, the **government must prioritise preparing a long-term action plan to safeguard human lives, livestock, and wildlife.**
 - Effective implementation of the [Sendai Framework for Disaster Risk Reduction 2015-30](#) with the State playing a leading role and sharing responsibility with other stakeholders is now the need of the hour.
- **Implementing Climate Action Plans:** National Action Plan for Climate Change (NAPCC) should be implemented in true spirit for inclusive growth and ecological sustainability.
 - [Nature-based solutions](#) should be taken into account, not just for tackling climate change induced heat waves but also doing it in a way that is **ethical and promoting intergenerational justice.**
- **Sustainable Cooling:** [Passive cooling technology](#), a widely-used strategy to create naturally ventilated buildings, can be a **vital alternative to address the urban heat island for residential and commercial buildings.**
 - The [Intergovernmental Panel on Climate Change \(IPCC\)](#) in the third part of its AR6 stated that **ancient Indian building designs that have used this technology, can be**

adapted to modern facilities in the context of global warming.

- **Heatwave Mitigation Plans:** Heat-related fatalities can be mitigated through effective measures such as **access to water, oral rehydration solutions (ORS), and shade, especially at public places** along with **flexible working hours in workplaces**, and **special arrangements for outdoor workers**.
 - Proactive implementation by **vigilant local administration, monitored by higher authorities, is also crucial.**

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. What are the possible limitations of India in mitigating global warming at present and in the immediate future? (2010)

1. Appropriate alternate technologies are not sufficiently available.
2. India cannot invest huge funds in research and development.
3. Many developed countries have already set up their polluting industries in India.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (a)

[Source: IE](#)

Wildlife Protection Act, 1972

For Prelims: [Wildlife Protection Act 1972](#), Project Tiger, [CITES](#)

For Mains: [Wildlife Conservation](#). Significance of Wildlife Conservation, success and challenges involved in Wildlife Protection Act 1972.

Why in News?

The [Wildlife \(Protection\) Act, 1972](#) has completed 51 years since its inception, and over the years, it has been successful in protecting several endangered species. The act has **played a critical role in conserving the country's diverse wildlife.**

What is the Wildlife (Protection) Act, 1972?

- **About:**
 - The **Wild Life (Protection) Act, of 1972** provides a **legal framework for the protection of various species of wild animals and plants**, management of their habitats, regulation, and control of trade in wild animals, plants, and products made from

them

- The act also lists schedules of plants and animals that are afforded varying degrees of protection and monitoring by the government.
- India's entry to the [CITES \(Convention on International Trade in Endangered Species of Wild Fauna and Flora\)](#) was made easier by the Wildlife Act.
- Earlier, **Jammu and Kashmir was not covered by the Wildlife Protection Act of 1972**. The Indian Wildlife Protection Act now applies to J&K as a result of the [reorganisation act](#).

▪ **Constitutional Provisions for the Wildlife Act:**

- The [42nd Amendment Act](#), 1976, **Forests and Protection of Wild Animals and Birds was transferred from State to Concurrent List**.
- Article 51 A (g) of the Constitution states that it shall be the [fundamental duty](#) of every citizen to protect and improve the natural environment including forests and Wildlife.
- Article 48 A in the [Directive Principles of State policy](#), mandates that the State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.

▪ **Schedules under the Act:**

◦ **Schedule I:**

- It covers **endangered species that need rigorous protection**.
- A person is **liable to the harshest penalties for violation** of the law under this Schedule.
- Species under this Schedule **are prohibited to be hunted throughout India**, except under threat to human life or in case of a disease that is beyond recovery.
- Some of the animals listed under Schedule I include **the Black Buck, Snow Leopard, Himalayan Bear and Asiatic Cheetah**.

◦ **Schedule II:**

- **Animals under this list are also accorded high protection with the prohibition on their trade**.
- Some of the animals listed under Schedule II include **Assamese Macaque, Himalayan Black Bear and Indian Cobra**.

◦ **Schedule III & IV:**

- Species that are **not endangered are included under Schedule III and IV**.
- This includes **protected species with hunting prohibited but the penalty for any violation is less compared to the first two schedules**.
- Animals protected under Schedule III include Chital (spotted deer), Bharal (blue sheep), Hyena, and Sambhar (deer).
- Animals protected under Schedule IV include **Flamingo, Hares, Falcons, Kingfishers, Magpie, and Horseshoes Crabs**.

◦ **Schedule V:**

- This schedule contains animals that are considered as [vermin](#) (small wild animals that carry disease and destroy plants and food). These animals can be hunted.
- It includes only four species of wild animals: **Common Crows, Fruit Bats, Rats, and Mice**.

◦ **Schedule VI:**

- It provides for **regulation in the cultivation of a specified plant** and restricts its possession, sale, and transportation.
- Both cultivation and trade of specified plants can only be carried out with the prior permission of the competent authority.
- Plants protected under Schedule VI include **Beddomes' cycad (Native to India), Blue Vanda (Blue Orchid), Red Vanda (Red Orchid), Kuth (Saussurea lappa), Slipper orchids (Paphiopedilum spp.) and Pitcher plant (Nepenthes khasiana)**.

▪ **Bodies Constituted under the Act:**

◦ [National Board for Wildlife \(NBWL\):](#)

- **NBWL serves as an apex body for the review of all wildlife-related matters** and for the approval of projects in and around national parks and sanctuaries.

◦ **State Board for Wildlife (SBWL):**

- The Chief Minister of the state/UT is the chairperson of the board.

- **Central Zoo Authority:**
 - The [Central Zoo Authority](#) consists of a total 10 members including the Chairperson and a Member-Secretary.
 - The **authority provides recognition to zoos and is also tasked with regulating the zoos across the country.**
 - It lays down **guidelines and prescribes rules under which animals may be transferred among zoos nationally and internationally.**
- **National Tiger Conservation Authority (NTCA):**
 - Following the recommendations of the Tiger Task Force, **NTCA** was constituted in 2005 for strengthening tiger conservation.
 - The Union Environment Minister is the Chairperson of NTCA and the State Environment Minister is the Vice-Chairperson.
 - The Central Government on the recommendations of NTCA declares an area as a [Tiger Reserve](#).
- **Wildlife Crime Control Bureau (WCCB):**
 - The act provided for the constitution of **WCCB** to combat organized wildlife crime in the country.
- **Protected Areas Under the Act:**
 - There are five types of protected areas under the Act which are: **Sanctuary, National Parks, Conservation Reserves, Community Reserves and [Tiger Reserves](#).**
- **Important Amendments done to the Act:**
 - **Wildlife (Protection) Amendment Act of 1991:**
 - This amendment **strengthened the penalties and fines for wildlife-related offences** and also **introduced provisions for the protection of endangered species.**
 - **Wildlife (Protection) Amendment Act of 2002:**
 - This amendment introduced the **concept of [community reserves and conservation reserves as protected areas](#).**
 - **Wildlife (Protection) Amendment Act of 2006:**
 - This amendment dealt with the issue of **human-wildlife conflict** and provided for the creation of a [National Tiger Conservation Authority \(NTCA\)](#) to manage and **protect tiger reserves.**
 - It also made provisions for the creation of a **Tiger and Other Endangered Species Crime Control Bureau** to deal with wildlife-related crimes.
 - **Wildlife (Protection) Amendment Act, 2022:**
 - The Act seeks to **increase the species** protected under the law and implement CITES.
 - The **number of schedules has been reduced to four:**
 - **Schedule I** containing animal species enjoying the highest level of protection.
 - **Schedule II** for animal species subject to a lesser degree of protection.
 - **Schedule III** for protected plant species, and
 - **Schedule IV** for scheduled specimens under CITES.
 - The Act permits the **use of elephants** for '**religious or any other purposes**'.
 - The penalties have also been increased for general and specially protected animals' violations.

What are the Initiatives of Wildlife Development Under WPA, 1972?

- **Project Tiger Conservation:**
 - [Project Tiger Conservation](#) to conserve the population of tigers. Launched in 1973, the project is still ongoing with the help of the Ministry of Environment, Forest, and Climate Change.
- **Project Elephant:**
 - [Project Elephant](#) is launched by the central government in 1992 to protect and conserve elephants.
 - A total of 88 corridors were identified under the Act.
- **Wildlife Corridors:**

- Wildlife corridors **are connected with the protected areas and allow the movement of animals without interfering with human settlements**. Recently, India's first urban wildlife corridor is being planned between New Delhi and Haryana. The corridor is near the [Asola Bhatti wildlife sanctuary](#) to provide safe passage to wildlife animals such as leopards and other animals.

What are the Challenges in WPA, 1972?

- **Lack of Awareness:**
 - Despite being in existence for over 50 years, the **Act has not been able to reach the masses effectively**. Many people are still unaware of the importance of wildlife conservation and the laws surrounding it.
- **Human-Wildlife Conflict:**
 - With the **increase in human population and the encroachment of wildlife habitats, there has been a rise in human-wildlife conflict**. This often leads to the killing of wildlife, which is illegal under the WPA.
- **Illegal Wildlife Trade:**
 - India has observed a significant increase in illegal wildlife trade, which is a major threat to the country's wildlife. Despite stringent laws, poaching and illegal trade in wildlife products continue to thrive.
- **Lack of Coordination:**
 - There is often a **lack of coordination between the forest department and other government agencies such as the police, customs, and revenue departments**.
 - This makes it difficult to effectively enforce the WPA and curb illegal wildlife trade.
- **Inadequate Penalties:**
 - The penalties for wildlife crimes under the WPA are not stringent enough to act as a deterrent. The fines and sentences are often too low to make an impact on the offenders.
- **Lack of community participation:**
 - Conservation efforts cannot be successful without the participation of **local communities**. However, there is often a lack of community participation in wildlife conservation efforts.
- **Climate Change:**
 - Climate change is a significant threat to wildlife habitats, and it is likely to create threats to existing wildlife. The WPA needs to take into account the impact of climate change on wildlife and their habitats.

Conclusion

- The WPA 1972 has been in existence for more than 50 years, but it faces several challenges. Addressing these challenges will require a concerted effort from the government, civil society, and the public. Effective enforcement, community participation, and awareness-raising campaigns are some of the steps that can be taken to protect India's wildlife and their habitats.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. If a particular plant species is placed under Schedule VI of the Wildlife Protection Act, 1972, what is the implication? (2020)

- (a) A licence is required to cultivate that plant.
- (b) Such a plant cannot be cultivated under any circumstances.
- (c) It is a Genetically Modified crop plant.
- (d) Such a plant is invasive and harmful to the ecosystem.

Ans: (a)

Source: TH

Russia-India Bilateral Trade

For Prelims: Russia-India Inter-Governmental Commission Meeting, [Trade Imbalance](#), [Oil](#), [Fertilizers](#), [Indo-Pacific region](#).

For Mains: [Russia-India](#) Bilateral Trade.

Why in News?

Recently, Russia's Deputy Prime Minister has attended the **24th Russia-India Inter-Governmental Commission (IGC) meeting** in India.

- Russia has expressed its interest in **importing manufacturing equipment**, including machinery, from India to replace those of Western origin.



What are the Key Highlights of the Meeting?

- Both countries reviewed the defense cooperation between India and Russia, which has been facing challenges related to deliveries and payments due to the [ongoing war in Ukraine](#).
- The two countries discussed the **plans that India has for Russia's far eastern region**, which is an essential part of Russia's strategy in the [Indo-Pacific region](#).
- They held discussions on bilateral trade efforts and the **identification of new industrial points that would provide additional impetus** for trade between the two countries.
 - Balance of trade currently **tilts in favor of Russia**, and hence, the two sides discussed **ways to bring more balance** in trade relations.
- Both sides also discussed a wide range of issues related to bilateral trade, economic, and humanitarian cooperation.
 - These discussions covered many areas of mutual interest, including those related to **technology, energy, healthcare, and education**.

What is the Status of India-Russia Trade Ties?

- India's total bilateral trade with Russia stood at ~USD 13 Billion in **2021-22** and **USD 8.14 Billion in 2020-21**.
- Russia is India's **seventh biggest trading partner**, up from **25th position in 2021**.
 - The US, China, UAE, Saudi Arabia, Iraq, and Indonesia were the **six countries that recorded higher volumes of trade with India** during the first five months of 2022-23.

What are the Concerns Related to Bilateral Trade?

- **Trade Imbalance:**
 - India's **Imports from Russia** accounted for **USD 17.23 Billion**, while India's exports to Moscow were only worth **USD 992.73 million**, resulting in a **negative trade balance** of USD 16.24 Billion in 2020-21.
 - Russia's share in India's total trade has **increased to 3.54%, up from 1.27% in 2021-22**.
 - While Russia's share in India's total trade was **2.1% in 1997-98**, it has hovered below 2% for the last 25 years.
- **Factors Causing Trade Imbalance:**
 - The sudden jump in imports from Russia, **mainly oil and fertilizers**, which began to surge earlier in 2022, is the **main driver behind this increase in bilateral trade**.
 - **Petroleum oil** and other fuel items **accounted for 84% of India's total imports** from Russia, while **Fertilizers were second**.
 - Together, fertilizers and fuel accounted for **over 91% of the total imports** from Russia this year.

How can Trade Imbalance Between Russia and India be Addressed?

- **Indian Export to Russia:**
 - Both the countries are looking to increase Indian imports, particularly in the **machinery sector**, where India has advanced production capabilities.
- **Rupee-Ruble Mechanism:**
 - One of the challenges facing the trade relationship is payments, logistics, and certifications. Both sides are in talks to resort to the **Rupee-Ruble mechanism** to safeguard bilateral trade from the impact of western sanctions.
- **New Industrial Points:**
 - Both are looking to identify new industrial points that can give additional impetus for trade, and to negotiate a **Free Trade Agreement**.

What are the Different Aspects of Indo-Russia Relations?

- **Historical Background:**
 - During the **Cold War**, **India and the Soviet Union** had a strong strategic, military, economic and diplomatic relationship. After the Dissolution of the Soviet Union, Russia inherited its close relationship with India which resulted in both nations sharing a Special Strategic Relation.
 - However, the relations have taken a steep downfall over the past few years, especially in the post-Covid scenario. One of the biggest causes for this is **Russia's close relations with China and Pakistan**, which have caused many geopolitical issues in the past few years for India.
- **Political Relations:**
 - Two Inter-Governmental Commissions - **one on Trade, Economic, Scientific, Technological and Cultural Cooperation (IRIGC-TEC)**, and **another on Military-Technical Cooperation (IRIGC- MTC)**, meet annually.
- **Defence and Security Relations:**
 - Both countries regularly conduct the Tri-Services exercise '**INDRA**'.
 - The joint military programmes between India and Russia include:
 - **BrahMos cruise missile programme**
 - 5th generation fighter jet programme
 - Sukhoi Su-30MKI programme

- The military hardware purchased/leased by India from Russia includes:
 - [S-400 Triumph](#)
 - [Kamov Ka-226 200 to be made in India under the Make in India initiative](#)
 - [T-90S Bhishma](#)
 - [INS Vikramaditya aircraft carrier programme.](#)
- **Nuclear Energy:**
 - Kudankulam Nuclear Power Plant (KKNPP) is being constructed within the scope of the Russia-India Inter-Governmental Agreement.
 - Both India and Russia are implementing Rooppur Nuclear Power Project in Bangladesh.

Conclusion

- A multi-pronged approach that focuses on diversification, promotion of exports, negotiation of better trade deals, expansion of economic cooperation, and addressing structural issues **can help address the trade imbalance between India and Russia.**

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Recently, India signed a deal known as 'Action Plan for Prioritization and Implementation of Cooperation Areas in the Nuclear Field' with which of the following countries? (2019)

- (a) Japan
- (b) Russia
- (c) The United Kingdom
- (d) The United States of America

Ans: (b)

Mains

Q. What is the significance of Indo-US defence deals over Indo-Russian defence deals? Discuss with reference to stability in the Indo-Pacific region. (2020)

Source: TH

Ongoing Issues in Myanmar

For Prelims: [International Court of Justice \(ICJ\)](#), [International Court of Justice \(ICJ\)](#), [Rohingya](#), [United Nations General Assembly](#).

For Mains: Issues in Indian Neighbourhood, [International Genocide Convention](#), [Refugee Crisis](#).

Why in News?

The [International Court of Justice \(ICJ\)](#) recently rejected **Myanmar junta's appeal for a 10-month reprieve** to file a counter-memorial in response to the case accusing Myanmar of breaching the [International Genocide Convention](#).

- The case pertains to the **atrocities committed by the Myanmar military during the "clearing" operations in 2017 in Rakhine state**, resulting in displacement of [Rohingya people](#).

What Led to Instability in Myanmar?

- **Background - The country gained independence from Britain in 1948.** It was ruled by the armed forces from 1962 until 2011, when a new government began ushering in a return to civilian rule.
 - In the 2010s, the **military regime decided to transition the country towards democracy.** Although the armed forces remained powerful, political opponents were freed and elections were allowed to be held.
 - The **National League for Democracy** won the 2015 election, the country's first free and fair election participated by multiple parties, and **formed the government, raising hopes that the country is on its way to full transition to democracy.**
- **Military Coup:**
 - In the **November 2020 parliamentary election**, NLD secured the majority of the seats.
 - In the Myanmar's Parliament, the **military holds 25% of the total seats according to the 2008 military-drafted constitution** and several key ministerial positions are also reserved for military appointees.
 - When the **newly elected Myanmar lawmakers were to hold the first session of Parliament in 2021**, the military imposed a state of emergency for one year citing massive voting fraud in the parliamentary elections.
- **Associated Issues Highlighted by UN:**
 - Despite clear legal obligations for the military to protect civilians in the conduct of hostilities, there has been **consistent disregard for the related rules of international law.**
 - **Myanmar's economy has collapsed** with nearly half of the population now living below the [poverty line](#).
 - Since the coup was launched, the military has **imprisoned the democratically elected leadership of the country** and, in subsequent months, detained over 16,000 others.
- **The Rohingya Issue:**
 - On August 25, 2017, an outbreak of **violence in Myanmar's Rakhine State** forced hundreds of thousands of Rohingya people to flee their homes.
 - The **Rohingya community** has also been cut off from the **pro-democracy movement in Myanmar.**
 - **Over the years**, the pro-democracy movement in Myanmar has faced various challenges, including **restrictions on [freedom of speech](#)** and assembly, arbitrary arrests and detentions, censorship, and violence.
 - In January 2020, the **UN's top court (ICJ)** ordered the **Myanmar to take measures to protect members of its Rohingya community** from genocide.



What is India's Stand on Myanmar Issue?

- **In recent years**, India has expressed **concerns over the [human rights situation](#) in Myanmar**, particularly with regards to the **Rohingya crisis**.
 - India has called for **peaceful resolution of the issue**, respect for human rights, and **accountability for those responsible for human rights violations**.
- Though India has expressed deep concern over recent developments in Myanmar, **cutting off from the Myanmar military is not a viable option as India** has significant **economic and strategic interests in Myanmar** and its neighbourhood.
 - **India's stance on the issue of Myanmar** may evolve based on the evolving situation and **[geopolitical dynamics](#)** in the region.

Note: Genocide is an **internationally recognized crime** where acts are committed with the intent to destroy, in whole or in part, a national, ethnic, racial, or religious group.

What is International Genocide Convention?

- The **International Genocide Convention**, also known as the **Convention on the Prevention and Punishment of the Crime of Genocide**, is a treaty adopted by the **[United Nations General Assembly](#)** on December 9, 1948.
 - According to this Convention, genocide is a crime that can take place both in time of war as well as in time of peace.
 - The Convention requires **states to prevent and punish genocide, including enacting domestic legislation**.
- The definition of the crime of genocide, as set out in the Convention, has been widely adopted at both national and international levels, including in the 1998 Rome Statute of the International Criminal Court (ICC).
- **India is a signatory to this convention.**



ICJ vs. ICC



	International Court of Justice (ICJ) La Cour Internationale de Justice (CIJ)	International Criminal Court (ICC) La Cour pénale internationale (CPI)
Year Court Established	1946	2002
UN-Relationship	Official court of the U.N., commonly referred to as the "World Court."	Independent. May receive case referrals from the UN Security Council.
Location	The Hague, The Netherlands	The Hague, The Netherlands
Types of Cases	Contentious between parties & Advisory opinions	Criminal prosecution of individuals
Subject Matter	Sovereignty, boundary, & maritime disputes, trade, natural resources, human rights, treaty violations, treaty interpretation, and more.	Genocide, crimes against humanity, war crimes, crimes of aggression
Funding	UN-funded.	Assessed contribution from state parties to the Rome Statute; voluntary contributions from the U.N.; voluntary contributions from governments, international organizations, individuals, corporations and other entities.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Consider the following pairs: (2016)

	Community	sometimes mentioned in the news In the affairs of
1.	Kurd	Bangladesh
2.	Madhesi	Nepal
3.	Rohingya	Myanmar

Which of the pairs given above is/are correctly matched?

- (a) 1 and 2
- (b) 2 only
- (c) 2 and 3
- (d) 3 only

Ans- (c)

Mains

Q. How does illegal transborder migration pose a threat to India's security? Discuss the strategies to curb this, bringing out the factors which give impetus to such migration. (2014)

Managing Thermal Stress for Sustainable Livestock Farming

For Prelims: Sustainable Livestock Farming, Thermal Stress, Livestock Sector, Dairy, Rastriya Gokul Mission, AHIDF.

For Mains: Sustainable Livestock Farming.

Why in News?

Thermal stress poses a serious threat to **Sustainable Livestock Farming** in Kerala.

- In Kerala more than **95% of the cattle are crossbreeds with low thermal tolerance** compared with native Varieties. Kerala Veterinary and Animal Sciences University (KVASU) has started a project for selecting cattle in the context of climate change to cope with Thermal Stress.

What is Thermal Stress and its Impact on Livestock?

- **About:**
 - Thermal stress refers to the **physiological and metabolic responses** of animals to elevated temperatures that exceed their comfort zone.
 - It occurs when the **animal's body is unable to maintain its normal internal temperature**, and it results in a range of negative effects on the animal's health and productivity.
- **Causes:**
 - Thermal stress can be caused by a variety of factors such as **high ambient temperature, humidity, solar radiation, and lack of proper ventilation** or cooling mechanisms.
 - It is a significant concern in livestock farming as it can have **severe economic and animal welfare consequences**.
- **Impact of Thermal Stress:**
 - **Reduced Productivity:** High levels of thermal stress can cause a **decline in milk production, decreased feed intake, and weight loss** in livestock animals. This can lead to a reduction in productivity and income for farmers.
 - **Health Issues:** It can cause various health issues in livestock animals, including **respiratory distress, heat stroke, and dehydration**.
 - This can lead to **increased susceptibility to diseases**, lower immunity, and reduced lifespan.
 - **Economic Losses:** Livestock farmers may face significant economic losses due to thermal stress and consequent health issues and high mortality rates.
 - Farmers may **also have to incur additional costs to provide their animals with cooling mechanisms**, such as fans or sprinklers.
 - **Environmental Impact:** In order to mitigate the effects of thermal stress, farmers may have to **resort to unsustainable practices such as the excessive use of water for cooling**, which can have a negative impact on the environment.

How can Livestock be Prevented from Heat Stress?

- **Breeding Management:**
 - A good heat detection program is necessary to detect cows with marginal heat symptoms

as cows exhibit lesser heat symptoms during heat stress.

- It is always advisable to **continue** [AI \(Artificial Insemination\)](#) **breeding** instead of using bulls because in natural breeding both bulls and cows suffer infertility due to summer stress.
- **Cooling Systems:**
 - Fans in combination with water sprinkling facility can be **provided but excessive sprinkling should be avoided** as it can result in wet bedding and make animals prone to [mastitis](#) and other diseases. The farm should be well ventilated.
- **Feeding Management:**
 - Thermal stressed animals are more prone to lower **reproductive and productive performance**.
 - Feeding **high quality forages and balanced rations can decrease some of the effects of thermal stress** and boost animal performance.
- **Selection of Heat Tolerant Animals:**
 - Genetic selection of animals based on specific molecular genetic markers for heat tolerance **can be a boon to alleviate heat stress in cattle** and buffaloes by identifying the heat tolerant animals.

What is the Scenario of the Livestock Sector in India?

- The livestock sector grew at a [CAGR \(Compound Annual Growth Rate\)](#) of 7.9 % during 2014-15 to 2020- 21 (at constant prices), and its contribution to total agriculture GVA (Gross value added) has increased from 24.3 % in 2014-15 to 30.1 % in 2020-21.
- [Dairy](#) is the single-largest agri commodity in India. It **contributes 5% to the national economy** and employs 80 million dairy farmers directly.

What are the Initiatives Related to Livestock Sector?

- [Rashtriya Gokul Mission](#)
- [Animal Husbandry Infrastructure Development Fund \(AHIDF\)](#)
- [National Animal Disease Control Programme](#)
- [National Artificial Insemination Programme](#)
- [National Livestock Mission](#)

Way Forward

- Promoting Sustainable Livestock farming involves a multi-faceted approach that includes implementing proper animal welfare practices, adopting sustainable production methods, reducing waste and emissions, promoting local and regional markets, and providing education and training programs to farmers.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Consider the following statements: (2019)

1. Agricultural soils release nitrogen oxides into environment.
2. Cattle release ammonia into environment.
3. Poultry industry releases reactive nitrogen compounds into environment.

Which of the statements given above is/are correct?

(a) 1 and 3 only

- (b) 2 and 3 only
(c) 2 only
(d) 1, 2 and 3

Ans: (d)

Mains

Q. Livestock rearing has a big potential for providing non-farm employment and income in rural areas. Discuss suggesting suitable measures to promote this sector in India. **(2015)**

[Source: TH](#)

Drug Trafficking and Threat to Security

For Prelims: Methamphetamine, Fentanyl, [NDPS Act](#), [NCB](#), Golden Crescent and Golden Triangle, [National Fund for Control of Drug Abuse](#), [National Action Plan for Drug Demand Reduction](#)

For Mains: Drug Menace: Threats, Challenges, Initiatives taken, challenges

Why in News?

The **global drug trade is a major problem** that has put **security and law enforcement agencies on high alert worldwide**, including in India.

- Traditionally India has been seen **as sandwiched between the Death (Golden) Crescent and Death (Golden) Triangle** and is being flooded with drugs, especially heroin and methamphetamine, from these two regions by drug lords indirectly supported by intelligence setups.

Why is Drug Trafficking Dangerous?

- It is a **social problem that harms youth and families** and the money it generates is diverted for disruptive activities that have bearings on national security.
- Criminal networks traffic a range of drugs including cannabis, cocaine, heroin and methamphetamine.
 - **Methamphetamine (meth)** is an addictive drug and can cause considerable health adversities that can sometimes result in death.
 - Recently, USA has witnessed a new **zombie drug (fentanyl)** gripping its population.
 - This drug can cause raw wounds on the user's skin that can spread rapidly with repeated exposure.
 - It starts with ulcers, hardens to dead skin called eschar, and if left untreated can result in amputation.
- Drug trafficking is often associated with other forms of crime, such as [terrorism](#), [money laundering](#) or corruption.
- Trafficking routes can also be used by criminal networks to transport other illicit products.

What is the Status of Drug Addiction in India?

- In 2018, The Ministry of Social Justice and Empowerment has conducted a **“National Survey on Extent and Pattern of Substance Use in India”** in collaboration with AIIMS, New Delhi. The survey’s findings are as follows:

Name of the substance	Prevalence of use (Age Group 10-75 years)
Alcohol	14.6%
Cannabis	2.83%
Opiates/ Opioids	2.1%

- According to [World Drug Report 2022](#), India has the **fourth largest quantity of opium seized in 2020** at 5.2 tons and the third-highest amount of morphine was also seized in the same year at 0.7 tons.

From where the Illegal Drugs are trafficked in India?

- **Threats from Death (Golden) Crescent:** Comprises Afghanistan, Iran, and Pakistan.
 - Parts of Pakistan adjoining Afghanistan are also used by Pakistani drug traffickers to convert Afghan opium to heroin and then sent to India.
- **Threats from Death (Golden) Triangle:** Consists of Vietnam, Thailand, Laos and Myanmar.
 - The Shan and Kachin provinces of Myanmar bordering China also pose challenges.
- **China Factor:** These heroin and methamphetamine-producing areas have porous borders and are, reportedly, **under the control of rebel groups, indirectly supported by the Chinese.**
 - Illicit arms are manufactured here and supplied to underground groups active in India.
- According to the latest annual report by the [Narcotics Control Bureau \(NCB\)](#), **drug trafficking through sea routes in the Arabian Sea and the Bay of Bengal, estimated to account for around 70% of the total illegal drugs smuggled into India.**



What are the Initiatives taken by India to curb the Drug Menace?

- **The Narcotic Drugs and Psychotropic Substances Act, (NDPS) 1985:** It prohibits a person from producing, possessing, selling, purchasing, transporting, storing, and/or consuming any narcotic drug or psychotropic substance.
- **National Action Plan for Drug Demand Reduction:** The Ministry of Social Justice and Empowerment has prepared a plan for Drug Demand Reduction for the period of 2018-25. This plan focuses on:
 - Preventive education
 - Awareness generation
 - Identification, counselling, treatment and rehabilitation of drug dependent persons
 - Training and capacity building of service providers through collaborative efforts of

government and NGOs.

- **National Fund for Control of Drug Abuse:** It was created in accordance with a provision of the NDPS, 1985 for meeting the expenditure incurred in measures taken for:
 - Combating illicit trafficking
 - Controlling abuse of drugs and substances
 - Identifying, treating and rehabilitating addicts
 - Preventing drug abuse
 - Educating public against drug abuse
- **Nasha Mukh Bharat Campaign:** Nasha Mukh Bharat Abhiyaan (NMBA) was launched in 2020 to tackle the issue of Substance Abuse and a vision to make India Drug Free. It is a three-pronged attack combining:
 - The supply curb by Narcotics Control Bureau
 - Outreach and Awareness and Demand Reduction effort by Social Justice and Empowerment
 - Treatment through Health Department.
- **Initiatives of Indian Coast Guards:** The Indian Coast Guard (ICG) has developed a good synergy with the security agencies and with the coast guards of Sri Lanka, Maldives and Bangladesh for seizure of such drugs.
 - It seized 2,160 kgs of meth in two different instances recently near the Andaman and Nicobar Islands.
- **International Treaties and Conventions to Combat Drug Menace:** India is signatory of the following international treaties and conventions:
 - [United Nations \(UN\) Convention on Narcotic Drugs \(1961\)](#)
 - [UN Convention on Psychotropic Substances \(1971\)](#).
 - [UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances \(1988\)](#)
 - [UN Convention against Transnational Organized Crime \(UNTOC\) 2000](#)

What are the Challenges in tackling Drug Trafficking in India?

- **Dark Net:** Darknet markets are difficult to trace because of their anonymity and low risks. They have taken over the traditional drug markets. Studies reveal that 62% of the darknet is being used for illicit drug trafficking.
 - The success rate in catching traffickers using the darknet has been very low the world over.
- **Transactions in Cryptocurrency:** Cryptocurrency payments and doorstep deliveries, through courier services, have made darknet transactions attractive.
- **Traffickers have become Creative and Tech Savvy:** The traffickers have adopted to new age technologies such as supplying drug and guns through drones in Punjab which have posed new challenges before the security forces.
- **Using more Safe and Anonymous methods:** The drug traffickers have started relying more upon courier/parcel/post after the restrictions imposed on vehicular/ship/airline movement during Covid-19 pandemic.
 - In 2022, a person was arrested for doing the drugs business through making an e-commerce dummy website.
 - In one more instance, few persons were arrested for selling drugs through e-commerce websites like amazon by listing fake products on the website.
- **Nexus between Drugs Lords and NRIs:** Recent investigations have revealed the connection of the drug cartels with NRIs based in Canada, Australia, Singapore, Hong Kong and several European countries along with local drug lords and gangsters in India, who have links with Khalistani terrorists and the ISI in Pakistan.
- **Trafficking through Local Gangs:** A new trend has emerged wherein organised gangs, which primarily used to carry out extortion activities in their local areas are being used for drug trafficking as they are ready-made logistics to carry out such activities.

Way Forward

- To stop drugs from entering the country, **measures must be taken such as controlling cross-border trafficking and improving drug enforcement.** However, to fully address the problem, India must also work on reducing the demand for drugs through measures such as imposing harsher punishments under NDPS Act, 1985.

- **Awareness must be spread** among the people to lower down the drug addiction **through campaigns and NGOs**. The stigma associated with drug taking needs to be reduced. Society needs to understand that drug-addicts are victims and not criminals.
- **Certain crop drugs which have more than 50% alcohol and opioids need to be contained**. Strict action is required from police officers and the excise and narcotics department to curb the problem of drug menace in the country.
- Education curriculum should include chapters on drug addiction, its impact and also on de-addiction. Proper Counselling is another alternative.
- **Concerted and coordinated efforts of all the agencies** will be required to tackle this growing threat.
- **Creating more employment opportunities** would solve the problem to some extent as Quick, and more, money attracts unemployed youth towards such activities.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Consider the following statements:

1. The United Nations Convention against Corruption (UNCAC) has a 'Protocol against the Smuggling of Migrants by Land, Sea and Air'.
2. The UNCAC is the ever-first legally binding global anti-corruption instrument.
3. A highlight of the United Nations Convention against Transnational Organized Crime (UNTOC) is the inclusion of a specific chapter aimed at returning assets to their rightful owners from whom they had been taken illicitly.
4. The United Nations Office on Drugs and Crime (UNODC) is mandated by its member States to assist in the implementation of both UNCAC and UNTOC.

Which of the statements given above are correct?

- (a) 1 and 3 only
- (b) 2, 3 and 4 only
- (c) 2 and 4 only
- (d) 1, 2, 3 and 4

Ans: (c)

Mains

Q. In one of the districts of a frontier state, narcotics menace has been rampant. This has resulted in money laundering, mushrooming of poppy farming, arms smuggling and near stalling of education. The system is on the verge of collapse. The situation has been further worsened by unconfirmed reports that local politicians as well as senior police officers are providing surreptitious patronage to the drug mafia. At that point of time a woman police officer, known for her skills in handling such situations is appointed as Superintendent of Police to bring the situation to normalcy.

If you are the same police officer, identify the various dimensions of the crisis. Based on your understanding, suggest measures to deal with the crisis. **(2019)**

Source: IE

Saurashtra Tamil Sangamam

Why in News?

Nearly 3,000 people are expected to attend **Saurashtra Tamil Sangamam**. The festival aims to showcase “**age-old ties**” and cultural links between two coastal **States of Gujarat and Tamil Nadu**.

- The **Saurashtra Tamil Sangamam**, is similar to the [Kashi Tamil Sangamam](#).

What is Saurashtra Tamil Sangamam?

▪ Background:

- Centuries ago, invasions between 600 and 1000 years ago forced numerous individuals to **migrate from Saurashtra in Gujarat and establish new settlements in Tamil Nadu's districts around Madurai**, now known as **Tamil Saurashtrian**.
 - People of Gujarati origin have settled in various places in TamilNadu, such as **Tiruchi, Thanjavur, Kumbakonam, and Salem**, creating cultural connections between **Gujarat and Tamil Nadu**.

▪ Highlights of the Festival:

- The festival aims to **highlight the cultural diversity and strength of India and to reconnect people with pilgrimage destinations and [cultural heritage](#)**.
- This event will take place at multiple locations in Gujarat such as **Somnath, Dwarka and the [Statue of Unity](#) at Kevadia**.



▪ Significance of Logo:

- It is a representation of the **merging of the silk fabric expertise of the Tamil Saurashtrian people and the textile industry of Gujarat**.
- The confluence of the **two cultures is depicted through the Somnath temple**, the place of origin of the Saurashtrians, and the [Meenakshi temple near Madurai](#), where they settled.
- A young woman, posing in a **dancing posture with dandiya (Gujarat) and Bharatanatyam (Tamil Nadu)**, embodies the coming together of two art forms.

- The **upper tricolour signifies the message of 'Ek Bharat Shreshtha Bharat.'** while the **blue colour** on the lower side **symbolises the merging of the two states with the sea.**

What is the Significance of Sangamam?

- **Cultural Security:** It is as important as other forms of security, such as border security, economic security, food security, social security, and cybersecurity.
 - **Protecting cultural links and heritage through Sangamam** is essential for maintaining the identity of a nation and has witnessed a **cultural revival of India.**
- **Community Building and Social Cohesion:** Sangamam serves as a **platform for the community to come together, socialise, and build a sense of community.**
 - It also promotes **mutual respect, understanding, and harmony** among people from different walks of life fostering a **sense of unity and togetherness.**

What is Ek Bharat Shreshtha Bharat?

- **About:** It was launched in 2015 to promote engagement amongst the people of different States/UTs so as to enhance **mutual understanding and bonding between people of diverse cultures,** thereby securing stronger unity and integrity of India.
- **Ministry Involved:** The **Ministry of Education** has been designated as the Nodal Ministry for co-ordination of the programme.
- **Activities Under the Scheme:** Every State and UT in the country would be paired with another State/UT for a time period, during which they **would carry out a structured engagement with one another in the spheres of language, literature, cuisine, festivals, cultural events, tourism etc.**

[Source: TH](#)

Jagdish Chandra Bose

Why in News?

Researchers from **Tel Aviv University** have discovered that **plants make distinct, high-pitched sounds in the ultrasonic range when faced with stress,** such as needing water.

- This discovery is seen as **a logical extension of the work of Indian scientist [Jagdish Chandra Bose](#),** who demonstrated that plants could experience sensations and feel pleasure and pain, highlighting the continued relevance of his work in modern science.

What is Bose's most Significant Contribution to the Study of Plants?

- Bose demonstrated that plants could feel pleasure and pain, just like animals.
- He used his skills as a physicist **to build sensitive instruments that could detect even the weakest signals from plants.**
- He studied the biology of plant movements, feelings, and the nervous system. He is credited with using the **word "feelings" to describe the way that plants react to touch, although some scientists argue that this is a matter of semantics.**

Who was Jagdish Chandra Bose?

▪ **About:**

- Born on 30th November 1858 to Bama Sundari Bose and Bhagawan Chandra, Bengal.
- He was a **Plant Physiologist and physicist** who invented the **crescograph**, a device for measuring the growth of plants. He for the first time demonstrated that plants have feelings.

▪ **Education:**

- He earned a **BSc from University College London**, which was connected with the University of London in 1883, and a BA (Natural Sciences Tripos) from the University of Cambridge in 1884.

▪ **Scientific Contribution:**

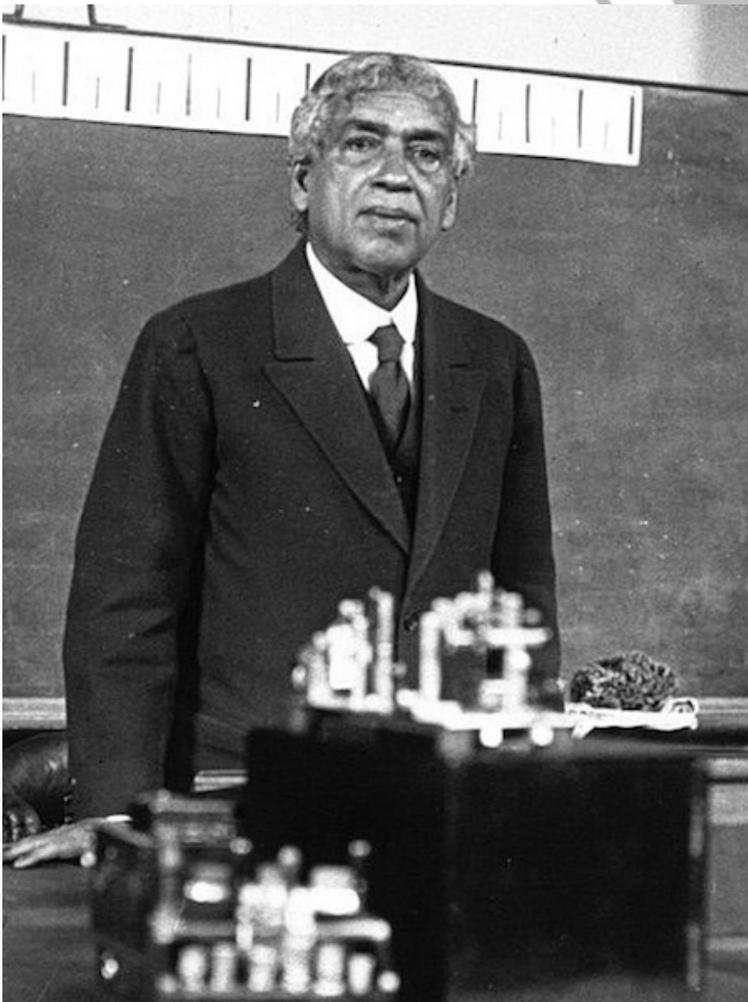
- He was a biologist, physicist, botanist and an early writer of science fiction.
- Bose discovered **wireless communication and was named the Father of Radio Science** by the **Institute of Electrical and Electronics Engineering**.
- Bose is widely believed to be the **first one to generate electromagnetic signals in the microwave range**.
- He was responsible for the **expansion of experimental science in India**.
- Bose is **considered the father of Bengali science fiction**. A crater on the moon has been named in his honour.
- He founded **Bose Institute**, a premier research institute of India and also one of its oldest. Established in 1917, the Institute was the **first interdisciplinary research centre in Asia**.

▪ **Books:**

- His books include **Response in the Living and Non-Living (1902)** and **The Nervous Mechanism of Plants (1926)**.

▪ **Death:**

- He died on 23rd November 1937 in Giridih, Bihar.



दृष्टि
The Vision

Digital Highways

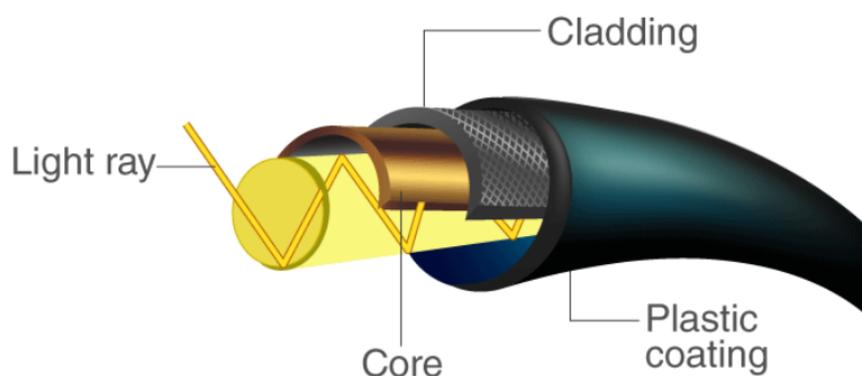
Why in News?

The [National Highways Authority of India \(NHAI\)](#) has announced its plan to develop around **10,000 km of [Optic Fibre Cable \(OFC\)](#) infrastructure** across the country by the fiscal year 2025.

- NHAI's plan aligns with [United Nations' Sustainable Development Goals \(SDGs\)](#) targets, which aim at providing access to safe, affordable, accessible, and sustainable transport systems for all by 2030.

What is OFC?

- **About:**
 - Fiber-optic cables are like tubes that hold tiny wires made of glass or plastic. They **use light to send information much faster than regular wires** that use electricity.
 - Metal wires are preferred for transmission in optical fibre communication as signals travel with less damage.
 - The optical fiber works on the principle of **total internal reflection (TIR)**.
 - **TIR is the complete reflection of a ray of light** within a medium such as water or glass from the surrounding surfaces back into the medium.
 - Light rays can be used to transmit a huge amount of data (In case of long straight wire without any bend).
 - In case of a bend, the optical cables are designed such that they bend all the light rays inwards (using TIR).



- **Development of OFC Network:**
 - The OFC network will be developed by the **National Highways Logistics Management Limited (NHLML)**, a fully owned special purpose vehicle (SPV) of NHAI.
 - It will implement the network of Digital Highways by developing integrated utility corridors along the National Highways to develop OFC infrastructure.
 - NHAI has identified around 1,367 km on Delhi-Mumbai Expressway and 512 km on Hyderabad-Bangalore Corridor as pilot routes for the Digital Highway development. Providing internet connectivity to remote locations across the country, the OFC network will help to expedite the rollout of new-age telecom technologies like 5G & 6G

What are Digital Highways?

- Digital Highways or Roads are digital platforms that offer shared public and private services. They **utilize data, technology, and connectivity to improve the Strategic Road Network (SRN) in terms of design, construction, operation, and usage.** This will result in safer travel, quicker deliveries, and better experiences for all.

What is National Highways Authority of India?

- **About:** NHAI was set up under **the NHAI Act, 1988.**
- **Objective:** It has been entrusted with the **National Highways Development Project (NHDP),** along with other minor projects **for development, maintenance and management.**
 - NHDP is a project to upgrade, rehabilitate and widen major highways in India to a higher standard. The project was started in 1998.
- **Vision:** To meet the nation's need for the provision and **maintenance of National Highways network to global standards** and to **meet user's expectations** in the most time bound and cost-effective manner and **promote economic wellbeing** and quality of life of the people.

[Source: PIB](#)

Rapid Fire Current Affairs

Coalition to Combat Marine Litter in India's Coastal Cities

The Centre for Science and Environment (CSE), a non-profit organization based in Delhi, has launched a **coalition of coastal cities to combat marine litter pollution across India.** The Coalition aims to **address the serious trans-boundary issue of marine litter pollution,** which is responsible for **damaging marine ecosystems and harming marine life.** About 80% of marine litter comes from **land-based mismanagement of solid waste that reaches the ocean through various land-to-sea pathways.** The coalition will **focus on tackling plastic pollution, which accounts for 90% of all the waste that ends up in the marine ecosystem.** India produces about 460 million Tonnes of plastic, of which nearly 8 million Tonnes (2.26%) is leaked into the marine ecosystem.

According to the CSE, **South Asian seas are particularly affected, with Tonnes of plastic waste leaked into them every day,** accounting for 5.6 million Tonnes of plastic waste per year. India's 7,517 km coastline across nine states and 66 coastal districts is home to about 250 million people and rich biodiversity. The CSE emphasized the need to enforce policies like the single-use plastic ban and extended producer responsibility stringently to manage the plastic waste on land that contributes to marine litter pollution.

Read more: [Marine Pollution](#)

India's Milk Prices and Production

Milk prices have been increasing since 2021 and have seen several hikes across brands, with the average price for a litre of milk in India reaching ₹57 in April 2023, 12% higher than the previous year. **Milk prices are the highest in Lucknow and Guwahati, while southern cities such as Bengaluru and Chennai have relatively lower milk prices.** The high inflation in milk has been identified as one of the reasons driving retail inflation, with milk inflation continuing to trend higher. Milk production in India has been facing stagnation due to several factors, including a **demand slump during the COVID-19 pandemic,** **outbreaks of lumpy skin disease affecting cattle and buffaloes resulting in lower milk yields,** and **high prices of fodder** raising the cost of production.

India is the largest producer of milk in the world, its milk production has slowed down in recent years, with the growth rate peaking at 6.6% in FY18. The possibility of importing dairy products to address the current situation, with the government considering options including the import of butter and ghee if the situation remains unchanged.

Read more: [National Milk Day](#)

Maa Kamakhya Corridor

The Prime Minister of India expressed his optimism that the **Maa Kamakhya corridor, just like the [Kashi Vishwanath Dham \(Uttar Pradesh's Varanasi\)](#) and [Shree Mahakal Mahalok corridor \(Ujjain, Madhya Pradesh\)](#), will become a significant landmark initiative**. Kashi Vishwanath Dham and Shree Mahakal Mahalok, have enhanced the **spiritual experience for many and helped boost the local economy through increased tourism**.

The Maa Kamakhya corridor is a proposed infrastructure project that **aims to renovate and develop the pilgrimage site of Kamakhya Temple** in Guwahati, Assam, India. The **Maa Kamakhya temple, dedicated to the goddess of desire also known as Kameshwari**, is situated in the Nilachal mountain in Guwahati. **Among the 51 Shaktipeeths present on earth**, Maa Kamakhya Devalaya is considered the **oldest and the most sacred**. It is the **center of the Tantric Shaktism cult**, which has a significant following in India.

Read more: [Kashi Vishwanath Dham](#) , [Shree Mahakal Mahalok corridor](#).

SATHI Portal

The Union Agriculture and Farmers Welfare (MoA & FW) Minister of India has launched the **SATHI (Seed Traceability, Authentication and Holistic Inventory) Portal and Mobile App** to address the **challenges in seed production, quality seed identification, and seed certification**. The system has been developed by the [National Informatics Centre \(NIC\)](#) in collaboration with MoA & FW with the theme of 'Uttam Beej - Samridh Kisan'.

The SATHI portal is a significant step to address the challenges in the agriculture sector and will prove to be a revolutionary step in agriculture when it is used at the grassroots level. This portal will **ensure the quality assurance system, identify the source of seed in the seed production chain, and trace the seeds through a QR code**. The system will have integrated **seven verticals of the seed chain - Research Organization, Seed Certification, Seed Licensing, Seed Catalogue, Dealer to Farmer Sales, Farmer Registration, and Seed DBT**. Only seeds with valid certification can be sold by valid licensed dealers to centrally registered farmers, who will receive subsidy through [DBT directly into their pre-validated bank accounts](#).

PDF Reference URL: <https://www.drishtias.com/current-affairs-news-analysis-editorials/news-analysis/20-04-2023/print>