



EXCEL QUEST

VOLUME - 24, DECEMBER 2021



India launches the 41st Scientific Expedition to Antarctica



India's powerful destroyer INS Visakhapatnam commissioned



A new Exoplanet has been discovered by PARAS



World's most sophisticated MRI facility



India's first Virtual Science Lab for children launched to promote Culture of Curiosity



Made-in-India AK203 assault rifles to boost firepower of Indian Army



Enriched Uranium Stockpile by Iran



Centre constitutes 20-member Empowered Group of Secretaries to monitor implementation of PM Gati Shakti NMP

A Monthly Magazine from

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Director's Message

Dear Aspirants,

Crypto currency is a digital or virtual currency (VC) that is secured by cryptography, which makes it nearly impossible to counterfeit or double-spend. Many crypto currencies are decentralized networks based on blockchain technology. A defining feature of crypto currencies is that they are generally not issued by any central authority, rendering them theoretically immune to government interference or manipulation.

The decision of the Government of India (GoI) to introduce a bill that might seek to regulate all private cryptocurrencies in India was not entirely unexpected. The issue of crypto currency first came to the limelight when the matter went to the Supreme Court in 2018. In the course of lengthy arguments, the three-judge bench set aside the RBI circular that prevented crypto exchanges from dealing with the formal financial system on grounds of proportionality. However, the judgment recognised the role of the RBI in safeguarding the interest of financial stability. The focus point of the verdict was that there was nothing to show that Virtual Currency (VC) adversely impacted RBI regulated entities and that trading in such currencies was illegal. The current bill now attempts to define the rules of the game so that the RBI, tax authorities, SEBI and other agencies have much better legal guidance in deciding the course of action with respect to VC in their respective domains.

Prime Minister Narendra Modi recently stated that the emerging technologies such as crypto currencies should be used to empower democracy, not undermine it. Policymakers in India say unregulated transactions in digital currencies could hurt macroeconomic and financial stability. After initially planning to ban crypto currencies, the Modi government is instead considering legislation to regulate their use. "We must jointly shape global norms for emerging technologies like social media and crypto currencies so that they are used to empower democracy, not to undermine it," Modi told a virtual summit hosted by US President Joe Biden.

The Indian government may also be looking at the creation of a uniform wallet, like a demat account, to keep an eye on retail crypto transactions. The government is mulling over a mechanism that will monitor all inflow and outflow of the Indian rupee on Indian crypto exchanges, and they will be only allowed to operate within the country. This may involve the exchanges opening up their ledgers to the government on a quarterly basis. The aim is reportedly to bring crypto exchanges on the same level as other stock or commodity exchanges in the country and keep crypto transactions from working around the Foreign Exchange Regulation Act (FEMA). The Securities and Exchange Board of India (SEBI) is likely to be roped in to regulate the crypto industry. Investors in India might not be allowed to store their holdings on foreign crypto exchanges or private wallets. Once the law is in place, these individuals will reportedly

be given some time to make the required changes. Failing to do so could result in penalties within the range of Rs. 5 crore to Rs. 20 crore. Since the government will restrict the operation of wallets owned by private players, India may create a uniform wallet like a demat account for crypto trade.

El Salvador, earlier this year, launched a national crypto wallet called “El Chivo”. However, unlike India’s plan, the wallet was launched to help the adoption of Bitcoin as legal tender. However, India has no plans to do so. The Indian Finance Minister, Sitharaman has already clarified in the Parliament that India has no plans of granting the status of currency to Bitcoin. El Chivo solves the same problem that India is looking at- the creation of a closed-loop system where crypto transactions can only occur within the designated system. One Chivo Wallet user can transfer funds to another Chivo Wallet, but cannot transfer them to an external wallet. While this may be an attractive proposition for the government, proponents of the crypto universe argue that this goes against the objective of interoperability, which may limit growth.

In a nutshell, the bill which the GoI plans to introduce to regulate crypto currencies, must meet many important objectives. The universe of crypto currency overlaps with many domains. While there are obvious concerns of money laundering and benami transactions, there are equal concerns with respect to company laws, payment systems and banking, securities and other commercial laws. The issue of consumer protection also needs to be addressed and the current laws may have to be modified considering this innovation. We also need to have robust data information systems which reflect the actual investments on VCs so that the banks could design better products and strategies in order to maintain financial stability.

Best wishes,



K Rajendra Kumar IPS (Retd)

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1. NATIONAL

1.1 Bhaskarabda: A Luni-Solar Calendar

- The Assam Government has announced that Bhaskarabda, a Luni-Solar Calendar will be used as an official calendar.
- Presently, the official calendar of Assam government makes use of the Saka calendar and the Gregorian calendar.
- However, the Bhaskarabda calendar will also be used from now onwards.
- Bhaskarabda, an era counted from the date of the ascension of a 7th-century local ruler Bhaskar Varman.
- It is based on both the phases of the moon and the solar year. Unlike the Gregorian, where a day starts at midnight, the Assamese calendar begins and ends at sunrise over 24 hours. While the Gregorian goes by the solar cycle, the Saka and Bhaskarabda use a lunisolar system based on both the phases of the moon and the solar year
- It began when Bhaskaravarman was crowned ruler of the Kamrupa kingdom.
- He was a contemporary and political ally of northern Indian ruler Harshavardhana.
- The gap between Bhaskarabda and Gregorian is 593 years.

Type of Calendars:

1. Solar: Any dating system based on the seasonal year of approximately 365 1/4 days, the time it takes the Earth to revolve once around the Sun.

2. Lunar: Any dating system based on a year consisting of synodic months—i.e., complete cycles of phases of the Moon.
3. Luni-Solar: In the lunisolar calendar months are lunar but years are solar, it was used in the early civilizations of the whole Middle East and in Greece.

Bhaskarvarman (600–650):

- He belonged to the Varman dynasty and was the ruler of Kamarupa Kingdom.
- Kamarupa was one of the most advanced kingdoms in India under Bhaskaravarman. Kamarupa was the first historical kingdom of Assam.
- His name has been immortalised in the accounts of the Chinese Buddhist pilgrim, Xuanzang, who visited Kamarupa during his reign.
- He is known for his alliance with Harshavardhana against Shashanka, the first major ruler of Bengal (Karnasuvarna)

1.2 PM's 60-Point Action Plan :

- The Centre has prepared a comprehensive 60-point action plan.
- The action plan is targeted at specific ministries and departments, but a closer analysis suggests they fall under broadly three buckets: leveraging IT and technology for governance, improving business climate, and upgrading the civil services.

Leveraging IT and Technology for Governance:

- There are several actionable inputs for the Ministry of Electronics and Information

Technology from streamlining disbursement of scholarships to bridging digital divide for underprivileged students by developing indigenous tablets and laptops.

- Digitising all land records by 2023 under the central database called 'Matribhumi.' Integration with e-Courts system will provide transparency on title/possession related issues.
- Citizenship may be linked to birth certificates through technology and mainstreamed.

Improving Business Climate:

- It includes doing away completely with certain permissions, reducing the cost of starting a business in 10 sectors and bringing it on a par with Vietnam and Indonesia, automatic notification of clearances, single-point access to all government services.
- Incentives to states for timely land acquisition and forest clearances, one comprehensive Environment Management Act that subsumes various laws in the sector.
- Mentoring platform for start-ups and skilling programmes for emerging sectors.
- Using Geographic Information System (GIS) mapping for decision making to increase the country's GDP (Gross Domestic Product). Pushing for jobs while negotiating trade pacts.

Upgrading the Civil Services:

- Capacity building (Mission Karmayogi) – training of officers on various aspects of infrastructure in both the Centre and states, infusion of expertise and exposure to latest technologies for higher civil services.
- Performance-based working, clear and specific targets for ministries and departments just like that for public sector undertakings, institutional mechanisms for addressing issues of states given their limited capacities and restructuring of departments through Government Process Re-engineering (GPR) every 10 years.
- GPR is undertaken to address 'problems' or 'needs' of the organization or its customers with an objective to improve the overall quality of the services.
- Appointment of more Chief Information Officers (CIOs) and Chief Technology Officers (CTOs) as data is not being used efficiently. All government data should be made accessible to all ministries.

1.3 Kushinagar International Airport :

- Prime Minister Narendra Modi inaugurated the Kushinagar international airport in the presence of representatives from 12 countries.
- The airport in eastern UP, the third international airport in the state, will mainly service the Buddhist tourism circuit.

- The Sri Lankan Airlines flight carrying monks and dignitaries was the first to land at the airport.

Kushinagar and The Buddha :

- Among the most important of Buddhist pilgrimages, Kushinagar was where The Buddha attained Mahaparinirvana (ultimate salvation) in c. 483 BC.
- Today's Kushinagar is identified with Kushinara, capital of the ancient Malla republic, which was one of the 16 mahajanapadas of the 6th-4th centuries BC.
- The area went on to be part of the kingdoms of the Mauryas, Shungas, Kushanas, Guptas, Harshavardhana, and the Palas. Kushinara is believed to have been inhabited until at least the 12th century.
- The first excavations in Kushinagar were carried out by Alexander Cunningham and ACL Carlleyle, who unearthed the main stupa and the 6-metre-long statue of the Reclining Buddha in 1876.
- Kushinagar is among the very few places in India where The Buddha is depicted in reclining form.

1.4 Digi-Book – “Innovations For You”

- NITI Aayog's Atal Innovation Mission (AIM) has launched a Digi-Book – “Innovations for You” an attempt to showcase the success stories of Atal Innovation Mission's Startups in different domains.

- These startups have worked to create new, disruptive and innovative products, services, and solutions that can pave a path for a sustainable future. The first edition of this book is focused on innovations in Health Care and soon other sectors shall follow.
- The book is a compilation of 45 health tech start-ups, incubated at Atal Incubation Centres spread across the country.
- These startups are leveraging frontier technologies such as AI, IoT, ICT and others to provide socially relevant solutions to problems like Anemia, Malaria, dental care, mental health, neonatal and child care and monitoring human vitals, among others.

Atal Innovation Mission of NITI Aayog:

- The Atal Innovation Mission (AIM) is the Government of India's flagship initiative to promote innovation and entrepreneurship culture in the country.
- AIM is mandated to create an umbrella structure to oversee innovation ecosystem of the country and revolutionizing the innovation eco-system – touching upon the entire innovation life cycle through various programs

1.5 National Fund To Control Drug Abuse

The Social Justice and Empowerment Ministry has recently recommended that the National Fund to Control Drug Abuse be used to carry out de-addiction programmes, rather than just policing activities.

National Fund to Control Drug Abuse:

- It was created in accordance with a provision of the Narcotic Drugs and Psychotropic Substances Act, 1985.
- It had a nominal corpus of Rs 23 crore.
- Funding: Under the NDPS Act, the sale proceeds of any property forfeited, grants made by
- Any person and institution, and income from the investments of the fund, go towards the fund.

Usage of the fund: The Act states that the fund would be used to combat illicit trafficking of narcotics, rehabilitating addicts, and preventing drug abuse.

Major Reasons for Drug Abuse:

1. To be accepted by the peers.
2. Increasing economic stress.
3. Changing cultural values.
4. Experimentation.
5. Neurotic pleasure.
6. Ineffective Policing.

Drug abuse cases and numbers in India:

- According to the National Crime Records Bureau's Crime in India 2020 report, a total of
- 59,806 cases were lodged under NDPS Act.
- In 2019, there were 3.1 crore cannabis users and 2.3 crore opioid users.

World Drug Report 2021:

- Around 275 million people used drugs globally in the last year. Over 36 million people suffered from drug use disorders.
- Rise in the use of cannabis during the pandemic has been reported by most countries.
- Non-medical use of pharmaceutical drugs has also been observed in the same period.
- The latest global estimates say, about 5.5 per cent of the population between 15 and 64 years have used drugs at least once in the past year.
- Over 11 million people globally are estimated to inject drugs – half of them have Hepatitis C.
- Opioids continue to account for the largest burden of disease-linked to drug abuse.

Indian Government has taken several policy and other initiatives to deal with drug trafficking problem:

1. The 'Nasha Mukh Bharat Abhiyaan' or a 'Drugs-Free India Campaign' was flagged off on 15th August 2020 across 272 districts of the country found to be most vulnerable based on the data available from various sources.
2. Ministry of Social Justice & Empowerment has begun implementation of a National Action Plan for Drug Demand Reduction (NAPDDR) for 2018-2025.

3. The government has constituted Narco-Coordination Centre (NCORD) in November, 2016.

4. The government has constituted a fund called “National Fund for Control of Drug Abuse” to meet the expenditure incurred in connection with combating illicit traffic in Narcotic Drugs; Rehabilitating addicts, and educating public against drug abuse, etc.

5. **SWAMIH Fund :**

- The SWAMIH (Special Window for Affordable & Mid-Income Housing) fund has made its first complete exit from an investment made for completion of a residential project in Mumbai.
- It has already completed over 1,500 homes in seven projects and is on track to complete at least 10,000 homes every year.
- This is a government backed fund that was set up as a Category-II AIF (Alternate Investment Fund) debt fund registered with SEBI (Securities and Exchange Board of India), launched in 2019.
- Liquidity squeeze and the cash trap situation that the real estate sector faced in 2019 made things difficult, prompting the government to launch this scheme.
- Liquidity squeeze or cash trap is a situation where interest rates are as low so that investors prefer to save rather than invest.
- The Investment Manager of the Fund is SBI (State Bank of India) CAP Ventures, a wholly-owned subsidiary of SBI Capital Markets, which in turn is a wholly-owned subsidiary of the SBI.
- The Sponsor of the Fund is the Secretary, Department of Economic Affairs, and Ministry of Finance, on behalf of the Government of India.
- Eligibility Criteria: The real estate projects seeking last-mile funding from SWAMIH must be Real Estate (Regulation and Development) Act (RERA)-registered which have been stalled due to a lack of adequate funds.
- Each of these projects must be very close to completion.
- They must also fall under the ‘Affordable and Middle Income Project’ category (any housing projects wherein housing units do not exceed 200 sq.m.).
- Net-worth positive projects are also eligible for SWAMIH funding. Net-worth positive projects are those projects for which the value of their receivables (debts owed to them by buyers), plus the value of their unsold inventories is greater than their completion costs and outstanding liabilities
- Aim: To provide financing to enable completion of stalled housing projects and ensure delivery of apartments to homebuyers.
- Significance of Fund: It helps unlock liquidity in the real estate sector and provide a boost to core industries such as cement and steel.

1.6 Samudrayaan Misson

- The Ministry of Earth Sciences (MoES) has launched India's first manned ocean mission "Samudrayaan" in Chennai.
- With this Unique Ocean Mission, India joined the elite club of nations such as the US, Russia, France, Japan, and China to have niche technology and vehicles to carry out subsea activities.
- It is India's first unique manned ocean mission that aims to send men into the deep sea in a submersible vehicle for deep-ocean exploration and mining of rare minerals.
- It will send three persons in a manned submersible vehicle MATSYA 6000 to a depth of 6000 metres into the sea for deep underwater studies. Submarines go only about 200 metres.
- It is a part of the Rs 6000-crores Deep Ocean Mission.

Deep Ocean Mission:

- It was approved in June 2021 by the (MoES). It aims to explore the deep ocean for resources, develop deep-sea technologies for sustainable use of ocean resources, and support the Blue Economy Initiatives of the Indian Government.
- The cost of the Mission has been estimated at Rs. 4,077 crore over a five-year period and will be implemented in phases.

MATSYA 6000:

- It is an indigenously developed manned submersible vehicle.

- It will facilitate the MoES in conducting deep ocean exploration of resources such as gas hydrates, polymetallic manganese nodules, hydro-thermal sulfides, and cobalt crusts which are located at an approximate depth between 1000 and 5500 metres.
- Polymetallic nodules, also called manganese nodules, are mineral concretions on the sea bottom formed of concentric layers of iron and manganese hydroxides around a core.

Subsea field development:

The following issues should be considered as part of subsea activities:

- Deepwater or shallow -water development
- Dry tree or wet tree
- Stand alone or tie-back development
- Hydraulic and chemical units
- Subsea processing
- Artificial lift methods
- Facility configurations

1.7 12-Foot Statue Of Adi Shankaracharya:

- A 12-foot statue of Adi Shankaracharya has been unveiled at Kedarnath, where the acharya is believed to have attained samadhi at the age of 32 in the ninth century.

Adi Shankaracharya:

- He was born in Kaladi village on the bank of the Periyar. He was constantly on the move — bearing the flag of Advaita Vedanta, challenging prevailing

philosophical traditions including Buddhism and Jainism.

- He is believed to have established the ritual practices at the Badri and Kedar dhams.
- Adi Shankara is generally identified as the author of 116 works — among them the celebrated commentaries (bhashyas) on 10 Upanishads, the Brahmasutra and the Gita, and poetic works including Vivekachudamani, Maneesha Panchakam, and Saundaryalahiri.
- He also composed texts like Shankarasmrithi, which seeks to establish the social supremacy of Nambuthiri Brahmins.
- Advaita Vedanta articulates a philosophical position of radical nondualism, a revisionary worldview which it derives from the ancient Upanishadic texts.
- According to Advaita Vedantins, the Upanishads reveal a fundamental principle of nonduality termed ‘brahman’, which is the reality of all things.
- Advaitins understand brahman as transcending individuality and empirical plurality.
- They seek to establish that the essential core of one’s self (atman) is brahman. The fundamental thrust of Advaita Vedanta is that the atman is pure non-intentional consciousness.

- It is one without a second, nondual, infinite existence, and numerically identical with brahman.

1.8 **Kaho :Arunachal Pradesh :**

- Arunachal Pradesh is planning to make a documentary about one of its most “patriotic destinations” —, a village in Anjaw district on the China border — to mark the 75th year of Independence.
- One of seven villages in the Kibithoo block bisected by the Lohit River, Kaho had weathered the Chinese attack in 1962.
- Its people had assisted the Indian soldiers who had been outnumbered.
- The village is 580 km east of Itanagar.
- Its people belong to the Meyor community.
- Anjaw is one of the 11 districts of Arunachal Pradesh that share their border with China.
- The documentary, sanctioned by the State BJP Government, is a part of the celebrations of “Azadi Ka Amrut Mahotsav”, the nationwide celebrations for the 75th year of Independence.
- According to the 2011 census, Kaho has only 65 residents and a literacy rate of 64.15%.
- Dipa village: A similar publicity event was organised at Dipa village in Lower Siang district a month ago.
- Several residents of Dipa had taken part in the freedom movement and the national

flag was first hoisted at the village on August 15, 1947.

1.9 Janjatiya Gaurav Diwas :

- The Union Cabinet has approved declaration of 15th November as Janjatiya Gaurav Divas dedicated to the memory of brave tribal freedom fighters so that coming generations could know about their sacrifices about the country.
- India's freedom struggle was strengthened by several movements by tribal communities such as Santhals, Tamars, Kols, Bhils, Khasis and Mizos to name a few.
- The date is the birth anniversary of Sri Birsa Munda who is revered as Bhagwan by tribal communities across the country.
- Birsa Munda fought bravely against the country against the exploitative system of the British colonial system and spearheaded movement against British oppression giving a call for 'Ulgulan' (Revolution).
- The declaration acknowledges the glorious history and cultural heritage of tribal communities.
- The day will be celebrated every year and would recognize the efforts of the tribals for preservation of cultural heritage and promotion of Indian values of valour, hospitality and national pride.
- Tribal Freedom Fighter Museum at Ranchi where Birsa Munda breathed his last will be inaugurated by Hon'ble Prime Minister

1.10 MPLAD Scheme

- Citing economic recovery, the Union Cabinet has restored the Members of Parliament Local Area Development Scheme (MPLADS) that was suspended in April 2020 subsuming the funds for the scheme in the consolidated fund of India.
- However, the MPs will get Rs2 crore instead of the annual approved Rs.5 crore.
- The government had in April, 2020 decided not to operate MPLADS for the Financial Years 2020-21 and 2021-22; and place the MPLADS funds for these two-years at the disposal of the Ministry of Finance to meet the emergent needs of people.
- From Rs 5,012 crore spent during 2018-19, an expenditure of just Rs 2,491.45 crore was taken up under the scheme in 2019-20.
- The government has said that the funds saved from the MPLAD Scheme have been utilised to enhance the allocation of funds for improving health infrastructure, provide free ration under PM Garib Kalyan Yojana, and free vaccination for the people.

MPLAD scheme:

- Launched in December, 1993.
- Seeks to provide a mechanism for the Members of Parliament to recommend works of developmental nature for creation of durable community assets and for provision of basic facilities including

community infrastructure, based on locally felt needs.

- The MPLADS is a Plan Scheme fully funded by Government of India.
 - The annual MPLADS fund entitlement per MP constituency is Rs. 5 crore.
 - MPs are to recommend every year, works costing at least 15 per cent of the MPLADS entitlement for the year for areas inhabited by Scheduled Caste population and 7.5 per cent for areas inhabited by S.T. population.
 - Funds are released in the form of grants in-aid directly to the district authorities.
 - The funds released under the scheme are non-lapsable.
- The liability of funds not released in a particular year is carried forward to the subsequent years, subject to eligibility.
 - The MPs have a recommendatory role under the scheme.
 - The district authority is empowered to examine the eligibility of works, sanction funds and select the implementing agencies, prioritise works, supervise overall execution, and monitor the scheme at the ground level.
 - At least 10% of the projects under implementation in the district are to be inspected every year by the district authority

2. INTERNATIONAL RELATIONS

2.1 India-US Trade Policy Forum

Why in News

- Recently, after a gap of four years, the Trade Policy Forum (TPF) was convened between the United States and India. The Forum resolved to take economic ties between the two countries to the ‘next high level’ and exchanged views on ‘potential targeted tariff Reductions’.

Main Points

- **Aim:** To activate working groups of the TPF on agriculture, non-agriculture goods, services, investment, and intellectual property to meet frequently and address issues of mutual concern in a mutually beneficial manner.
- The idea is to deliver tangible benefits to both countries by resolving outstanding market access issues.

Highlights of the forum:

- **Mutual Market Access:** The Forum has decided to forge an agreement to facilitate U.S. market access from India, and reciprocate with similar accessing the Indian market to many agriculture and animal products.
- **Restoration of the GSP:** India has sought restoration of the GSP (Generalized System of Preferences) benefits by the U.S.
- **Totalisation Agreement:** The Forum also agreed on the significance of negotiating a

- Social Security Totalization Agreement in the interest of workers from both sides.
 - A Totalization Agreement is a convention between two countries preventing duplicate social security contributions for the same income.
 - It would allow workers from both countries to move their retirement savings, the lack of which particularly affects Indian IT workers in the U.S.
- **Towards Rules-based Global Trading System:** India and the U.S. also discussed engagement in various multilateral trade bodies including the World Trade Organisation (WTO) and the G20 for achieving a shared vision of a transparent, rules-based global trading system among market economies and democracies.
- The Forum also decided to find mutually agreed solutions on outstanding
- WTO disputes between the two countries.
- **Ethanol Supply:** The U.S. indicated an interest in supplying ethanol to India for its goal of 20% ethanol blending with petrol by 2025.
- **Pharma Cooperation:** The two sides decided to partner with allies in developing a secure pharmaceutical manufacturing base and de-risk global supply chains in such critical sectors like health.

- **Services Front:** The Forum discussed ways in which legal, nursing and accountancy services can facilitate growth in trade and investment, and sought to work together on electronic payment services and the digital economy.
- **Collaboration in Critical Technologies:** Both countries recognise the importance of critical and emerging technologies like cyberspace, semiconductors, Artificial Intelligence, 5G, and future generation telecommunications technology.
- **Climate Change:** Both countries exchanged views on approaches to increase the utilization of renewable energy to achieve net-zero emissions, as agreed in the India – US Climate and Clean Energy Agenda 2030 Partnership.
- A deal with the US will be beneficial for India, both strategically and economically. As the US companies assess whether to shift some of their manufacturing from China, a vibrant trade strategy can complement the Production-Linked Incentive (PLI) schemes, and help to boost both manufacturing and exports.
- **Facilitating Digital Growth:** To promote further growth in the digital sphere, which represents over USD 100 billion of bilateral trade, the two must address several foundational issues; digital service tax, cross-border data flows and common cellular standards.
- It's important that on the digital services tax, India accords with emerging global agreements that will accelerate trade.

2.2 Kulbhushan Jadhav Case

Way Forward

- **Initiating Tariff Removal:** The first step towards a potential deal is for India to take the initiative and consider unilaterally removing its retaliatory tariffs. This will represent India as willing to be a constructive player in trade talks.
- Even though removing the tariffs without a commitment from the US is a leap of faith, it ultimately will be beneficial for the bilateral trade relationship.
- **Together Countering China:** From a strategic point of view, one of the ways that India can counter China is through deepening trade ties with partners who are committed to supporting India's growth.
- Recently, Pakistan's Parliament has enacted a law to give Indian death-row prisoner Kulbhushan Jadhav the right to file a review appeal against his conviction by a military court.
- The bill was enacted to implement an order of the International Court of Justice (ICJ).
- However, India points out that the law has several "shortcomings" and that steps are needed to implement the ICJ's order "in letter and spirit".

Main Points

Kulbhushan Jadhav Case:

- **Arrest:** A 51-year-old retired Indian Navy officer, Jadhav was sentenced to death

- by a Pakistani military court on charges of espionage and terrorism in April 2017.
- In December 2017, Jadhav's wife and mother were allowed to meet him across a glass partition, with India contesting Pakistan's claim that this was consular access at ICJ.
- Denial of Consular Access: India approached the ICJ against Pakistan for denial of consular access (Vienna Convention) to Jadhav and challenging the death sentence. ICJ Ruling: In 2019, the ICJ ruled that Pakistan was obliged under international laws to provide by means of its own choosing "effective review and
- Reconsideration" of Jadhav's conviction.
- Pakistan's Response: In the wake of the ICJ order, the Pakistan government had promulgated a special ordinance to allow Jadhav to file a review.
- Pakistan's Parliament has passed the International Court of Justice (Review and Reconsideration) Bill, 2021 aimed to fulfill the obligation under the verdict of the ICJ.

Shortcomings in the Law:

- No Clear Road Map: India believes the Bill reiterates a 2019 ordinance passed by Pakistan, without creating a machinery to facilitate an effective review and reconsideration in Kulbhushan Jadhav's case.
- Extraordinary Power to Municipal Court: It invites municipal courts in Pakistan to

decide whether or not any prejudice has been caused to Jadhav on account of the failure to provide consular access.

- This is clearly a breach of the basic tenet, that municipal courts cannot be the arbiter of whether a State has fulfilled its obligations under international law. It further invites a municipal court to sit in appeal.

Implications of 'Effective Review and Reconsideration' for India:

- Effective review and reconsideration is a phrase which is different from 'review' as one understands in a domestic course.
- It includes giving consular access and helping Jadhav in preparing his defence. It means that Pakistan has to disclose the charges and also the evidence
- Which it has been absolutely opaque about uptill now.
- Pakistan would also have to disclose the circumstances in which Jadhav's confession was extracted by the military.
- It implies that Jadhav will have a right to defend whichever forum or court hears his case.

International Court of Justice

- ICJ is a principal judicial organization of the United Nations (UN).
- It was established in 1945 by a UN Charter and began working in 1946 as the successor to the Permanent Court of International Justice.
- It settles legal disputes between member countries and gives advisory opinions to

authorized UN Organs and Specialized Agencies.

- It is seated in the Peace Palace of Hague, Netherlands.

Vienna Convention

- The Vienna Convention on Consular Relations is an international treaty that defines consular relations between independent states.
- A consul (who is not a diplomat), is a representative of a foreign state in a host country, who works for the interests of his countrymen.
- Article 36 of the Vienna Convention states that foreign nationals who are arrested or detained in the host country must be given notice without delay of their right to have their embassy or consulate notified of that arrest.

2.3 The Sydney Dialogue

Recently, the Prime Minister delivered the keynote at the inaugural Sydney Dialogue via video conferencing. He spoke on the theme of India's technology evolution and revolution.

Main Points

Highlights of the Address:

- The international order should ensure crypto currencies do not end up in the wrong hands.
- Citing the unregulated nature of the crypto market, recently, the PM called for taking progressive and forward-looking steps.
- India's space sector is open to private investment and the agriculture sector is

reaping the benefits of the digital revolution.

- In 2020, the government opened Indian National Space Promotion and Authorization Centre (IN-SPACe) to provide a level playing field for private companies to use Indian space infrastructure.
- Highlighted the leaps in India's digital revolution that has redefined politics, economy and society.
- However, the digital age is raising new questions on sovereignty, governance, ethics, law, rights and security.

Five Important Transitions listed by India:

- One, the world's most extensive public information infrastructure being built in India. Over 1.3 billion Indians have a unique digital identity (Aadhaar), six hundred thousand villages will soon be connected with broadband and the world's most efficient payment infrastructure, the Unified Payments Interface (UPI).
- Two, use of digital technology for governance, inclusion, empowerment, connectivity, delivery of benefits and welfare.
- Examples: Pradhan Mantri Jan-Dhan Yojana (PMJDY), Common Services Centres (CSC) etc.
- Three, India has the world's third largest and fastest growing Start-up Ecosystem.
- Four, India's industry and services sectors, even agriculture, are undergoing massive digital transformation.

- Example: Government e-Marketplace (GeM), agri-startups, etc.
- Five, there is a large effort to prepare India for the future.
- Investing in developing indigenous capabilities in telecom technology such as 5G and 6G.
- India is one of the leading nations in artificial intelligence and machine
- Learning, especially in human-centred and ethical use of artificial Intelligence.
- Developing strong capabilities in Cloud platforms and cloud computing.

Sydney Dialogue

- It is an initiative of the Australian Strategic Policy Institute.
- It is an annual summit of cyber and critical technologies to discuss the fallout of the digital domain on the law and order situation in the world.

Other Such Initiatives

Eastern Economic Forum:

- EEF was established by the decree of the President of the Russian Federation in the year 2015.
- It serves as a platform for the discussion of key issues in the world economy, regional integration, and the development of new industrial and technological sectors, as well as of the global challenges facing Russia and other nations.

Future Investment Initiative:

- The Future Investment Initiative (FII) is widely described as “Davos in the desert”.

It is Saudi Arabia’s flagship investment conference.

- The informal name derives from the World Economic Forum’s annual meeting that is held in Davos, Switzerland, where world leaders discuss agendas for pressing international issues.

2.4 Delhi Declaration on Afghanistan

Why in News

- Recently, the Delhi Regional Security Dialogue on Afghanistan was held. The meeting was composed of National Security Advisors’ (NSA) of regional countries and chaired by the Indian NSA.
- The meeting called for “urgent humanitarian assistance” to the Afghan people and urged close cooperation and consultation among the regional countries over the Afghan scenario.
- This is the third meeting of the Regional Security Dialogue (the earlier two meetings were held in Iran, in 2018 and 2019).

Main Points

- Invited Participants: Afghanistan’s neighbours such as Pakistan, Iran, Tajikistan, and Uzbekistan, Turkmenistan, and other key players including Russia, and China.

Need: After the withdrawal of US forces and the Taliban’s takeover of Afghanistan, India is concerned about security in the region.

- There is a possibility of terrorism spreading from the territory of Afghanistan.



Highlights of the Delhi Declaration:

- Secure and Stable Afghanistan: Reiterated strong support for a peaceful, secure and stable Afghanistan while emphasising the respect for sovereignty, unity and territorial integrity and non-interference in its internal affairs.
- Condemning Terrorism: Committed to combat terrorism in all its forms and manifestations.
- Urged the regional members to ensure that Afghanistan would never become a safe haven for global terrorism.
- Ensuring Fundamental Rights: That is, the fundamental rights of women, children and minority communities are not violated.
- The assistance should be provided in non-discriminatory manner across all sections of the Afghan society.
- Collective Cooperation: Called for a collective cooperation against the menace of Radicalization, extremism, separatism and drug trafficking in the region.
- Central Role of UN: Recalling the relevant UN Resolutions on Afghanistan, they noted that the United Nations' (UN) continued presence in the country must be preserved.
- The recent UN Resolution 2593 reiterates the importance of combating terrorism in Afghanistan, including those individuals and entities designated pursuant to resolution 1267.
- Response by the Regional Countries:
 - Russia held that multiple dialogue mechanisms "should not complicate" the unfolding situation in the Taliban controlled Afghanistan.
 - Pakistan and China too were invited to participate in the consultation but both stayed away.
 - Moreover, there was no representation from the erstwhile Afghan government or the Taliban.
 - Uzbekistan and Turkmenistan's NSAs did not mention the word terrorism a tall in their opening statements.

Other Afghan Peace Process Framework:

- Troika plus Meeting on Afghanistan: The U.S.-Russia-China-Pakistan grouping on Afghanistan peace process.
- Moscow Format on Afghanistan: It was set up by Russia for Peace and stability in Afghanistan in the year 2017.
- It is a six-party mechanism. It involved Russia, India, Afghanistan, Iran, China and Pakistan.

Way Forward

- Inclusive Government: The solution comes only through the formation of an inclusive government with the participation of all ethnic groups.
- Russian Support: Russia has cultivated links with the Taliban in recent years. India would need Russia's support in any form of direct engagement with the Taliban.
- Bonhomie with China: India should talk with China, with the objective of finding apolitical settlement and lasting stability in Afghanistan.
- Engaging with Taliban: Talking to the Taliban would allow India to seek security guarantees from the insurgents in return for continued development assistance or other pledges as well as explore the possibility of the Taliban's autonomy from Pakistan.

2.5 India Sweden Innovation Meet

- On 26 October, 2021, India and Sweden celebrated the 8th Innovation Day.

Theme: Accelerating India Sweden Green Transition

Main Points**Green Transition:**

- India is well on its way to meet and exceed its Paris Climate commitments. Sweden's goal is of achieving net-zero emissions by 2045 and negative net emissions following that.
- India and Sweden are together in the UN (United Nations) led industrial transition programme ('Leadership Group for Industry Transition').
- Both have the impacts of innovation with the launch of Hybrit Green Steel (with low carbon footprint), in a sector that accounts for approximately 30% of global greenhouse gas emission.

Science & Technology & Research and Innovation:

- The India Sweden innovation collaborations are guided by the India Sweden Innovation Partnership and the Joint Action Plan (JAP).
- In 2018, the JAP was signed to include smart cities, innovation, and next generation transport.
- In addition, the Department of Biotechnology is already engaged with Swedish Partners on Incubator Connect, Digital Health Care and Global Bio India programmes, enhancing the partnerships in the field of Biotechnology.

Call on Circular Economy:

- Both countries had a new joint call on Circular economy including the theme such as Health Science and Waste to Wealth.
- Circular Economy entails markets that give incentives to reusing products, rather than scrapping them and then extracting new resources.
- Agreed to launch the new call in 2021-2022 on broad themes viz., Public health, prevention, and health promotion Organization and provision of care for the elderly.

India - Sweden Relations**Political Relations:**

- Diplomatic relations were established in 1948 and steadily strengthened over the decades.
- The first India-Nordic Summit (India, Sweden, Norway, Finland, Iceland and Denmark) took place in the year 2018 in Sweden.
- Sweden also participated in the First India Nordic Baltic (including Estonia, Latvia and Lithuania) Conclave co-chaired by India in November 2020.

Multilateral Engagement:

- India and Sweden jointly launched the Leadership Group on Industry Transition (LeadIT) in association with World Economic Forum (WEF) at the UN Climate Action Summit in 2019.
- In the 1980s India and Sweden worked together on nuclear disarmament issues

within the framework of the 'Six Nation Peace Summit' (that also included Argentina, Greece, Mexico and Tanzania).

- At the UN General Assembly, India and Sweden present an annual Joint Statement on Humanitarian Affairs.
- In 2013, during the Swedish Presidency, India joined the Arctic Council as an Observer at the Kiruna Ministerial Meeting.

Economic and Commercial relations:

- India is Sweden's third-largest trade partner after China and Japan in Asia. Trade in goods and services has increased from USD 3 billion (2016) to USD 4.5 billion (2019).

Defence and Aerospace (Sweden-India Joint Action Plan 2018):

It highlights collaboration on space research, technology, innovation, and applications.

Way Forward

- Being a member of the European Union, Sweden can play an important role in India's partnership with the EU and EU countries.
- Strategic engagements, bilateral trade and investment scenarios are expected to embolden shared economic progress under mutually beneficial nomenclature.
- The ongoing momentum of consolidation of strategic interests between New Delhi and Stockholm in the aftermath of March 2021 summit is expected to make an

impeccable imprint in regional and global levels especially in defining the post Covid-19 geopolitical chessboard, especially in the context of India ascending to G-20 presidency in 2023.



2.6 China Delivers Largest Warship to Pakistan: PNS Tughril

Recently, China handed over the first Type 054A/P frigate (warship) to Pakistan. It is named the PNS Tughril.

The PNS Tughril is the first hull of four Type 054 frigates being constructed for the Pakistan Navy.

Main Points

Features:

- The ship is a technologically advanced and highly capable platform with enormous surface-to-surface, surface-to-air and underwater firepower, besides extensive surveillance potentials.
- This warship has world-class stealth capability and can easily dodge any radar. It also has long-range missiles and state-of-the-art cannon capable of firing multiple rounds in a minute.

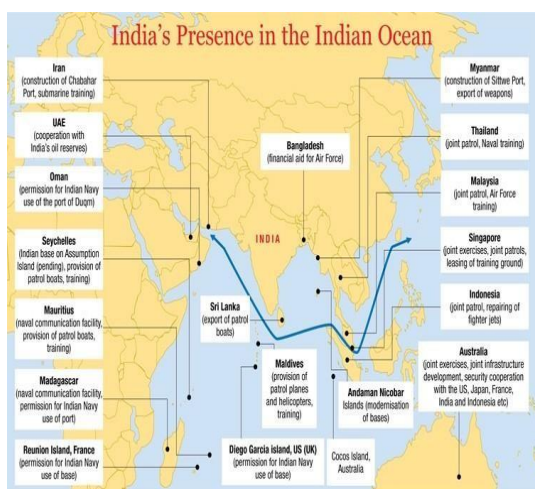
- The warship is fitted with a state-of-the-art Battle Management System (BMS), which will increase the fighting capability of the Pakistan Navy manifold.
- BMS basically helps communicate between the radar and the interceptor missile.

Concerns for India:

- It will strengthen Pakistan Navy's capabilities to respond to maritime challenges to ensure seaward defence in the Indian Ocean region.
- It will form the mainstay of the Pakistan Navy fleet while bolstering the Pakistan Navy's maritime defence capabilities.
- Besides the advanced naval ships, China also partners with the Pakistan Air Force to build JF-17 Thunder fighter aircraft.
- Besides building its first military base in Djibouti in the Horn of Africa in the Indian Ocean, China has acquired Pakistan's Gwadar port in the Arabian Sea which connects with China's Xinjiang province by land in the USD 60 billion
- China Pakistan Economic Corridor (CPEC).
- China is also developing Sri Lanka's Hambantota port after it acquired it on 99 years' lease.
- The modernisation of the Pakistan Navy coupled with the acquisition of the naval bases was expected to shore up the Chinese Navy's presence in the Indian Ocean and the Arabian Sea.

India's Rising Profile in the Indian Ocean Region

- **Various Agreements with Littoral Nations:** India has negotiated agreements with several states in the littoral IOR to obtain military access to their bases.
- Such agreements, including access to Indonesia's strategically-located deep-sea Sabang port and Oman's Duqm port, enhance New Delhi's geopolitical positioning as
- It looks to counter China's "string of pearls."
- **Engagement Outside IOR:** India has engaged with powers outside of the IOR, deepening cooperation with France and the United States through logistics agreements,
- This grants India access to port facilities at the US base on Diego Garcia (southernmost member of the Chagos



Archipelago, in the central Indian Ocean) and the French base on Reunion Island.

- **Quadrilateral Dialogue:** The United States engages with India through the

informal Quadrilateral Security Dialogue, or the "Quad," which also includes Australia and Japan. Paris-New Delhi-Canberra Axis: France has called for the creation of a "Paris-New Delhi-Canberra" axis in the Indo-Pacific, underscoring India's growing influence on geopolitics in the IOR.

- Information Fusion Centre for the Indian Ocean Region (IFC-IOR): IFC-IOR is established with the vision of strengthening maritime security in the region, by building a common coherent maritime situation picture and acting as a maritime information hub for the region.
- **Maritime Exercises:** India concluded an edition of its "Malabar" naval exercise, which included the US, Japan and Australia.
- In 2018, India also held multilateral naval exercises called "Milan" in the Andaman and Nicobar Islands with 16 other countries and in the Rim of the Pacific Exercise (RIMPAC), sailing alongside the Australian, Japanese, and US naval forces.
- **Naval Ships:** While India already has one commissioned carrier, the INS Vikramaditya, and plans to commission a second, the INS Vikrant, it has outlined an ambitious plan to develop a class of aircraft carriers to follow the Vikrant.
- India's navy has further outlined plans to procure 57 carrier-based fighter jets, as well as modernize its submarine fleet

with a new Arihant -class of nuclear-powered attack vessels.

2.7 Approach towards Eurasia

- New Delhi's intensive diplomacy in recent years has led to India's Indo-Pacific strategy acquiring political and institutional traction. However, the Indo-Pacific is only about maritime geopolitics and India must equally focus on its continental strategy too.
- The time has come for India to begin a strategic conversation with Europe on Eurasian security for Eurasia plays a key role in the recalibration of India's continental strategy.
- India must now devote similar energy (as Indo-Pacific) to the development of a "Eurasian" policy as it will be a natural complement to the fledgling engagement between India and Europe on the Indo-Pacific.

All about Eurasia

- What Comprises Eurasia: Geographically, Eurasia is a tectonic plate that lies under much of Europe and Asia. However, when it comes to the political boundaries, there is no shared international understanding of what constitutes the region.
- For Delhi, it makes sense to use the broadest possible definition of Eurasia in reimagining the region.
- India-Eurasia Historical Ties: There are references to India's ancient civilization links with Eurasia; the collaboration

between the Sangha and the Shreni in the Buddhist era produced lasting interaction between the two regions.

- The arrival of the British in India and the consolidation of the Raj as a territorial entity in the subcontinent saw the outward projection of India's influence into Central Asia.
- British rivalry with Russia during the Great Game in the 19th and early 20th centuries put Eurasian geopolitics at the top of undivided India's security agenda.
- The Partition of the subcontinent and India's physical disconnection from inner Asia, however, cut India off from Eurasian geopolitics.
- Overcoming the geographic limitation represented by Pakistan is central to an expanded Indian role in Eurasian geopolitics.
- India's Eurasian Strategy: The recently held Delhi Regional Security Dialogue on Afghanistan is a part of developing a Eurasian strategy. India's National Security Advisor invited his counterparts from Pakistan, Iran, Central Asia, Russia, and China to join this discussion.
- However, Pakistan and China skipped the meeting. Pakistan's reluctance to engage with India on Afghanistan reveals Delhi's persisting problem with Islamabad in shaping a new Eurasian strategy.
- It also reinforces the urgency of an Indian strategy to deal with Eurasia.

- USA's Interests in Eurasia: Washington's Indo-Pacific strategy does not seem to account adequately for the rise of Eurasia.
- US' interests in Asia lie primarily in the western Pacific and the South China Sea. Both regions are far from the core of the Eurasian theatre.
- However, amidst mounting challenges from China in the Indo-Pacific maritime domain, Washington has begun to rethink its strategic commitments to Eurasia.
- The USA and EU are engaging in talks about rebalancing the trans-Atlantic responsibilities for Europe's collective defence.
- China, A Major Player in Eurasia: The recent most important development in Eurasia is the dramatic rise of China and its growing strategic assertiveness, expanding economic power and rising political influence.
- Beijing's approach to the long and disputed border with Bhutan and India, its quest for a security presence in Tajikistan, the active search for a larger role in Afghanistan, and a greater say in the affairs of the broader sub-Himalayan region speak volume about its growing influence.
- As the world's second-largest economy, China's commercial influence is felt across the world and the physical proximity multiplies China's economic impact on the inner Asian regions.
- The expansion of China's Belt and Road initiative across central Asia and Russia, onto the shores of the Atlantic, and Europe's growing economic interdependence with China have added to Beijing's powerful leverages in Eurasia.
- These leverages were reinforced by a deepening alliance with Russia that straddles the Eurasian heartland.

Way Forward

- Putting Europe Back into India's Continental Calculus: Before independence, many Indian nationalists turned to Europe to secure the nation's liberation from British colonialism.
- However, post-independence, Delhi's drift towards an alliance with Moscow saw India neglect Europe's strategic significance.
- As India now steps up its engagement with Europe, the time has come for it to begin a strategic conversation with Brussels (often dubbed as the capital city of the EU) on Eurasian security.
- Greater Engagement with EU and NATO Members: India's Eurasian policy must necessarily involve greater engagement with both the European Union and the North Atlantic Treaty Organization.
- A dedicated military office in the Indian mission to Brussels, where both EU and NATO are headquartered, will be a crucial step towards a sustained security dialogue with Europe.

- Intensifying India-Russia Dialogues on Eurasian Security: While Indo-Russian differences on the Indo-Pacific, the Quad, China, and the Taliban are real, the two have good reasons to narrow their differences on Afghanistan and widen cooperation on continental Eurasian security.
- Moreover, Russia has cultivated links with the Taliban in recent years. India would need Russia's support in any form of direct engagement with the Taliban.
- Geo-Economic Cooperation: India can pursue EU countries to engage in Indo-pacific narrative, geo-economically if not from security prism.
- It can mobilise massive economic resources for sustainable development of regional infrastructure, wield political influence and leverage its significant soft power to shape the Eurasian discourse.
- Substantive Indian Collaboration with Persia and Arabia: If Persia's (Iran's) location makes it critical for the future of Afghanistan and Central Asia, the religious influence of Arabia is quite consequential in the region.
- India's partnerships with Persia and Arabia are also critical in overcoming Turkey's alliance with Pakistan that is hostile to Delhi.
- Integrated Approach in Eurasia: It will require a response far more nuanced than placing most bets on the Indo-Pacific.

- Bolstering deterrence and simultaneously walking the talk on multi-alignment may be the answer which will require re-centering Eurasia by repairing fraying relations with Iran, striking a hard geopolitical bargain with Russia and perhaps even the unspeakable, outreach toward Pakistan.

Conclusion

- India, over the decades, has dealt with Eurasia's constituent spaces separately but what Delhi now needs is an integrated approach to set a strong foothold in Eurasia.
- India will surely encounter many contradictions in its path between and among the USA, Europe, Russia, China, Iran, and the Arab Gulf but it should not let these contradictions hold India back.
- The key for India lies in greater strategic activism that opens opportunities in all directions in Eurasia.

2.8 Indian Ocean Naval Symposium

Why in News

- The 7th edition of Indian Ocean Naval Symposium (IONS) Conclave of Chiefs is being hosted by the French Navy at Paris from 15th-16th Nov 21.
- The inaugural edition of IONS was held in Feb 2008 at New Delhi, with the Indian Navy as the Chair for two years. The IONS Chair is presently held in France.

Main Points**About:**

- The IONS is a voluntary and inclusive initiative that brings together navies of Indian Ocean Region (IOR) littoral states to increase maritime co-operation and enhance regional security.
- It also serves to develop an effective response mechanism and humanitarian assistance and disaster relief (HADR) against natural disasters.
- The chairmanship of IONS has been held by India (2008-10), UAE (2010-12), South Africa (2012-14), Australia (2014-16), Bangladesh (2016-18) and Islamic Republic of Iran (2018-21).
- France assumed the Chairmanship in June 2021 for two-year tenure.

Members:

- IONS include 24 member nations that touch or lie within the IOR, and 8 observer nations.
- The members have been geographically grouped into the following four sub-regions: South Asian Littorals: Bangladesh, India, Maldives, Pakistan, Seychelles, Sri Lanka and United Kingdom (British Indian Ocean Territory)
- West Asian Littorals: Iran, Oman, Saudi Arabia and United Arab Emirates East African Littorals: France (Reunion), Kenya, Mauritius, Mozambique, South Africa, and Tanzania.

- South East Asian and Australian Littorals: Australia, Indonesia, Malaysia, Myanmar, Singapore, Thailand and Timor-Leste.

Significance for India:

- IONS fits into India's three-fold ambitions in the region:
- Strengthening and deepening the relations with the Indian Ocean littoral states, Establishing its leadership potential and aspirations of being a net-security provider, and
- Fulfilling India's vision of a rules-based and stable maritime order in the IOR. It will help India to consolidate its sphere of influence from the Straits of Malacca to Hormuz.
- IONS can be used to counterbalance the increasing presence of China in the region.

Other Important Groupings/Initiatives Associated with IOR:

- **Indian Ocean Rim Association:** The Indian Ocean Rim Association (IORA) was established in 1997.
- It is aimed at strengthening regional cooperation and sustainable development within the Indian Ocean region.
- **Indian Ocean Commission:** Recently, India has been approved as an observer of the Indian Ocean Commission, the inter-governmental organization that coordinates maritime governance in the south-western Indian Ocean.
- **Security and Growth for All in the Region (SAGAR):** It was launched in

2015. Through SAGAR, India seeks to deepen economic and security cooperation with its maritime neighbours and assist in building their maritime security capabilities.

- Information Fusion Centre for the Indian Ocean Region (IFC-IOR): It was setup by India in 2018, as an information-sharing hub of maritime data.
- **Asia Africa Growth Corridor:** The idea of Asia Africa Growth Corridor (AAGC) emerged in the joint declaration issued by India and Japan in 2016.
- The AAGC is raised on four pillars of Development and Cooperation Projects, Quality Infrastructure and Institutional Connectivity, Enhancing Capacities and Skills and People-to-People partnership.
- Bay of Bengal Initiative for Multi-Sectoral Technical and Economic
- **Cooperation:** It is a sub-regional organization that came into being in 1997 through the Bangkok Declaration.
- It mainly aims to create an enabling environment for rapid economic development, accelerate social progress, and promote collaboration on matters of common interest in the IOR.

2.9 India-France Defence Partnership

Why in News

- Recently, at the India-France strategic dialogue, both countries resolved to expand the defence and security partnership by enhancing intelligence sharing, bolstering capabilities,

expanding military drills and pursuing new initiatives in maritime, space and cyber domains.



Main Points

Highlights of the Dialogue:

- Support to ‘Atmanirbhar Bharat’: France reiterated its commitment to India’s vision of “Atmanirbhar Bharat (self-reliant India)” and defence industrialization, joint research and technology development in India across a wide range of advanced capabilities.

France’s Indo-Pacific Strategy: France stressed its continuing commitment to the Indo-Pacific region as a “resident power”, and partnership with India as a “major pillar” of its strategy for the region.

- Moreover, the French Presidency of the European Union (EU) in the first half of 2022 is expected to give a further shape to the EU’s engagement in the Indo-Pacific region.
- A resident power is one that does not own territory or have a territorial presence in a

particular region of the world, but is nevertheless a force to be reckoned with in the international politics of that region.

- Significance of the Meeting: France's reiteration to expand strategic cooperation with India has come after the unveiling of a new security alliance (AUKUS) by Australia, the UK and the US.
- The unexpected announcement of the alliance, which involves building submarines for Australia, had angered the French government after Australia pulled out of a separate submarine deal with France.
- AUKUS is a new trilateral security partnership for the Indo-Pacific, between
- Australia, the UK and the US (AUKUS).

India-France Strategic Relations: Background:

- France was one of the first countries with which India signed a "strategic partnership" after the end of the Cold War, in January 1998.
- France was one of the very few countries to support India's decision to test nuclear weapons in 1998.
- Defence Cooperation: Both countries have a defence dialogue at the Ministerial level.
- The three services have regular defence exercises; viz.
- Exercise Shakti (Army) Exercise Varuna (Navy) Exercise Garuda (Air Force)

- Recently, the Indian Air Force (IAF) has inducted French Rafale multi-role combat aircraft.
- India entered into a contract with a French firm to build six Scorpene submarines in India's Malegaon dockyards through a technology-transfer arrangement in 2005.
- The two countries also signed the Agreement regarding the Provision of Reciprocal Logistics Support.
- This agreement will help to facilitate the replenishment of fuel, rations, spares, and berthing and maintenance for the other nations' warships, military aircraft and troops during routine port calls, as well as during Humanitarian Assistance and Disaster Relief (HADR).

Indian Ocean, the Common Shared Interest:

- France needs to protect its colonial territorial possessions like Reunion Island and Indian Ocean being the zone of influence for India.
- Recently, France became the 23rd member of the Indian Ocean Rim Association (IORA).
- It is the first time that a country whose mainland is not on the Indian Ocean has been brought into the fold of the IORA.
- Counter Terrorism: France backed the India's proposal for a global conference on terrorism. Both the countries also support organising a new "No Money for Terror" - an International Conference on Fighting Terrorist Financing.

- France Backing India: France also continues to steadfastly back India on Kashmir while its relations with Pakistan have plummeted in the recent past and China has become an object of suspicion.

Way Forward

- France, which had sought strategic autonomy within the framework of its alliance with the US, and India, which has valued independent foreign policy, are natural partners in building the new coalitions for an uncertain era.
- France also opens the pathway for deeper engagement with Europe on global issues, especially after uncertainty in the region due to BREXIT.
- The new partnerships with France, Germany and other like-minded countries like Japan would hopefully turn out to be far more consequential for India's influence on the global stage.

Source: IE

2.10 Enriched Uranium Stockpile by Iran

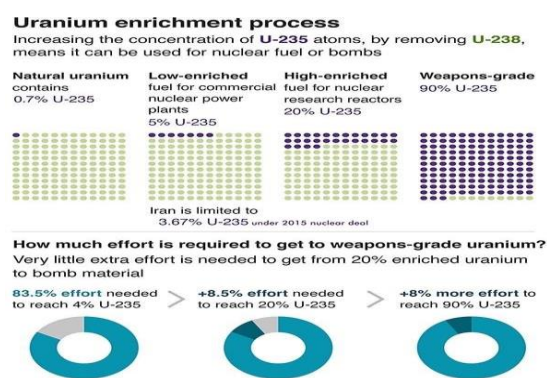
- Recently, Iran's atomic agency said that its stockpile of 20% enriched uranium has reached over 210 kilograms.
- In April 2021, the International Atomic Energy Agency (IAEA) said Iran had begun the process of enriching uranium to 60% fissile purity at an above-ground nuclear plant at Natanz. Under the historic 2015 nuclear deal between Iran and the World Powers, Iran was not meant to enrich uranium above 3.67%. Enriched

uranium above 90% can be used for nuclear weapons.

Main Points

Uranium Enrichment:

- Natural uranium consists of two different isotopes - nearly 99% U-238 and only around 0.7% of U-235.
- U-235 is a fissile material that can sustain a chain reaction in a nuclear reactor.
- Enrichment process increases the proportion of U-235 through the process of isotope separation (U-238 is separated from U-235).
- For nuclear weapons, enrichment is required upto 90% or more which is known as weapons-grade uranium.
- Low-enriched uranium, which typically has a 3-5% concentration of U-235, can be used to produce fuel for commercial nuclear power plants.
- Highly enriched uranium has a purity of 20% or more and is used in research reactors.

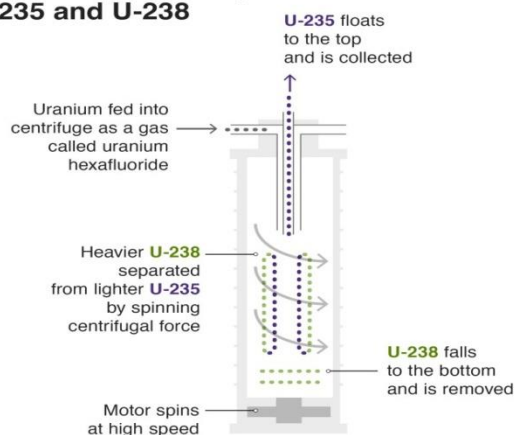


Associated Concerns:

- The tricky process of enrichment becomes far easier and requires fewer centrifuges as it moves into the higher purities.

- In other words, getting to 90% purity is much easier starting from 20%, and easier still starting from 60%.

How a centrifuge separates uranium atoms, U-235 and U-238



2015 Nuclear Deal:

- In 2015, Iran with the P5+1 group of world powers - the USA, UK, France, China, Russia, and Germany agreed on a long-term deal on its nuclear programme.
- The deal was named as Joint Comprehensive Plan of Action (JCPOA) and in common parlance as Iran Nuclear Deal.
- Under the deal, Iran agreed to curb its nuclear activity in return for the lifting of sanctions and access to global trade.
- The agreement allowed Iran to accumulate small amounts of uranium for research but it banned the enrichment of uranium, which is used to make reactor fuel and nuclear weapons.
- Iran was also required to redesign a heavy-water reactor being built, whose spent fuel would contain plutonium suitable for a bomb and to allow international inspections.

- In May 2018, the USA abandoned the deal criticising it as flawed and reinstated and tightened its sanctions.
- Since sanctions were tightened, Iran has been steadily breaking some of its commitments to pressure the remaining signatories to find a way to provide sanctions relief.
- After months of delays, the European Union, Iran and the US have recently announced that indirect talks to resuscitate the deal would resume on 29th November 2021 in Vienna.



3. INDIAN ECONOMY

3.1 Finance Minister Smt. Nirmala Sitharaman participates in 6th Annual Meeting of Board of Governors of Asian Infrastructure Investment Bank

- Every year at the Annual Meeting, the Board of Governors meets to take key decisions on important matters relating to AIIB, and its future vision. India is a Founding Member and the second largest shareholder in AIIB. India also has one of the largest project portfolios within AIIB. This year's Annual Meeting has been jointly organized by AIIB and the Government of United Arab Emirates on the theme of "Investing Today and Transforming Tomorrow".
- The Asian Infrastructure Investment Bank (AIIB) is a multilateral development bank that aims to improve economic and social outcomes in Asia. The bank currently has 104 members, including 17 prospective members from around the world. The bank started operation after the agreement entered into force on 25 December 2015, after ratifications were received from 10 member states holding a total number of 50% of the initial subscriptions of the Authorized Capital Stock.
- The United Nations has addressed the launch of AIIB as having potential for "scaling up financing for sustainable development"] and to improve the global economic governance.] The starting capital of the bank was US\$100 billion,

equivalent to 2/3 of the capital of the Asian Development Bank and about half that of the World Bank.

- The bank was proposed by China in 2013] and the initiative was launched at a ceremony in Beijing in October 2014.[10] It received the highest credit ratings from the three biggest rating agencies in the world, and is seen as a potential rival to the World Bank and IMF

3.2 India, ADB sign project readiness financing loan to support urban mobility in Mizoram

- The Government of India and the Asian Development Bank signed a \$4.5 million project readiness financing (PRF) loan to support project preparation and design activities to improve urban mobility in Aizawl, the capital city of the north eastern state of Mizoram.
- the PRF supports the development of long-term solutions to improve urban mobility in Aizawl by identifying high-priority urban transport investments for the ensuing project and enhance its readiness by supporting due diligence and other preparatory activities.
- "The PRF will develop a Comprehensive Mobility Plan (CMP) for Aizawl that outlines the urban transport development strategy and build synergies with urban development planning initiatives in the state, and promote climate and disaster resilience, and gender inclusiveness in its interventions,"

- Urban mobility in Aizawl, the center of Mizoram's administrative and service industry, is severely constrained due to rapid and unplanned urbanization. This results in traffic congestion on narrow road widths, and adversely impacts road safety, efficiency in movement of people and goods, and environmental sustainability.
- The ensuing project, being developed through the PRF, seeks to resolve the city's transport problems by adopting sustainable urban mobility solutions. The PRF will conduct feasibility studies for prioritized projects identified in the CMP, and prepare detailed project reports and detailed design for the ensuing project. It will help develop institutional capacity of the state's Urban Development and Poverty Alleviation Department in pre-implementation and project preparation activities.
- The Government of India and the Asian Development Bank (ADB) signed a \$251 million loan for climate-resilient, integrated urban flood protection and management in the Chennai-Kosasthalaiyar basin to strengthen resilience of Chennai city to floods.
- The Asian Development Bank (ADB) is a regional development bank established on 19 December 1966, which is headquartered in the Ortigas Center located in Manila, Philippines. The company also maintains 31 field offices around the world to promote social and economic development in Asia. The bank admits the members of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP, formerly the Economic Commission for Asia and the Far East or ECAFE) and non-regional developed countries. From 31 members at its establishment, ADB now has 68 members.
- The ADB was modeled closely on the World Bank, and has a similar weighted voting system where votes are distributed in proportion with members' capital subscriptions. ADB releases an annual report that summarizes its operations, budget and other materials for review by the public. The ADB-Japan Scholarship Program (ADB-JSP) enrolls about 300 students annually in academic institutions located in 10 countries within the Region. Upon completion of their study programs, scholars are expected to contribute to the economic and social development of their home countries. ADB is an official United Nations Observer.
- As of 31 December 2020, Japan and the United States each holds the largest proportion of shares at 15.571%. China holds 6.429%, India holds 6.317%, and Australia holds 5.773%.

3.3 "SAMBHAV"

- Union Minister of MSME Shri Narayan Rane has called for engagement of the youth in promoting entrepreneurship

leading to the economic development of the country. Launching “SAMBHAV”, a National Level Awareness Programme-2021 being organised by Ministry of Micro, Small & Medium Enterprises, Government of India, he emphasized that new products and services created by budding entrepreneurs can give a cascading effect, for stimulating related businesses or sectors. stressed upon enhancing the GDP contribution from present 30 per cent to 50 per cent, and employment generation in MSME sector from 11 crore to 15 crore. He expressed hope that India will be the top economy of the world in future.

3.4 GoI constitutes 20-member Empowered Group of Secretaries to monitor development and implementation of the PM Gati Shakti NMP

The Empowered Group of Secretaries (EGoS) shall have the following terms of reference:

1. Review and monitor implementation of the Plan to ascertain the logistics efficiency accruing thereof;
2. Adopt framework and norms for undertaking any amendments in the Plan;
3. Coordinate for any changes in the projects already included in the Plan, within the prescribed framework and norms;
4. To set out a procedure and a definitive timeframe for synchronisation of various activities for construction of roads, rail, etc. along with all utility services in an

area-based approach for development of infrastructure on pilot basis;

5. Align various initiatives on development of a common integrated portal which serves the needs of all stakeholders;
6. Issue appropriate directions for achieving the objectives and for compliance to guiding principles of the PM GatiShakti NMP and in addressing demand side requirements of concerned Ministries.
7. The EGoS will also look at the interventions required to meet the demand side, in efficiently transporting bulk goods based on the requirements of various Ministries like Steel, Coal, Fertilizer etc.

A Giant Stride in India's \$5 Trillion Economy Goal

Gati Shakti National Master Plan

Multimodal Connectivity Infrastructure to various Economic Zones

Targets upto 2024-25 for Ministry of Shipping

- Increase in Cargo capacity at the Ports to 1,759 MMTPA from 1,282 MMTPA in 2020
- Cargo movement on all National Waterways will be 95 million MT from 74 million MT in 2020
- Cargo movement on Ganga to be increased from 9 to 29 million MT

Aim: To ensure integrated planning and implementation of infrastructure projects in

the next four years, with focus on expediting works on the ground, saving costs and creating jobs.

- The Gati Shakti scheme will subsume the Rs 110 lakh crore National Infrastructure Pipeline that was launched in 2019.
- Besides cutting logistics costs, the scheme is also aimed at increasing cargo handling capacity and reducing the turn around time at ports to boost trade.
- It also aims to have 11 industrial corridors and two new defence corridors - one in Tamil Nadu and other in Uttar Pradesh. Extending 4G connectivity to all villages is another aim. Adding 17,000 kms to the gas pipeline network is being planned.
- It will help in fulfilling the ambitious targets set by the government for 2024-25, including expanding the length of the national highway network to 2 lakh kms, creation of more than 200 new airports, heliports and water aerodromes.

3.5 Integrated Approach: It intends to bring together 16 infrastructure related Ministries.

- This will help in removing long-standing issues such as disjointed planning, lack of standardisation, problems with clearances, and timely creation and utilisation of infrastructure capacities.
- Gati Shakti Digital Platform: It involves the creation of a common umbrella platform through which infrastructure projects can be planned and implemented in an efficacious manner by way of

coordination between various ministries/departments on a real-time basis.

Expected Outcomes

- The scheme will help mapping the existing and proposed connectivity projects.
- Also, there will be immense clarity on how different regions and industrial hubs in the country are linked, particularly for last mile connectivity.
- A holistic and integrated transport connectivity strategy will greatly support Make in India and integrate different modes of transport.
- It will help India become the business capital of the world.

Production-Linked Incentive (PLI) Scheme

- In order to boost domestic manufacturing and cut down on import bills, the union government in March 2020 introduced a PLI scheme that aims to give companies incentives on incremental sales from products manufactured in domestic units.
- Apart from inviting foreign companies to set shop in India, the scheme also aims to encourage local companies to set up or expand existing manufacturing units.
- The Scheme has also been approved for sectors such as automobiles, pharmaceuticals, IT hardware including laptops, mobile phones & telecom equipment, white goods, chemical cells, food processing, etc.

3.6 Prices of Petrol and Diesel will come down accordingly

- Government of India has taken a significant decision of reducing Central Excise Duty on Petrol & Diesel by Rs. 5 and Rs. 10 respectively from tomorrow. Prices of petrol & diesel will thus come down accordingly.
- The reduction in excise duty on diesel will be double that of petrol. The Indian farmers have, through their hard work, kept the economic growth momentum going even during the lockdown phase and the massive reduction in excise on diesel will come as a boost to the farmers during the upcoming Rabi season.
- In recent months, crude oil prices have witnessed a global upsurge. Consequently, domestic prices of petrol and diesel had increased in recent weeks exerting inflationary pressure. The world has also seen shortages and increased prices of all forms of energy. The Government of India has made efforts to ensure that there is no energy shortage in the country and that commodities such as petrol and diesel are available adequately to meet our requirements.
- Driven by the enterprising ability of India's aspirational population, the Indian economy has witnessed a remarkable turnaround post the COVID-19 induced slowdown. All sectors of the economy – be it manufacturing, services or

agriculture – are experiencing significant upward economic activity.

- To give a further fillip to the economy, the Government of India has decided to significantly reduce the excise duty on diesel and petrol.
- The reduction in excise duty on Petrol and Diesel will also boost consumption and keep inflation low, thus helping the poor and middle classes. Today's decision is expected to further spur the overall economic cycle.

3.7 Edible Oil Economy

- The Government has cut the basic duty on Crude Palm Oil, Crude Soyabean Oil and Crude Sunflower Oil from 2.5% to nil in a bid to reign in continuous rise in the cooking oil prices since past one year. The Agri-cess on these Oils has been brought down from 20% to 7.5% for Crude Palm Oil and 5% for Crude Soyabean Oil and Crude Sunflower Oil.
- Consequent upon the above reduction, the total duty is 7.5% for Crude Palm Oil and 5% for Crude Soyabean Oil and Crude Sunflower Oil. The basic duty on RBD Palmolein Oil, Refined Soyabean and Refined Sunflower Oil has been slashed to 17.5% from the current 32.5%.
- Before reduction, the agricultural infrastructure cess on all forms of Crude Edible Oils was 20%. Post reduction, the effective duty on Crude Palm Oil will be 8.25%, Crude Soyabean Oil and Crude Sunflower Oil will be 5.5% each.

3.8 Prime Minister has announced a new national initiative on palm oil production to help increase farm incomes.

Reduction in Import dependence:

- It is expected to incentivise production of palm oil to reduce dependence on imports and help farmers cash in on the huge market.
- India is the largest consumer of vegetable oil in the world. Of this, palm oil imports are almost 55% of its total vegetable oil imports.

Rise in Yields:

- India produces less than half of the roughly 2.4 crore tonnes of edible oil that it consumes annually. It imports the rest, buying palm oil from Indonesia and Malaysia, soyoil from Brazil and Argentina, and sunflower oil, mainly from Russia and Ukraine.
- In India, 94.1% of its palm oil is used in food products, especially for cooking purposes. This makes palm oil extremely critical to India's edible oils economy.

LEADS-2021 Report

- The Ministry of Commerce and Industry (MoCI) had launched a study, "Logistics Ease Across Different States (LEADS)" in 2018 with the main objective of ranking States and UTs on the efficiency of their logistics ecosystem.
- The first version of the report, LEADS 2018, focused on export-import trade and

assessed the efficiency of the logistics ecosystem in each State and UT.

- The second edition of the study – LEADS 2019, covered both international and domestic trade.
- The LEADS 2021 exercise has gone one-step ahead in analysing domestic and EXIM logistics ecosystem of the state. Specifically, two improvements have been done in the overall assessment framework. Firstly, objective parameters have been used along with the perception-based indicators for index formulation.
- The objective parameters in the LEADS 2021 Index have been introduced by way of an objective survey instrument administered to the States/UTs and by the inclusion of secondary datasets on logistics across the State/UT level. Secondly, the statistical methodologies to build the index has been updated to get more robust results, given change in the overall framework.
- Alternatively, a total of 21 perception and objective variables have been statistically analysed to prepare a composite index basis upon which the states have been ranked.
- The LEADS survey 2021 was conducted over the period from May to August 2021 in a challenging environment when the COVID crisis was being fought across multiple fronts.
- The whole exercise garnered 3771 responses from 1,405 respondents across

the country. For representation purposes, states have been ranked in three separate classes including 'North Eastern States & Himalayan UTs' and 'Other UTs' group.

- Gujarat, Haryana and Punjab have emerged as the top performers in the LEADS 2021 index respectively.
- Proactive policies, well-developed infrastructure and services driven by a responsive Government have helped Gujarat to maintain its rank. Haryana has secured the second position, followed by Punjab.
- Within the North Eastern States and Himalayan Region, Jammu and Kashmir is the top ranker followed by Sikkim and Meghalaya. Delhi stands at the top rank among Other UTs. Uttar Pradesh, Uttarakhand and Jharkhand have witnessed a remarkable improvement in their ranks compared to 2019 LEADS ranking and have emerged as the top improvers.
- The report consists of specific section on States and UTs giving detailed analysis of their performance in the LEADS, including issues and challenges being faced by stakeholders as well as suggestions to mitigate the issues.
- States/UTs are encouraged to examine and evaluate the findings of the report and to formulate a suitable strategy and a prioritized action plan for improving logistics performance.

- LEADS is a continuous exercise, and the MoCI is enthused to provide a pivotal role in initiating, creating, and connecting all the stakeholders to bring in the required improvements in the logistics space collaboratively.
- With the efforts in the right direction, it is hoped that the vision of logistics cost will be reduced by 5% in the next five years. This will ensure that the Logistics sector serves as an engine of growth and a key driver for transforming India into a five trillion-dollar economy.
- Department of Commerce through LEADS will continuously engage with all States and UTs to support, facilitate and promote improvements in the overall logistics ecosystem. Synergies flowing from such a coordinated approach will reduce logistics costs and which, in turn, will act as significant stimulants to PM Gati Shakti National Master plan.

3.9 Cabinet approves mechanism for procurement of ethanol by Public Sector Oil Marketing Companies under Ethanol Blended Petrol programme revised - ethanol price for supply to Public Sector OMCs for Ethanol Supply Year 2021-22

Ethanol Blending:

About Ethanol:

- It is one of the principal biofuels, which is naturally produced by the fermentation of sugars by yeasts or via petrochemical processes such as ethylene hydration.

Blending Target:

- The Government of India has advanced the target for 20% ethanol blending in petrol (also called E20) to 2025 from 2030.
- Currently, 8.5% of ethanol is blended with petrol in India.

Objectives of Ethanol Blending:**Energy Security:**

- Increased use of ethanol can help reduce the oil import bill. India's net import cost stands at USD 551 billion in 2020-21.
- The E20 program can save the country USD 4 billion (Rs 30,000 crore) per annum.

Incentives for Farmers:

- The oil companies procure ethanol from farmers that benefit the sugarcane farmers.
- Further, the government plans to encourage use of water-saving crops, such as maize, to produce ethanol, and production of ethanol from non-food feedstock.

Impact on Emission:

- Use of ethanol-blended petrol decreases emissions such as carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx).
- The unregulated carbonyl emissions, such as acetaldehyde emission were, however, higher with E10 and E20 compared to normal petrol. However, these emissions were relatively lower.

3.10 APEDA organised 75 awareness-cum-training programmes for farmers in seven Basmati growing states

- For boosting exports of quality production of aromatic and long grain Basmati rice, the Agricultural and Processed Food Products Export Development Authority (APEDA)' arm Basmati Export Development Foundation (BEDF) has taken innovative steps to sensitize farmers involved in the cultivation of Basmati rice in the key growing regions about adoption of good agricultural practices.
- As part of the initiatives, BEDF in collaboration with the rice exporters associations of Punjab, Haryana, Uttar Pradesh, Uttarakhand, Himachal Pradesh, Jammu & Kashmir and Delhi, state agriculture universities and state agriculture departments, organised 75 awareness and training programmes to encourage farmers for growing high-quality Basmati rice in the seven states. BEDF is also involved as technical partner for different FPOs, exporter associations, etc in Basmati rice growing states.
- APEDA is given the Geographical Indication (GI) tag as the sole custodian of basmati rice grown in the Indo-Gangetic plains. Under the GI certification issued in February, 2016, 77 districts of seven states- Punjab, Haryana, western Uttar Pradesh, Uttarakhand, Delhi

and Jammu and Kashmir are referred to as basmati rice growing region.

- During the awareness drive by BEDF, scientists explained to farmers and exporters about the pesticide residue problem in export of basmati rice and transfer of production technology including nursery raising, integrated nutrient and water management in local languages.

APEDA has been promoting rice exports through collaborations with various stakeholders in the value chains. The government had set up the Rice Export Promotion Forum (REPF), under the aegis of the APEDA. REPF has representatives from rice industry, exporters, officials from APEDA, ministry of commerce and directors of agriculture from major rice producing states, including West Bengal, Uttar Pradesh, Punjab, Haryana, Telangana, Andhra Pradesh, Assam, Chhattisgarh and Odisha.

3.11 Cabinet approves Restoration and continuation of Member of Parliament Local Area Development Scheme (MPLADS)

- The Union Cabinet, chaired by the Prime Minister Shri Narendra Modi, today has approved the restoration and continuation of Member of Parliament Local Area Development Scheme (MPLADS) during the remaining part of Financial Year 2021-22 and up to Financial Year 2025-26 co-terminus with the period of 15th Finance Commission.

Details of the Scheme:

- The MPLADS is a Central Sector Scheme fully funded by Government of India. The objective of the scheme is to enable MPs to recommend works of developmental nature with emphasis on the creation of durable community assets in the areas of drinking water, primary education, public health, sanitation and roads, etc. primarily in their Constituencies.
- The annual MPLADS fund entitlement per Member of Parliament (MP) constituency is Rs.5 crore, released in two instalments of Rs.2.5 crore each, subject to the fulfilment of conditions as per the MPLADS Guidelines.
- For managing the health and adverse impacts of covid 19 in the society, the Cabinet in its meeting held on 6th April 2020, had decided not to operate MPLADS during the FY 2020-21 and 2021-22 and place the fund at the disposal of Ministry of Finance for managing the impacts of covid 19 pandemic.
- As the country is now on the road to economic recovery and the Scheme continues to be beneficial for the creation of durable community assets, in fulfilling the aspirations of locally felt needs of the Community, in skill development and creation of jobs across the country, thereby helpful in achieving the objective of Atamirbhar Bharat. Accordingly, the

Union Cabinet has now decided to restore Members of Parliament Local Area Development Scheme (MPLADS) during the remaining part of Financial Year 2021-22 and to continue MPLADS up to 2025-26, co-terminus with the period of 15th Finance Commission.

4. ENVIRONMENT

4.1 India's 1st State-Wildlife DNA testing analysis lab inaugurated in Nagpur.

At present, there are 2 Wildlife DNA testing laboratories at Dehradun & Hyderabad, which are fully owned by the Central Government, whereas the newly launched is the 1st in India to be owned by a state government.

Genetically modified crops

- According to the Coalition for GM Free India, the discovery of 500 tonnes of Genetically Modified (GM) rice in a consignment that India exported to the European Union countries in June 2021 has led to the “loss of reputation of India and its agricultural market”.
- However, India pointed out that GM rice is not grown commercially in India, let alone exported, and promised a thorough enquiry by its agricultural exports authority, the Agricultural and Processed Food Products Export Development Authority (APEDA).

GM Crops:

- GM foods are derived from plants whose genes are artificially modified, usually by inserting genetic material from another organism, in order to give it a new property, such as increased yield, tolerance to a herbicide, resistance to disease or drought, or to improve its nutritional value.
- Probably the best known variety of GM rice is golden rice.

- Golden rice involves the insertion of genes from a plant -- both daffodils and maize have been used -- and a soil bacterium to create a grain that is enriched with Vitamin A.
- India has approved commercial cultivation of only one GM crop, Bt cotton.
- No GM food crop has ever been approved for commercial cultivation in the country. However, confined field trials have been allowed for at least 20 GM crops.
- That includes varieties of GM rice which would have improved resistance to insects and diseases, as well as hybrid seed production and nutritional enhancements such as golden rice. The cons of GM foods are that they may cause allergic reactions because of their altered DNA and they may increase antibiotic resistance.

Export of GM Rice (Implications for India):

- India is the world's top rice exporter, earning Rs. 65,000 crore in 2020 by selling 18 million tonnes of grain (organic rice), about a quarter of which is premium basmati.
- Among the 75 countries which buy Indian rice, West Asian nations, the US and the U.K. are the biggest importers of basmati, while the majority of non-basmati goes to African countries and neighbours Nepal and Bangladesh.

- For Indian farmers, the nightmare scenario could be what happened in the US in 2006, when trace amounts of a GM rice variety were found in shipments ready for exports.
- Trading partners such as Japan, Russia and the EU suspended rice imports from the US, hitting farmers hard.
- Under pressure from the rice export lobby at the time, India drafted policies to ban GM rice trials in the basmati belt. However, farmers from other parts of the country, especially those aiming for the nascent but growing organic rice export market, worry that their products could face contamination.
- Unauthorised HtBt Cotton and Bt Brinjal are already being grown commercially, with hundreds of growers blatantly defying the governmental ban.
- Climate Change Cost: Although there is disagreement on the magnitude, several economists are certain about the possible impact of global warming on global output.
- According to one International Monetary Fund (IMF) estimate, unchecked global warming would reduce 7% of world output by 2100.
- The Network for Greening the Financial System (NFGS) group of world central banks puts it even higher at 13%.
- **Most Vulnerable Area:** It is unanimously accepted that the developing world will be the worst affected area by climate change.
- Presently, much of the world's poor live in the tropical or low-lying regions already suffering climate change fall-out like droughts or rising sea levels.

4.2 Economics of climate change

- The COP26 climate talks are going to take place in Glasgow. Given the magnitude of climate change phenomena occurring all over the world, the upcoming climate deal negotiation is crucial to cap global warming at the 1.5-2 degrees Celsius upper limit set out in the 2015 Paris Agreement.
- In this context, it is necessary to analyze the impact of climate change on economic livelihoods in the world over and the future stability of the global financial system.
- Moreover their countries rarely have the resources to mitigate such damage.
- **Impact on Micro-Level:** Climate change will drive up to 132 million more people into extreme poverty by 2030, a World Bank paper last year concluded.
- Factors included lost farming income; lower outdoor labour productivity; rising food prices; increased disease; and economic losses from extreme weather.
- **Analysing Net Zero Emission Scenario:** 'Net zero emissions' refers to achieving an overall balance between greenhouse gas emissions produced and greenhouse

Key Points

gas emissions taken out of the atmosphere.

- However, there are several economic repercussions owing to Net Zero emissions.
- A report by think tank Carbon Tracker estimated that over USD 1 trillion of business-as-usual investment by the oil and gas sector would no longer be viable in a genuinely low-carbon world. Moreover, the IMF has called for the end of all fossil fuel subsidies – which it calculates at \$5 trillion annually if defined to include undercharging for supply, environmental and health costs. This may lead to an unemployment crisis of mass level.
- **Below Par Carbon Pricing:** Tax or permit schemes that try to price in the damage done by emissions create incentives to go green.
- However, so far only a fifth of global carbon emissions are covered by such programmes, pricing carbon on average at a mere USD 3 a tonne.
- This is well below the USD 75/tonne the IMF says is needed to cap global warming at well below 2°C.
- **Risk of Inflation:** Anything which factors in the polluting cost of fossil fuels is likely to lead to price rises in some sectors.
- **Failure of Green Decoupling:** Sustainable growth implies that economic

activity can grow as needed without adding yet more emissions.

- However, this has failed to manifest uptil now.
- Presently, higher rates of economic growth are achieved but it is accompanied by gains in emissions or achieved by shifting dirty production from one national territory to another.
- **Inadequate Green Finance:** At a global scale, the rich countries which since their industrial revolutions have generated the bulk of emissions have promised to help developing countries transition via USD 100 billion of annual transfers – a promise so far not fulfilled.

4.3 Mullaperiyar Dam issue

- The Supreme Court has directed the Supervisory Committee to take an immediate and firm decision on the maximum water level that can be maintained at Mullaperiyar dam, amid torrential rain in Kerala.
- The SC constituted a permanent Supervisory Committee in 2014 to oversee all the issues concerning Mullaperiyar dam. The dam is a source of friction between Tamil Nadu and Kerala.

What's the issue?

- Kerala said the water level should not go above 139 feet, the same as what the court had ordered on August 24, 2018, when the State was hit by floods. It is because the lives of 50 lakh people would be in

danger if the water level in the dam is raised.

- However, Tamil Nadu objected to this decision citing the Supreme Court judgments of 2006 and 2014, which fixed the maximum water level at 142 feet.
- The court asked officials of Kerala and Tamil Nadu to interact responsibly and avert any danger to lives. The Court also made it clear that this was not an issue to play politics about.
- Now, the supervisory committee will have to decide about the maximum water level and inform the court about it.
- Although the dam is located in Kerala, it is operated by Tamil Nadu following an 1886 lease indenture for 999 years (the Periyar Lake Lease Agreement) that was signed between the Maharaja of Travancore and the Secretary of State for India for the Periyar Irrigation works.
- Constructed between 1887 and 1895, the dam redirected the river to flow towards the Bay of Bengal, instead of the Arabian Sea and provide water to the arid rain region of Madurai in Madras Presidency.
- The dam is located on the confluence of the Mullayar and Periyar rivers in Kerala's Idukki district.

What does Tamil Nadu say?

- Tamil Nadu claims that although it has undertaken measures to strengthen the dam, the Kerala government has blocked any attempt to raise the reservoir water

level – resulting in losses for Madurai farmers.

Kerala's arguments:

- Kerala, however, highlights fears of devastation by residents living downstream in the earthquake-prone district of Idukki.
- Scientists have argued that if there is an earthquake in the region measuring above six on the Richter scale, the lives of over three million people will come under grave danger.

4.4 WMO Report on CO2

- The World Meteorological Organisation (WMO) has recently released a report on CO2 emissions.

Key findings:

- The increase in CO2 from 2019 to 2020 was slightly lower than that observed from 2018 to 2019 but higher than the average annual growth rate over the past decade.
- This is despite the approximately 5.6% drop in fossil fuel CO2 emissions in 2020 due to restrictions related to the pandemic.
- For methane, the increase from 2019 to 2020 was higher than that observed from 2018 to 2019 and also higher than the average annual growth rate over the past decade.
- For nitrous oxides, the increase was higher and also than the average annual growth rate over the past 10 years.
- Concentration of carbon dioxide (CO2), the most significant greenhouse gas,

reached 413.2 parts per million in 2020 and is 149% of the pre-industrial level. Methane (CH₄) is 262% and nitrous oxide (N₂O) is 123% of the levels in 1,750 when human activities started disrupting earth's natural equilibrium.

- Roughly half of the CO₂ emitted by human activities today remains in the atmosphere. The other half is taken up by oceans and land ecosystems.
- From 1990 to 2020, radiative forcing — the warming effect on our climate — by long-lived greenhouse gases increased by 47%, with CO₂ accounting for about 80% of this increase.

Concerns:

- The ability of land ecosystems and oceans to act as 'sinks' may become less effective in future, thus reducing their ability to absorb CO₂ and act as a buffer against larger temperature increase.
- At the current rate of increase in greenhouse gas concentrations, we will see a temperature increase by the end of this century far in excess of the Paris Agreement targets of 1.5 to 2 degrees Celsius above pre-industrial levels.

About WMO:

- The World Meteorological Organization (WMO) is a specialized agency of the United Nations dedicated to meteorology (weather), climatology (climate), operational hydrology (water) and other related geophysical sciences such as oceanography and atmospheric chemistry.

- Predecessor organization — International Meteorological Organization (IMO) — founded in 1873. Reports: Greenhouse Gas Bulletin. Status of the World Climate.

What does WMO do?

- WMO coordinates the activities of National Meteorological and Hydrological Services in 191 States and Territories so that basic weather, climate and water services are made available to anyone who needs them, when they need them.
- WMO guarantees the publication of observations and statistics and furthers the application of meteorology and hydrology (including the monitoring and predictions of climate change and ozone) to all aspects of human activities such as aviation, shipping, water management and agriculture.
- WMO also encourages research and training in meteorology and hydrology and their related applications and contributes towards reducing the impact of weather- and climate-related hazards. This is accomplished through regular, reliable forecasts and early warnings on flooding, drought, tropical cyclones, tornadoes and other extreme events.
- Predictions concerning locust swarms and the transport of pollutants (nuclear and toxic substances, volcanic ash) are also provided by WMO Members.”

4.5 Trigonopterus corona:

- On the Indonesian island of Sulawesi, museum scientists have discovered 28 new species of beetles.
- One of them has been named *Trigonopterus corona*. This reflects the large impact of the Covid-19 pandemic on this project.

4.6 WMO releases GHG bulletin

- As per Bulletin, abundance of heat-trapping greenhouse gases in the atmosphere reached a new record again in the year 2020.
- Annual rate of increase was above the 2011-2020 average. Report notes that, the trend has continued in 2021.
- Concentration of carbon dioxide (CO₂) increased to 413.2 parts per million in 2020. It accounted for 149% of the pre-industrial level.
- Methane (CH₄) accounted for 262% and nitrous oxide (N₂O) accounted for 123% of 1750 levels, when human activities started disrupting the natural equilibrium of Earth
- Report notes that, economic slowdown due to COVID-19 did not have any impact on the levels of greenhouse gases and their growth rates. However, there was a temporary decline in new emissions.
- In between 1990-2020, radiative forcing by greenhouse gases increased by 47%, in which CO₂ accounted for 80% of this increase.

Emissions and Global Temperature

- Global temperature will continue to rise as long as emissions continue. As CO₂ has a long life, current temperature level will persist for several decades even if emissions rapidly reduced to net zero. Presently, half of the CO₂ emitted by human activities remains in the atmosphere while other half is taken up by land and oceans ecosystems.

World Meteorological Organization (WMO)

- WMO is a specialized agency of United Nations which is responsible for promoting international cooperation on climatology, hydrology, atmospheric science, and geophysics. It originated from International Meteorological Organization, which is a nongovernmental organization founded in 1873.

4.7 State of the climate in Asia 2020 Report

- UN's World Meteorological Organisation (WMO) released its annual report titled "State of the climate in Asia" on October 25, 2021.
- As per report, in 2020, Asia suffered its hottest year on record.
- Report notes that, extreme weather is taking a heavy toll on development of the continent.
- In 2020, extreme weather and climate change in Asia has resulted into loss of life of thousands of people, cost billions of dollars, displaced millions of others,

and wreaked a heavy toll on infrastructure & ecosystems.

- As per report, sustainable development is threatened because health risks, food & water insecurity, and environmental degradation is increasing.
- Increased heat and humidity are forecast will also lead to an effective loss of outdoor working hours in Asia.
- Several weather and climate-related displacements across Asia are prolonged. People are unable to return home or integrate locally.
- In 2020 floods and storms affected around 50 million people in Asia, causing about 5,000 fatalities.
- Total average losses across countries
- China suffered an estimated loss of \$238 billion, India suffered \$87 billion, Japan suffered \$83 billion while South Korea suffered \$24 billion.
- Considering the size of economy, average annual losses are likely to be as high as 7.9 percent of gross domestic product (GDP) for Tajikistan, 5.8 percent for Laos and 5.9 percent for Cambodia.

Warmest Year in Asia

- The warmest year on record in Asia, witnessed the mean temperature 1.39 degrees Celsius above as compared to 1981-2010 average. 38 degrees Celsius was recorded at Verkhoyansk in Russia, which is the highest known temperature in north of the Arctic Circle.

4.8 What is the Global Methane Pledge?

- The Global Methane Pledge was launched on November 2, 2021 at the ongoing UN COP26 climate conference in Glasgow.
- As of now, more than 90 countries have signed this pledge.
- Global Methane Pledge is an effort led by the United States and the European Union, jointly. This pledge is significant because Methane is the second-most abundant greenhouse gas present in the atmosphere.

About Global Methane Pledge

- The Global Methane Pledge was first announced in September 2021 by the US and EU. It is an agreement to reduce global methane emissions. This pledge was announced with the aim of reducing methane emissions by 30 per cent by the year 2030, as compared to 2020 levels.

How Methane contributes to global temperature?

As per Intergovernmental Panel on Climate Change report, methane accounts for around half of the 1.0 degrees Celsius net increase in global average temperature as compared to Pre-industrial era. As per UN, 25 percent of the warming is because of methane.

About methane

Methane is a greenhouse gas and a component of natural gas. Its presence in the atmosphere increases the temperature on Earth. Methane comes from human as well as natural sources. Human sources of methane comprise of oil & natural gas

systems, landfills, coal mining, agricultural activities, wastewater treatment, and industrial processes. Human sources accounts for 60 percent of the global methane emissions, among which Oil & gas sectors are the largest contributor.

4.9 New Zealand's annual Bird of The Year award

- An independent conservation organisation in New Zealand, Forest & Bird, organised its annual Bird of The Year Award, recently.
- In the year 2021, the annual bird of the year award was won by Pekapeka-tou-roa, which is a native bat species of New Zealand.
- The species was made the winner in competition, despite not being a bird.

Why was a bat species allowed to enter?

- Pekapeka-tou-roa is also known as long-tailed bat. It is one among New Zealand's two land mammals. This species of bat was added to the Bird of the Year list by Forest and Bird as these species of bat as well as native birds are threatened by the same problems like habitat loss, Predators and climate change. Thus, the first time in 2021, the organisation has let a native mammal to enter the competition.

About New Zealand's long-tailed bat

- New Zealand's long-tailed bat is among two surviving species which are endemic or native to New Zealand. They can be found throughout the mainland as well as on some offshore islands in the country.

This species is a small-sized bat comprising of a long tail. New Zealand's long-tailed bat is associated to five other wattled or lobe-lipped bats in Australia.

Conservation Status

- As per New Zealand Department of Conservation, long-tailed bats are classified as 'nationally critical' while the short-tailed bat subspecies are classified as 'nationally vulnerable' to 'recovering'. However, they are in danger of extinction if they are not protected.

Bird of the Year competition

- Bird of the Year competition was started by 'Forest and Bird organisation' to raise awareness on native wildlife of New Zealand, their habitats & threats they face.

4.10 Diversion of Marusudar River at Pakal Dul HE Project inaugurated

- Union Minister of Power, New & Renewable Energy, R.K. Singh inaugurated the Diversion of Marusudar River of Pakal Dul Hydro Electric Project on November 1, 2021.
- This project is located in Kishtwar district of Jammu & Kashmir.
- Accelerated development of hydropower projects is significant for grid balancing and generating peak power.
- Pakal Dul H.E. Project will help in fulfilling the target of 450 GW Renewable energy by 2030. Through this project, investment of Rs 8212 crores is being made in this region. Investment will in turn provide direct & indirect employment

opportunities. It will help in overall development of local inhabitants.

Pakal Dul HE Project

- Pakal Dul HE Project is a 1000 MW project. It is being constructed by Chenab Valley Power Projects [P] Ltd. It is a joint venture company of JKSPDC (Govt of J&K) and NHPC Ltd (Govt of India Enterprise). CVPPPL has been charged with 3094 MW Hydro Power Projects for construction in J&K. The dam will divert water to the south using a 10 km long headrace tunnel. This project was awarded to a consortium of domestic & foreign countries comprising Bharat Heavy Electricals, AFCONS and Jay Prakash Associate, in February 2014.

Marusudar River

- Marusudar river is the largest river tributary of Chenab River. It starts at the Nunkun glacier of the Warwan Valley and joins Chenab at Bhandarkoot in the Kishtwar district. It runs for 133 kilometres. On this river, 1000MW Pakal Dul Dam and 800MW Bursar Hydroelectric Project are under construction.

4.11 International Methane Emissions

Observatory (IMEO) launched at G20

summit

- The United Nations Environment Programme (UNEP) has launched “International Methane Emissions Observatory (IMEO)” at the G20 Summit.

- Methane observatory was launched to drive action on reducing greenhouse gas emissions. It was launched with support from the European Union.
- International Methane Emissions Observatory (IMEO)
- It was launched because Methane is one among the most dangerous gases for climate. IMEO will monitor the methane emission through satellite.
- Observatory will produce a global public dataset of empirically verified methane emissions. It will initially focus on the fossil fuel sector, as it is responsible for one-third of anthropogenic emissions. This sector has the highest potential for reductions.

How will IMEO help?

- The IMEO will integrate data from four streams namely, Direct measurement data from scientific studies Remote sensing data
- National inventories and Reporting from the Oil & Gas
- It will monitor the commitments of around 30 countries that have joined Global Methane Pledge initiative by United States and European Union. This initiative was launched with the aim of cutting methane emissions by 30% by 2030.
- It will also help in improving the accuracy and public transparency of human-caused methane emissions.

Methane Partnership 2.0

- Methane Partnership 2.0 is a United Nations Environment Programme (UNEP) led climate initiative. It involves 62 companies, which represent 30% of the world's oil and gas production.

4.12 Punjab to begin Census of Indus River

Dolphin

- The state of Punjab is set to start the Census of one of the world's most threatened cetaceans, Indus River dolphin
- Indus River dolphin is scientifically called as *Platanista gangetica minor*. It is a freshwater dolphin, found in river Beas.
- Census will start in winter as part of a project by the Central government. However, Punjab's wildlife preservation wing will move a step ahead and it not only protect dolphins but also their natural habitat.
- Project will be implemented over five years.
- Under it, emphasis will be laid on collecting data on spatial & temporal distribution pattern of species and population status by means of an established and approved methodology.
- IUCN status
- In the IUCN red list, Indus River dolphin is classified as endangered by the International Union for the Conservation of Nature (IUCN).

Where they are found?

- Until recently, dolphins were believed to be endemic to Pakistan. However, a

remnant but viable population of Indus dolphins was discovered in Harike wildlife sanctuary of Punjab as well as in Lower Beas River in 2007. Since its discovery, Punjab's Department of Forests and Wildlife Preservation is conducting research in association with the WWF-India on the habitat use, current distribution and population of dolphins.

State aquatic animal

- In 2019, Indus River dolphin was declared as the State aquatic animal of Punjab.

Beas-Dolphin Mitras

- Under the initiative by Punjab, extension programmes will be organised by a group of dedicated individuals called 'Beas-Dolphin Mitras' [friends and protectors] of river Beas. The project will also embark on dolphin eco-tourism.

4.13 India officially endorses Emission list

- India officially endorsed a website made by Indian climate experts, listing the historical carbon dioxide emissions of developed countries.
- India endorsed the emission list ahead of commencement of the 26th United Nations Conference of Parties (COP) in Glasgow in Scotland.
- Emission list was created with the aim of highlighting the disparity between the emissions of developed and developing countries.
- Countries like the United States, Australia, Canada & countries in Western Europe are shown as having a net carbon

debt on the other hand, developing countries like India & China are having net credit.

- Thus, the database highlights that, it is only fair that developed countries should commit to steeper targets for curbing emissions as compared to developing countries.

Where does India stand?

- India is the third largest emitter of carbon emissions on yearly basis. However, it is the sixth largest with respect to its historical emissions. When the size of its population is considered, it is among the lowest per capita emitters. This highlights India's demands for climate justice as focus of the negotiations and its reluctance to agree for a fixed time frame in a bid to reach net zero. India is the only important emitter that has not committed to a net zero target.

What is the purpose of website?

- Website seeks to debunk the narrative provided by several developed countries, and global non-government organisations which focus on what developing countries must do.

Climate Equity Monitor

- The website is called as "Climate Equity Monitor". This scientific initiative focusses on equity and climate action from a data & evidence-based perspective, which in turn will encourage discussions on crucial issues. On the website, performance & policies of Non-

Annex-I Parties (developing countries) will be also provided to compare.

4.14 Haritha Karma Sena (Green Action Force)

- Kerala government has proposed to form "Haritha Karma Sena (Green Action Force) to collect and segregate waste from city households for transporting it to solid waste treatment facility at Kochi Corporation.
- Proposal to constitute the action force has been included in the draft bylaw in order to streamline municipal solid waste management system in the city.
- Draft legislation was framed in accordance with Section 33 of the Kerala Municipalities Act. It was discussed by health standing committee of the Corporation recently and now it will be placed before the Corporation council for approval.
- Clearance from State Government is also required for the bylaw to come into force.

What was the need for this legal framework?

- The policy framework was required for the civic body to handle plastic, solid & liquid waste; electronic & other waste and for managing hazardous waste created by industrial units. It was needed to keep the city clean as well as to prevent dumping of waste on roads & other public places.

What entities are covered under the bylaw?

- The new drafted by law covers all sections of society ranging from

individual households, industrial units and traders.

About Green Action Force

- The Green Action Force will be created in all divisions of the civic body. Each unit will be covering around 200 houses in the division. Residents of each division will be members of the Green Action Force, ideally. If enough members are not identified from a division, then those living within the Corporation limits will be selected. Members of the units will collect refuse from doorstep of residents. Non-biodegradable, degradable and sanitary waste will be collected separately on pre-designated dates and will be transported to vehicles engaged by the civic body. They will also keep an eye on illegal dumping of waste in water bodies and public places.

4.15 Climate Change Performance Index-

India's Rank

- German-watch in collaboration with Climate Action Network (CAN) and New Climate Institute, published the "Climate Change Performance Index 2022" on November 10.
- Report was released on the side-lines of COP26 to the United Nations Framework Convention on Climate Change (UNFCCC).
- CCPI 2022 finds that, major emitting economies which announced their Net Zero emission release targets poorly in climate change performance over 2021.

India's Rank

- In the index, India maintained its 10th rank.
- India continued to be among top-performing countries within G20.

World Scenario

- As per report, while United States has been ranked at 55th position among 66 countries with very low rating, despite USA is improving since it re-entered global climate negotiation process after President Joe Biden came to power.
- China has moved down four places as compared to 2020 ranking. It is ranked at 37th
- European Union is ranked at 22nd position, six places down as compared to 2020 ranking. It has been given 'medium' rating.
- UK is occupying 7th slot.
- Denmark emerged as the topper in the list with 76.92 per cent score. Denmark is followed by Sweden and Norway.

What is Climate Change Performance Index (CCPI)?

- CCPI is an independent monitoring tool, playing a leading role in providing information on implementation phase of Paris Agreement. It has provided analysis of climate protection performance of countries since 2005. The index evaluates 60 countries and European Union, which generate about 90 percent of global greenhouse gas emissions. It analyses

countries in four categories comprising of 14 indicators:

- Greenhouse gas emissions (40 per cent of total score), Renewable energy (20 per cent), Energy use (20 per cent) and Climate policy (20 per cent).

Where is Sela Tunnel being constructed?

- World's longest bi-lane road tunnel called "Sela Tunnel" is being built on Balipara-Charduar-Tawang (BCT) road by the Border Roads Organisation (BRO), under Project Vartak.

Kaiser-i-Hind: Arunachal's State butterfly

- Kaiser-i-Hind' is a large and brightly coloured butterfly.
- It is an elusive swallowtail butterfly, which carries 'India' in its name.
- It is found in China and now it has been approved as the State butterfly of Arunachal Pradesh.

4.16 World's largest solar power park in Bhadla-

- The solar park is located in Bhadla, a dry & sandy region in Rajasthan. It spans over 14,000 acres.
- The Park comprises of 10 million solar panels at the park. These solar panels contribute to an operational capacity of 2245 MW.

Bhadla Solar Park

- As of 2020, Bhadla solar park is largest solar park worldwide. It is spread over an area of 5,700 hectares in Bhadla, Jodhpur district of Rajasthan. Park has a total capacity of 2245 MW. It had witnessed

the lowest bid for solar power in India at Rs 2.44 per kilowatt-hour.

About Bhadla region

- Bhadla region of the Jodhpur district is officially recognized as sandy, dry, and arid region with an area of around 45 km². It is located around 200 km north of Jodhpur and 320 km west of Jaipur. Because of its climate, this region is described as "almost unlivable". Normal temperatures of the region are between 46-48 °C while, hot winds & sand storms occur frequently.

4.17 Australia declares 'La Nina weather event begins'

- Development of this phenomenon will bring above average rainfall across central, north and east Australia.
- This event could boost wheat yields in Australia.
- In September 2021, India had increased its wheat forecast for this season by 17 per cent to near record levels because of favourable weather.
- This year, climatic models suggest, La Nina pattern will be short-lived, and will be effective until late southern hemisphere summer or early autumn 2022.

What is La Nina?

- La Nina is an oceanic and atmospheric phenomenon, which is a colder counterpart of El Nino. It is a part of broader El Nino-Southern Oscillation (ENSO) climate pattern. Name of La Nina

originates from Spanish for 'the girl'. Phenomenon of La Nina is usually associated with more tropical cyclones, greater rainfall, and cooler than average temperatures in equatorial Pacific Ocean. The events typically last about a year.

What happens during La Nina?

- During La Nina period, sea surface temperature across eastern equatorial part of central Pacific Ocean becomes lower than normal by 3–5 °C.

Impact of La Nina

- La Nina has an extensive effect on weather worldwide, especially in North America. It also impacts the Atlantic and Pacific hurricane seasons, in which number of tropical cyclones increases in Atlantic basin because of low wind shear and warmer sea surface temperatures. It also reduces tropical cyclogenesis in Pacific Ocean.

4.18 Cryptocarya Muthuvariana: new tree species named after a tribe.

- A group of scientists has identified a new plant species from the forest area of Idamalakkudy colony in Idukki, where Muthuvar tribal community resides.

Cryptocarya Muthuvariana

- Cryptocarya Muthuvariana species of the tree belongs to genus Cryptocarya. The tree grows to a top of around 10 to 15 meters. It is characterised by not-too-broad leaves.

Muthuvar Tribal Community

- Muthuvan people were loyal subjects of Madurai dynasty. When this dynasty was deposed, surviving royal members migrated to Travancore in Kerala. They carried idols of Madurai Meenakshi, deity of the royal family while migrating. 'Muthuvar word' is used to denote same community in Tamil Nadu. Muthuvan people are ancient tribes of this land. This community is independent and reluctant to interact with others. They grow ragi, lemon grass and cardamom.

5. SCIENCE & TECHNOLOGY

5.1 Made-in-India AK203 assault rifles to boost firepower of Indian Army:

- In a major development, which will provide much needed fillip to the Indian Army, the Defence Acquisition Council (DAC) led under the Chairmanship of Defence Minister Rajnath Singh, cleared a deal between India and Russia to manufacture 6 lakh AK203 assault rifles at Amethi Ordnance Factory, Uttar Pradesh.
- Under the Make-in-India initiative, as many as 6 lakh AK203 assault rifles will be manufactured at a unit in Amethi for the Indian Army's infantry forces. A derivative of the AK47, which is part of the Kalashnikov assault rifle family, the AK203 will replace the Indian Army's standard-issue 7.62 mm INSAS rifles.



- It is noteworthy that the Indian Army's Rashtriya Rifles (RR) units and infantry regiments are some of the largest users of Kalashnikovs.

- As per the finalized deal between India and Russia, as many as 6,01,427 AK203 assault rifles will be manufactured in Amethi, UP. Notably, the first 70,000 rifles will include Russian-made components as part of the process of Transfer of Technology (ToT) between the two countries.

AK-203 rifle: Adding firepower to the Indian Army:

- Considered as the latest and most advanced version of the AK-47 rifle, the AK-203 is a select-fire assault rifle, gas-operated, magazine-fed, designed to chamber 7.62×39mm cartridge.
- Designed originally by Mikhail Kalashnikov (Russian Military Engineer), the firearm was originally named AK-103M and it was renamed AK-203 in 2018.
- The advanced rifle is reliable, durable and easy to maintain, hence it should be considered as the perfect partner to the Indian Army as it will provide better ergonomics, accuracy and density of fire.
- The negotiations between India & Russia for the AK-203 rifle began in 2018 but finally the much-awaited deal has been cleared and it will formally be signed next month ahead of the Russian president Vladimir Putin's visit to India.

Replacing Indian Army's INSAS rifles:

- Under the deal, the AK203 will replace the Indian Army's standard-issue 7.62

mm INSAS rifles. The INSAS or Indian Small Arms System is designed by the Defence Research and Development Organisation (DRDO) and it was inducted into service in the 1990s.

- The INSAS has a chrome-plated bore and the barrel has a six-groove rifling. The basic gas-operated long-stroke piston and the rotating bolt are similar to the AK-47.
- Furthermore, the INSAS rifle, with its smaller 5.56×45mm calibre bullets, is more aimed at injuring rather than neutralising the enemy.
- A comparison of the AK-203 and the INSAS shows that the former rifle is lighter, shorter and deadlier.

5.2 AIM & Vigyan Prasar's collaboration to promote scientific temperament in students:

- To motivate and engage students in the field of science, The Atal Innovation Mission (AIM), a flagship initiative of NitiAayog has, announced a partnership with VigyanPrasar, an autonomous organisation under the Department of Science and Technology to foster synergies between Atal Tinkering Labs (ATL) and VigyanPrasar's unique interactivity platform, 'Engage with Science' (EWS) today.
- As part of the agreement, Engage with Science will enroll all 9,200+ ATL-enabled schools and engage their students, teachers, and Principals in various ongoing activities. These activities will

result in the accumulation of points, which will be used to deliver certificates and incentives to encourage students and teachers to consume STEM content.

ATL, a workspace for do-it-yourself mode:

- The Atal Innovation Mission has created 9200+ Atal Tinkering Laboratories (ATLs) in schools across India with the goal of 'cultivating one million children in India as neoteric innovators.' The major goal of ATL is to encourage young brains to be curious, creative, and imaginative while also instilling skills like design mentality, computational thinking, adaptive learning, and physical computing among others.
- ATL is a place where young minds may put their ideas into action and acquire new skills in a hands-on, do-it-yourself environment. Young children are given the opportunity to work with tools and equipment in order to better understand STEM topics (Science, Technology, Engineering and Math).
- "The collaboration between AIM and Vigyan Prasar is a tremendous opportunity for both organisations as it will play a key role in reviving and upgrading our education practices to keep up with technology changes," stated Dr Chintan Vaishnav, Mission Director, Atal Innovation Mission. "The Engage with Science initiative will assist to develop STEM innovation culture by providing a platform for young minds to be exposed

to experiential learning with a focus on creation, innovation, and collaborative problem-solving to maximum impact,” he added.

About Engage With Science:

- Engage with Science is an initiative of the India Science OTT channel, with the goal of publicising and popularising STEM video content on India Science which is the nation’s own STEM OTT channel. EWS has almost 10,000 schools on board and organises frequent events for students and teachers. EWS activities are currently offered in Hindi and English, with plans to expand into other Indian languages in the future.

5.3 India’s first Virtual Science Lab for children launched to promote Culture of Curiosity:

- In order to promote science to all segments of students in every corner of the country, the Union Minister of Science & Technology Dr. Jitendra Singh launched the first-of-its-kind Virtual Science Lab for children under the CSIR Jigyasa program, which will also connect students with scientists across the country. Stating this as a huge beginning, Union Minister Jitendra Singh said that the Virtual Science Lab is also in tune with the National Education Policy (NEP), where students are allowed to choose any subject and the concept of streams has been disbanded. He further states that this new facility will immensely benefit young

children and students belonging to Kendriya Vidyalayas, Navodaya Vidyalayas, and Government Schools.



Virtual Lab – Promoting Culture of Curiosity

- In collaboration with IIT Bombay, CSIR has developed a Virtual Lab platform under the CSIR Jigyasa program, which facilitates classroom learning with laboratory research for school students. “The target audience for the Virtual Lab platform is students of the standard VI to XII (11-18 years) who would like to explore science using different activities, experienced researchers and faculties on the subjects of Science, Mathematics, Biology and IT,” Union Minister Jitendra Singh stated.
- The objective of the Virtual Lab is to provide quality research exposure and innovative pedagogy in order to drive school students’ scientific curiosity based on an online interactive medium with simulated experiments, pedagogy-based

content, videos, chat forums, animations, gaming, quiz, facility sharing, webinars, etc. Union Minister Jitendra Singh further reiterated that the content will be available in English initially, but has been planned to be made available in Hindi and other regional languages.

- A virtual tour of the CSIR laboratories will be facilitated under the Virtual Lab which will expose students to research infrastructure, which otherwise would be difficult to visit physically in some laboratories considering safety standards. The platform further provides options to interact with scientists and seek their inputs or provide clarification on students' doubts.

Key highlights of the virtual lab are:

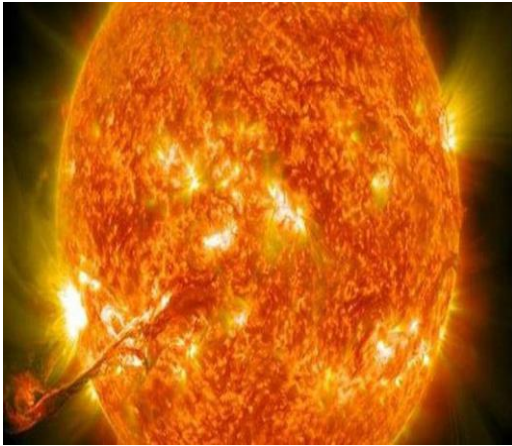
- Open-source platform
- Access content in regional languages;
- Scientist / Researchers Support; – Knowledge Upgradation for Teachers and Students;
- Project-based support;
- Fun based Gaming;
- Need-based Videos and Animation;
- Simulation Experiments;
- Promote scientific temperament;
- Science-based webinars;
- Student Entrepreneurship;
- Student-Expert forums;
- Student to Student forums;
- Simplified content;
- Availability to technical assistance;
- Build confidence and motivation

Scientist – Student Connect program “JIGYASA”

- Slated as one of the major initiatives by CSIR at the national level, “JIGYASA”, launched back in 2017, is aimed to address the culture of curiosity and provides a unique platform for bringing scientists and teachers for nurturing young minds. This program envisages opening up the national scientific facilities to school children, enabling CSIR scientific knowledge base and facilities to be utilized by school children. This model of engaging school children also has been extended to other schools in addition to KVS.
- The JIGYASA platform was successful in connecting nearly 3,00,000 students and more than 5,000 teachers with CSIR and they have benefited directly through visits to CSIR labs. The Union Minister Jitendra Singh said, even during the Covid-19 pandemic, online interactions and webinars for school students were conducted on several topics with more than 2 lakh cumulative views.

5.4 Pune astronomers discover rare class of stars using giant radio telescope:

- A group of astronomers from the National Centre for Radio Astrophysics (NCRA), Pune, has discovered eight stars belonging to a rare class called ‘MRPs’ or Main-sequence Radio Pulse emitters using the Giant Metrewave Radio Telescope (GMRT) located near Pune.



- It is noteworthy that the discovered rare class of radio stars are hotter than the Sun along with unusually strong magnetic fields and even stronger stellar wind.
- The group of scientists, led by astronomers from NCRA, said that they had also discovered three more such stars in the past using the GMRT. Thus, taking the total to 15 MRPs known so far, 11 were discovered with the GMRT, of which eight were discovered in 2021 alone.

A research paper on these findings

- All these new discoveries have been described in a research paper, which has been accepted for publication in the Astrophysical Journal.
- Barnali Das, who is the lead author of the paper, has recently completed a PhD, working under the supervision of Prof Poonam Chandra at the NCRA's Tata Institute of Fundamental Research, Pune.
- Notably, Barnali Das and Prof Chandra have been actively involved in several

projects aiming at the characterisation of this little-known class of MRPs.

Deciphering MRPs rare Stars and the role of GMRT

- Discovered for the first time in the year 2000, MRPs are stars hotter than the Sun with unusually strong magnetic fields, and even exponential stellar wind. Due to their characteristics, they emit bright radio pulses like a lighthouse.
- The success of discovering such rare stars can be linked to the high sensitivity of upgraded Giant Metre wave Radio Telescope It (uGMRT), as it has the ability to provide high-resolution pictures which enables the recovery of the pulsed signal from the different types of radiation coming from the sky.
- The fact that the radio pulses are visible only at certain times, and the phenomenon is mostly observable at low radio frequencies, this is the frequency range where the uGMRT stands out as the most sensitive telescope in the world.
- The telescope allowed the scientists to find that the magnetic field and temperature are two quantities that play an imperative role in deciding how intense the radio pulse will be.
- Further, these findings will be crucial in grasping what switches off the production of radio pulses in a hot magnetic star.
- Located at Khodad, 80 km away from Pune, the GMRT is a radio telescope operating over 150-1420 MHz. It consists

of 30 antennas, each of 45m diameter, and is operated by the National Centre for Radio Astrophysics of the Tata Institute of Fundamental Research (NCRA-TIFR).

- Interestingly, to understand the properties of these rare stars, the researchers have performed the most extensive study of MRPs over an ultra-wide frequency range, using the world's leading radio telescopes such as the GMRT and the US-based Karl G Jansky Very Large Array (VLA).

What's inside the radio pulses emitted by MRPs

- The findings by the astronomers have shown that the radio pulses emitted by MRPs contain a vast amount of information regarding the stellar magnetosphere (a space region surrounding an astronomical object).
- “The pulsed radio emission from MRPs is the only visible signatures of the theoretical models which predict tiny explosions in magnetic massive stars which occur at specific locations in the magnetosphere of the star. These explosions have been predicted to play an important role in regulating the transport of wind materials surrounding the star, and are likely to affect the stellar evolution as well,” said lead author Barnali Das.
- He further asserted that “the radio pulses produced by MRPs are the only probes that are sensitive enough to reflect the

changes incurred by these relatively weak events. Further experiments are underway to characterize these changes in pulse-behavior so as to be able to use the radio pulses to study the dynamic stellar magnetospheres.”

5.5 World's most sophisticated MRI facility:

- India is embarking on new frontiers of human Neuroscience and aligning with this, the Union Minister of State (Independent Charge) Science & Technology Dr Jitendra Singh launched the first of its kind, latest and world's most sophisticated MRI facility at the National Brain Research Centre (NBRC), Manesar Haryana – India's premier institute dedicated to Neuroscience Research and Education. With this technology, India has got a unique and powerful 3T MRI platform.



Newly developed MRI facility:

- The new MRI facility has the capability to run intense scanning modalities very fast, which reduces the scanning time for patients by almost a quarter from its predecessors. This is being used to develop human cohort data for patients suffering from common brain and mental health disorders that includes –
 - Parkinson’s Disease
 - Alziemer’s Disease
 - Anxiety
 - Depression
 - PTSD
 - Bipolar, etc.
- The novelty and newness of the machine is that it can also detect and quantify highly sensitive receptors and antioxidants from the brain which has a direct link with the onset of various brain disorders. The machine is equipped to detect brain sodium levels, which has direct relevance for assessment of brain tumors non-invasively. Also, heavy metal deposition in the brain due to pollution or many other factors can be quantified as necessary for various psychiatric and neurodegenerative disorders.
- Union Minister Jitendra Singh also underlined and highlighted the need for a single-subject world class research at the Centre, which promotes translational research with a mission to discover rationale therapies and cures for brain disorders.

About NBRC (National Brain Research Centre)

- With the aim of undertaking basic research to understand brain function in health and disease, NBRC is dedicated to studying brain functions in multidisciplinary approaches in basic and translational research.
- Located in the foothills of the Aravali range in Manesar, Haryana, NBRC is an autonomous institute funded by the Department of Biotechnology, Government of India. Apart from undertaking basic research to understand brain function, NBRC also promotes networking of the existing research groups in neuroscience in the country.

5.6 A new Exoplanet has been discovered by PARAS:

- This discovery was made using PRL Advanced Radial-velocity Abu-sky Search (PARAS) optical fiber-fed spectrograph, the first of its kind in India, on the 1.2 metre Telescope of PRL at its Mt Abu Observatory.
- PARAS have the capability to measure mass of an exoplanet. This is the second exoplanet discovered by PRL scientists using PARAS at 1.2 m Mt. Abu telescope; the first exoplanet K2-236b, a sub-Saturn size at 600 light-years away, was discovered in 2018.

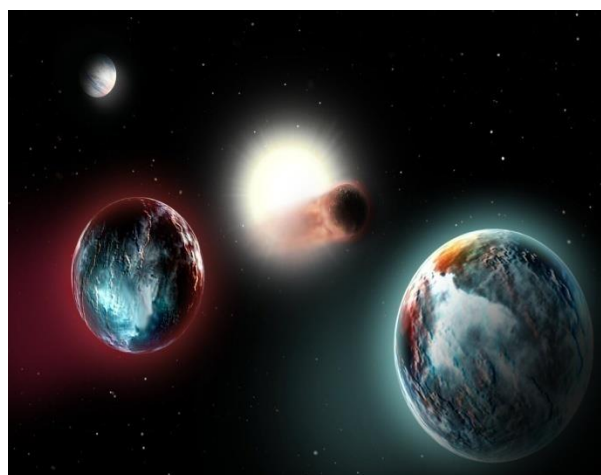


- The discovery of the second exoplanet with the help of PARAS has prompted Physical Research Laboratory (PRL) in Ahmedabad to launch PARAS-2 in the next six months.
- PARAS-2, will be an even more powerful machine through which the PRL aims to find more exoplanets that are five to 10 times the mass of the earth. PARAS-2 will be the largest spectrograph in Asia. Currently, there are only 10 such large-size spectrographs in the world; apart from India, US and Europe have it.
- The process of developing PARAS-2 started in 2016 and is likely to be operational by April 2022 at PRL's Mount Abu observatory. PARAS has 65,000 resolution (65k resolution) which is very powerful, but PARAS-2 will have 1,00,000 resolution (100k resolution).

The exoplanet

- The PARAS has measured the exoplanet's mass to be 70 per cent and size about 1.4 times that of Jupiter. These measurements

were carried out between December 2020 and March 2021. Further follow-up measurements were also obtained from TCES spectrograph from Germany in April 2021, and also independent photometric observations from the PRL's 43-cm telescope at Mt. Abu. This exoplanet is orbiting too close to an evolved or aging star with a mass of 1.5 times that of the Sun and is located 725 light years away.



- According to Indian Space Research Organisation (ISRO), this discovery was done by an exoplanet search and study group of PRL lead by Prof Abhijit Chakraborty that included students and international collaborators from Europe and the USA.
- The star is known as HD 82139 as per the Henry Draper catalogue and TOI 1789 as per the TESS catalogue. Hence, the planet is known as TOI 1789b or HD 82139b as per the IAU nomenclature. This newly

discovered star-planet system is very unique – the planet orbits the host star in just 3.2 days, thus placing it very-very close to the star at a distance of 0.05 AU (roughly one tenth the distances between Sun and Mercury). There are less than 10 such close-in systems known among the menagerie of exoplanets known so far.

- Owing to the close proximity of the planet to its host star, it is extremely heated with a surface temperature reaching up to 2000 K, and hence an inflated radius, making it one of the lowest density planets known (density of 0.31 gram per cc). Such close-in exoplanets around stars (with distance less than 0.1 AU) with masses between 0.25 to a few Jupiter mass are called “Hot-Jupiters”.

Significance:

- According to ISRO, the detection of such a system enhances our understanding of various mechanisms responsible for inflation in hot-Jupiters and the formation and evolution of planetary systems around evolving and aging stars.

5.7 INS Visakhapatnam:

- The stealth guided missile destroyer Visakhapatnam – the first in the series of Project 15B – is going to be commissioned next Sunday, November 21. Built by the Mumbai-based Mazagon Dock Shipbuilders Ltd (MDL), this destroyer – Yard 12704 – was delivered to the Indian Navy on October 28. Earlier,

the MDL had delivered the Delhi-class and Kolkata-class destroyers.



- A total of four vessels – Visakhapatnam, Mormugao, Imphal and Porbandar – are to be made by the MDL.
- The ship is a potent platform capable of undertaking a variety of tasks and missions, spanning the full spectrum of maritime warfare. This is amongst the largest destroyers constructed in India, with an overall length of 164 metres and a displacement of over 7500 tonnes.

The indigenous construct:

- A word on the steel used in construction of this ship. This ship is constructed using indigenous steel DMR 249A. To cater to the needs of the Indian Navy, the Defence Metallurgical Research Laboratory (DMRL) has successfully developed the technology for indigenous production of AB class of steels using the infrastructure existing in the country. Indigenous versions of AB class of steels, namely ABA and AB2, are designated as DMR-249A and DMR-249B, respectively. The indigenized plates of

this steel are about 4 to 8 times cheaper than the Imported Plates. This steel was developed for strategic applications by the Indian Navy at Steel Melting Shop II, Bokaro Steel Plant (SMS II, BSL). Steel Authority of India Ltd. (SAIL) too has supplied defence grade DMR 249A steel plates for the indigenously built Anti-Submarine Warfare (ASW) stealth corvette INS – Kiltan which was commissioned into the Indian Navy in 2017. The design of the ships has also been developed in-house by the Directorate of Naval Design and is follow-on of the Kolkata class (Project 15A) destroyers.

- The ship has several indigenous weapons systems like medium range SAMs, indigenous torpedo tube launchers, anti-submarine indigenous rocket launchers and 76-mm super rapid gun mount.
- According to the Indian Navy, “The 163-metre-long warship has a full load displacement of 7,400 tonnes and a maximum speed of 30 knots. The overall indigenous content of the project is approximately 75%.”

The Heavily Armed Warship:

- Back to the ship. It is armed with supersonic Surface-to-Surface ‘Brahmos’ missiles and ‘Barak-8’ Long Range Surface to Air Missiles.
- The ship is equipped with two helicopters onboard to further extend its reach. The ship is propelled by a powerful Combined

Gas and Gas Propulsion Plant (COGAG), consisting of four reversible Gas Turbines, which enables her to achieve a speed of over 30 knots (approx 55 kmph).

- The destroyer is fitted with indigenously developed anti-submarine weapons and sensors, prominently the Hull mounted Sonar Humsa NG, Heavy weight Torpedo Tube Launchers and Rocket Launchers.
- Significantly, more versatile than the previous destroyer and frigates in Naval inventory, the Visakhapatnam’s all round capability against enemy submarines, surface warships, anti-ship missiles and fighter aircraft will enable it to operate without a bevy of supporting vessels, and also function as the flagship of a Naval task force.
- The ship can accommodate a crew of 312 persons, has an endurance of 4,000 nautical miles and can carry out a typical 42 days mission with extended mission time in out of area operation.
- The Ship has a very high level of automation with sophisticated digital networks such as Gigabyte Ethernet-based Ship Data Network (GESDN), Combat Management System (CMS), Automatic Power Management System (APMS) and Integrated Platform Management System (IPMS).

5.8 India's research spree in Antarctica: 41st scientific expedition successfully launched:-

- India successfully launched the 41st scientific expedition to Antarctica on November 15, first batch of the contingent of which has reached the southern continent. The Ministry of Earth Sciences, in a statement, informed that the first batch of the contingent, comprising 23 scientists and support staff, reached the Indian Antarctic station, Maitri. Four more batches are expected to land in Antarctica by mid January 2022, using the DROMLAN facility.



41st scientific expedition to Antarctica

- Once the entire contingent reaches Antarctica, two major programs will be launched by the team as part of the expedition.
- First Program: This includes geological exploration of the Amery ice shelf at Bharati station, a permanent Antarctic research station commissioned by India. This involves studying and exploring the

links between India and Antarctica in the past.

- Second program: Reconnaissance surveys and preparatory work will be undertaken as part of this program for drilling of 500 meters of ice core near the Maitri station. The idea behind this program is to improve the understanding and undertaking proper study of Antarctic climate, westerly winds, sea-ice, greenhouse gases etc. from a single climate archive for the past 10,000 years.

Ice core drilling

- The second program involves drilling of 500 meters of ice core near the Maitri station. The British Antarctic Survey and the Norwegian Polar Institute have especially collaborated to carry out the drilling. This collaboration will also play a role in replenishing the annual supplies of food, provisions, fuel, and spares for operations and maintenance of life support systems at Maitri and Bharati.

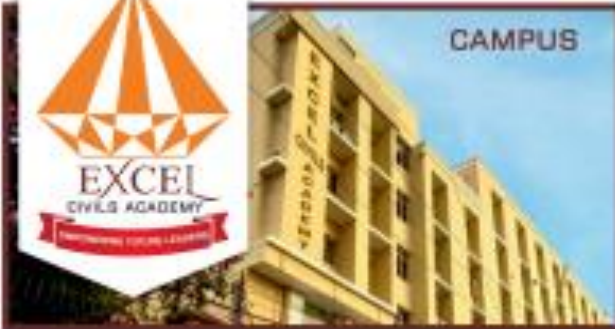
The Indian Antarctic Programme

- The Indian Antarctic Program is run and controlled by National Centre for Polar and Ocean Research, Ministry of Earth Sciences, GoI. Under the program, biological, atmospheric, chemical, and medical and earth sciences are observed and studied by India. India launched its first Annual Scientific Expeditions to the Antarctica in 1981, after having realised the importance that Antarctica holds in terms of scientific research. The first

permanent settlement Dakshin Gangotri, was built in 1983 but it was decommissioned in 1990 after half of it got buried under the ice. This was followed by setting up of the living-cum-research station 'Maitri' in 1989 and the Bharati station, later in 2012.

Bharati & Maitri stations: India's research cores in Antarctica

- The Bharati station is India's third Antarctic research facility in Antarctica. It holds its position as one of two active Indian research stations, alongside the Maitri station. Its completion made India one of the 9 nations to own multiple stations within the Antarctic Circle.
 - Bharati has been operational since March 2012, though it is still used for trials and awaits a formal launch. The research it undertakes includes oceanographic studies & the phenomenon of continental breakup. It also facilitates research to refine the present understanding of the Indian subcontinent's geological history.
 - The Maitri station, on the other hand, holds its position as India's second permanent research station in Antarctica as part of the Indian Antarctic Programme, under which atmospheric, biological, earth, chemical, and medical sciences are studied by India. It sits in the rocky mountainous region called the 'Schirmacher Oasis' and is situated 5 km away from the Russian Novolazarevskaya Station. Work here was first started by the Indian Expedition in end Dec 1984, whereas the first huts were started by the 4th Antarctica Expedition and completed in 1989, shortly before the first station Dakshin Gangotri got buried in ice.
- In order to keep the southern continent free of COVID-19, the contingent was made to undergo a strict medical examination at AIIMS (Delhi) and a stringent sanitary protocol which also included 14-days quarantine at Cape Town in South Africa.



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