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Varthaman

MONTHLY CURRENT AFFAIRS MAGAZINE
BY RV TRAINING ACADEMY



Antarctic Bill

NASA's Capstone Mission

Jagannath Rath Yatra 2022

Sanjhi Art

**CURRENT AFFAIRS
& PRACTICE QUESTIONS**

TEST SERIES TO ENHANCE PRELIMS 2023 PREPARATION

The Prelims exam is a decisive prerequisite in moving on to the next stage of 'Mains' in UPSC. The Prelims exam is that stage in UPSC where the screening process is the most dynamic. One sure shot way of clearing the Prelims exam for an aspirant is through a vigorous Prelims Test Series. The RV Training Academy has put together a well-integrated Prelims Test Series to assist students in their Prelims Exam preparations.

Test series comprises of:

Total 35 tests (6 NCERT Tests + 11 Sectional Tests + 4 Current Affairs Tests + 4 CSAT Tests + 10 Full Length Tests)

-
- 01 NCERT Test Series
 - 02 Sectional Test Series
 - 03 CSAT Test Series
 - 04 Current Affairs Test Series
 - 05 Simulation Test Series / Full Length Tests



SAROJINI NAIDU

Sarojini Naidu (Chattopadhyay) was an Indian political activist and poet. A proponent of civil rights, women's emancipation, and anti-imperialistic ideas, she was an important person in India's struggle for independence from colonial rule. She was also the first woman governor of an Indian state. Naidu's work as a poet earned her the sobriquet 'the Nightingale of India' or 'Bharat Kokila' by Mahatma Gandhi because of imagery and lyrical quality of her poetry. Naidu's poetry includes both children's poems and others written on more serious themes including patriotism, and tragedy. Published in 1912, "In the Bazaars of Hyderabad" remains one of her most popular poems.

Born in a Bengali family in Hyderabad, Chattopadhyay was educated in Madras, London and Cambridge. Following her time in England, where she worked as a suffragist, she was drawn to Indian National Congress' movement for India's independence from British rule. She became a part of the Indian Nationalist Movement and became a follower of Mahatma Gandhi and his idea of Swaraj. She married Govindarajulu Naidu, a general physician in 1898.

At the start of 1904, she became a popular orator, promoted Indian independence, and women's rights mainly women's education. In 1906, she addressed the Indian National Congress and the Indian Social Conference in Calcutta. Her social work for flood relief earned her the Kaisar-i-Hind Medal in 1911, which she later returned in protest over the April 1919 Jallianwala Bagh massacre. She met Muthulakshmi Reddy in 1909, and in 1914 she met Mahatma Gandhi, whom she credited with inspiring a new commitment to political action. She was the second woman President of the Indian National Congress and first Indian woman to preside over the INC conference.

With Muthulakshmi Reddy, she helped establish the Women's Indian Association in 1917. Later that year, Naidu accompanied her colleague Annie Besant, who was the president of Home Rule League and Women's Indian Association, to advocate universal suffrage in front of the Joint Select Committee in London, United Kingdom. She also supported the Lucknow Pact, a joint Hindu-Muslim demand for British political reform, at the Madras Special Provincial Council. As a public speaker, Naidu's oratory was known for its personality and its incorporation of her poetry.

She had close ties with Mahatma Gandhi, Gopal Krishna Gokhale, Rabindranath Tagore, and Sarala Devi Chaudhurani. She joined Mahatma Gandhi's Satyagraha movement of nonviolent resistance against British rule after 1917. In 1919, she went to London as a part of the All India Home Rule League. Next year, she participated in the non-cooperation movement in India.

She was one of the major figures to have led the Civil Disobedience Movement and the Quit Indian Movement. She was a founding member of the All Indian Women's Conference in 1927. She also presided over the East African and Indian Congress 1929 session in South Africa.

When she came back to India, her anti-British activity brought her a number of prison sentences in 1930, 1932, and 1942–43. The Indian National Congress did not attend the first Round Table Conference (London). However, in 1921, Sarojini Naidu and other leaders attended the second Round Table Conference (London) which was headed by Viceroy Lord Irwin. Upon the outbreak of World War II, she supported the Congress Party's policies. She became the governor of the United Province (now Uttar Pradesh) and remained in the post until her death. She was known as one of "India's Feminist Luminaries". The 13th of February is observed as 'National Women's Day' to commemorate the birth anniversary of Sarojini Naidu.

Purpose of the magazine

The purpose of Varthaman is to focus solely on issues which are relevant to the actual as well as applied aspects of the General Studies syllabus. The unique way the "Varthaman" team puts forward the facts and analysis would help you understand, retain and reproduce the information during the journey towards toppers' list.

The sources relied for selection and application of issues

The Hindu
The Indian Express
Times of India
PIB
Live Mint
Hindustan Times
News on Air
Prasar Bharati website
IDSA Website
NASA website
PRS India Website
Down to Earth
Rajya Sabha tv website
Lok Sabha tv website
Economic and Political Weekly
Yojana
Kurukshetra
NITI Aayog reports
BBC

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Features of the magazine

Current Affairs Analysis

- This month's edition covers the analysis of news from the immediately preceding month.
- The news are categorized subject wise viz. Polity, Economics, Environment & Ecology, Science & Technology, International Relations, etc. for easy and efficient study.
- Lead articles on burning issues are included.

Practice Questions

- Prelims Practice Questions
- Mains Practice Questions

Table of Content

Polity and Governance

- Vice Presidential Election 07
- Parliamentary committees 07
- Simultaneous parliamentary and Assembly polls 08
- Anti-Maritime Piracy Bill, 2019 08
- Antarctic Bill 09
- Nyaya Mitras 09
- Comprehensive Policy to Combat Air Pollution in Delhi-NCR 09
- BIS Indian Standards on safety aspects of Toys 10
- Har Ghar Jal Utsav 10

Government Schemes

- "e-Sanjeevani" - Free Telemedicine Service 11
- National Institute of Ranking Framework (NIRF) 2022 11
- District Mineral Funds 11
- Digilocker 12
- PARIMAN Portal 12
- e-VBAB or e-VidyaBharti and e-AarogyaBharti 12
- Pradhan Mantri JI-VAN Yojana 13
- National Action for Mechanised Sanitation Ecosystem (NAMASTE) Scheme 13
- National Child Labour Project (NCLP) scheme 13
- Bharatmala Pariyojana programme (BMP) 14
- Digi Yatra 14

Indian Economy

- Banks Board Bureau (BBB) 14
- Financial Stability Report 14
- NITI AAYOG LAUNCHES REPORT ON GIG ECONOMY IN INDIA 15
- National Conference of Scheduled and Multi-State Urban Co-operative Banks and Credit Societies 16
- Purchasing Managers Index 16
- Alternative Investment Fund (AIF) 16
- Foreign Contribution (Regulation) Act (FCRA) 17
- Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002 (SARFAESI Act) 17
- RBI sets up system to settle trade in rupees 18
- Depreciation of Rupee 18
- Gender Budgeting 18
- Masala Bonds 19
- Open Acreage Licensing Programme (OALP) 19
- External commercial borrowing 20
- Fallback liability 20
- Participatory Notes 20
- Yield inversion, soft-landing and reverse currency war 20
- Zero coupon, zero principal bond declared securities 21

- Farm Loan Waiver and The Reality 21
- Government Panel on MSP & Natural Farming 22
- Natural Resource Accounting 22
- Green Grid Initiative 23
- Landlord Major Port Model 23
- 'Green Energy Open Access' Rules 24

Environment and Ecology

- UN Ocean Conference 24
- Stockholm +50 Conference 24
- GLOBAL BIODIVERSITY FRAMEWORK 25
- Agrifood companies' carbon neutral Efforts 25
- National Conference on Millets 25
- URANIUM MINING RAJASTHAN 26
- YASUNI NATIONAL PARK 26
- LAKE SAWA 27
- Largest Bacteria in the World 27
- Direct-seeded rice Method 27
- Varroa Mite 27
- Sustainable use of wild species – IPBES Report 28
- Ozone Hole in the Tropics 28
- The fishbone channel plantation method 29
- The Singalila National Park 29
- Banni grasslands 29
- Natural Farming 29
- Podu cultivation 30
- Tobacco Crop 30
- Nonylphenol 31
- Grey Water Management 31
- Bacillus thuringiensis israelensis 31
- Wolbachia bacteria 32
- Cervavac Vaccine 32
- Eco-Sensitive Zones 32
- Biomass co-firing in power plants 33
- Migratory monarch butterflies 33
- Snow Leopard 33
- Salt water Crocodiles 34
- The Kali Bein River 34
- Paddy Cultivation 34
- Lumpy Skin Disease 35
- Africa's 1st malaria vaccine 35
- Monkeypox declared as Public Health Emergency 35
- Kala-azar or black fever 35

Geography

- Karakoram Anomaly 36
- Azores High 36
- Seismological observatory at Udampur 36

Disaster Management

- Assam Flood 37
- Flash Flood 37
- Manipur Landslide 38

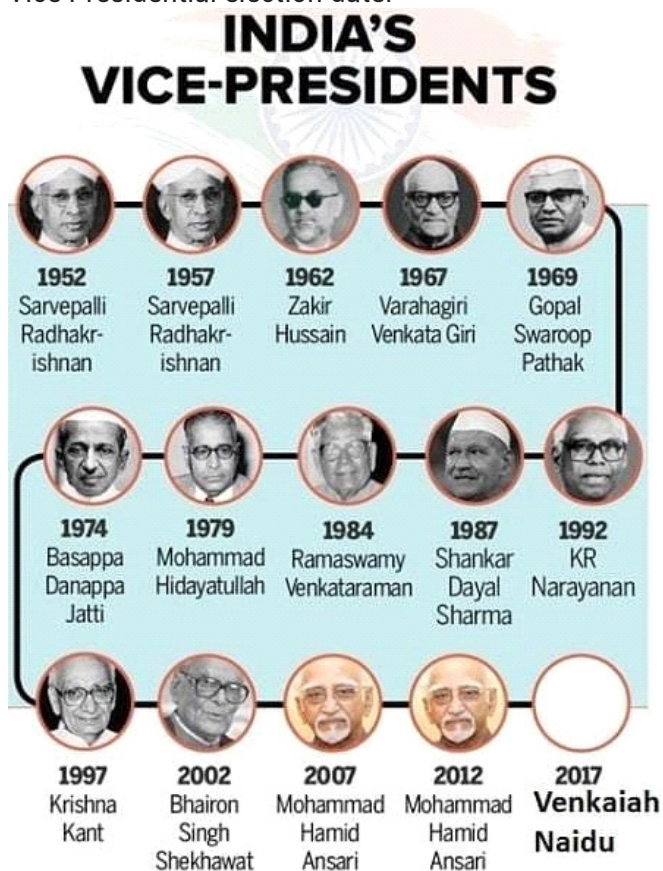
Table of Content

• Global Platform for Disaster Risk Reduction 2022	38	• State ranking index to assess implementation of the Targeted Public Distribution System (TPDS)	53
International Relations		• The State of Food Security and Nutrition in the World 2022	54
• The Two State Solution	39	• World Press Freedom Index	55
• Nord Stream 1 gas link	40	• Indian Bio Economy Report	55
• Interpol's International Child Sexual Exploitation (ICSE) initiative	40	• India Innovation Index	55
• Japan's 'Asia Energy Transition Initiative'	40	Indian Society/Social Issues/Social Justice	
• Lancang-Mekong Cooperation (LMC)	41	• Childhood Immunization Dropped	56
• Caspian Summit	41	• OBC sub-categorisation	56
• Digital Nomads	41	Ancient and Modern India, Art and Culture	
• Chabahar port	41	• Sanjhi Art	57
• One country, two systems	42	• Puri Jagannath Temple	57
• Partnership For Global Infrastructure And Investment	42	• Jagannath Rath Yatra 2022	58
• Partners in the Blue Pacific' initiative	43	• Kapilavastu Relics - Buddhism	58
• EU's ambitious draft law to restore nature	43	• Taranga Hill-Ambaji-Abu Road rail line	58
• China Pakistan Economic Corridor	43	• Dhammacakka Day 2022	59
• Shanghai Cooperation Organization	44	• National Emblem	59
Science and Technology		• Mangarh Hillock In Rajasthan	59
• India's GSAT-24 Satellite	44	• Sannati Buddhist Site	60
• Vertical Launch Short Range Surface to Air Missile (VL-SRSAM)	44	• Somnathpur Keshava Temple	60
• NASA's Capstone Mission	45	• Modhera Temple	61
• ISRO's POEM	45	• Sarna Religion	61
• DRUG-RESISTANT TYPHOID STRAINS	45	• Bonalu	61
• CRISPR Technology	46	Places and Personalities In News	
• National Internet Exchange of India	46	• Kamaraj	62
• James Web Telescope	46	• Gopal Ganesh Agarkar	62
• Autonomous Navigation facility, TiHAN	47	• Banda Singh Bahadur	62
• Large Hadron Collider	47	• Donetsk and Luhansk	63
• Aditya-L1	48	Miscellaneous	
• Network solution - GigaMesh	48	• Kargil Vijay Diwas	63
• Sodium-ion battery	48	PRACTICE QUESTIONS	64
• Rare Earth Minerals	48		
• Low Temperature Thermal Desalination (LTTD) technology	49		
• MIST Submarine Cable System	49		
• CAR-T cell therapy	49		
• Stealth frigate INS Dunagiri	50		
Reports and Indices			
• The Energy Progress Report 2022	50		
• World Drug Report 2022	50		
• Harnessing Green Hydrogen – Opportunities For Deep Decarbonisation In India” – Niti Ayog Report	51		
• Performance Grading Index For Districts	51		
• UN Habitat - World Cities Report 2022	52		
• The Global Gender Gap Index	52		
• The World Population Prospects 2022	53		

Polity and Governance

VICE PRESIDENTIAL ELECTION

In News: The Election Commission has announced the Vice Presidential election date.



More on the Topic:

- As per Article 68 of the Constitution of India, an election to fill the vacancy caused by the expiration of the term of office of the outgoing Vice-President is required to be completed before the expiration of the term.
- As per Rule 8 of the Presidential and Vice-Presidential Elections Rules, 1974, polls for the election will be taken in the Parliament House.

Electoral College:

- As per Article 66 of the Constitution of India, the Vice-President is elected by the members of the Electoral College consisting of the members of both Houses of Parliament in accordance with the system of proportional representation by means of the single transferable vote.
- Since, all the electors are members of both Houses of Parliament, the value of vote of each Member would be the same i.e. 1 (one).

Returning Officer:

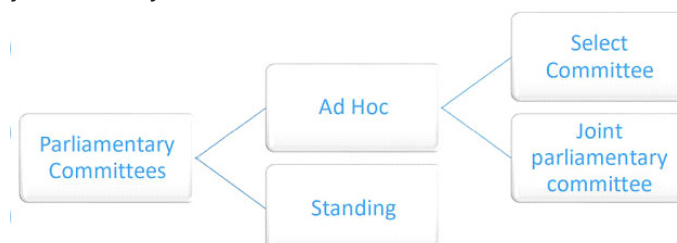
- The Election Commission, in consultation with the Central Government, appoints the **Secretary General of Lok Sabha and Rajya Sabha**, by rotation, as the Returning Officer.

Clarification on Whip:

- Political parties cannot issue any whip to their MPs in the matter of voting in the Vice-Presidential election.

PARLIAMENTARY COMMITTEES

In News: Ramacharyulu committee constituted for the study of the working of the Rajya Sabha secretariat and other procedural issues has suggested to increase the tenure of the Parliamentary committees from present one year to two years.



More on the Topic:

- While a significant amount of Parliament's work gets done on the floor of the House, it is difficult for Parliament to scrutinise all government activities in the House in a limited time.
- Thus, Parliamentary Committees were constituted to examine proposed legislation, government policies and expenditure in detail.
- They also examine petitions from the public, check whether rules framed by the government are in consonance with Acts of Parliament, and help manage the administration of Parliament.

Types of Parliamentary Committees:

- There are various types of Parliamentary Committees in India which look at matters such as government expenditure, legislation, government policies and schemes, and administration of Parliament.
- They can be categorised into Departmentally Related Standing Committees, financial committees, administrative committees, accountability committees, and ad hoc committees.

Advantages of Having Parliamentary Committees:

- Committees can get inputs from experts and stakeholders on various matters.
- Their ability to devote more time on each item allows them to examine matters in greater detail.
- They also help parties reach consensus on various issues.

Challenges faced by Parliamentary Committees:

- All Bills are not referred to Committees. They are thinly staffed and do not have full-time technical expert support.
- Some Committees may not seek evidence from experts on important Bills.
- Further, attendance of MPs in Committee meetings is about 50%, which is lower than the 84% attendance seen during the Parliament sittings.

SIMULTANEOUS PARLIAMENTARY AND ASSEMBLY POLLS

In News: The issue of holding simultaneous parliamentary and Assembly polls has been referred to the Law Commission.

More on the Topic:

- The idea of “One Nation, One Election” envisages a system where elections to all states and the Lok Sabha will have to be held simultaneously.
- This will involve the restructuring of the Indian election cycle in a manner that elections to the states and the centre synchronise.
- This would mean that the voters will cast their vote for electing members of the LS and the state assemblies on a single day, at the same time (or in a phased manner as the case may be).

Comments of Law Commission:

- In its draft report, the 21st Law Commission had said it was convinced that “there exists a viable environment, necessitating the holding of simultaneous elections to the House of the People and the State Legislatures.
- Simultaneous elections can be seen as a solution to prevent the country from being in constant election mode.”

Pros of Simultaneous Election:

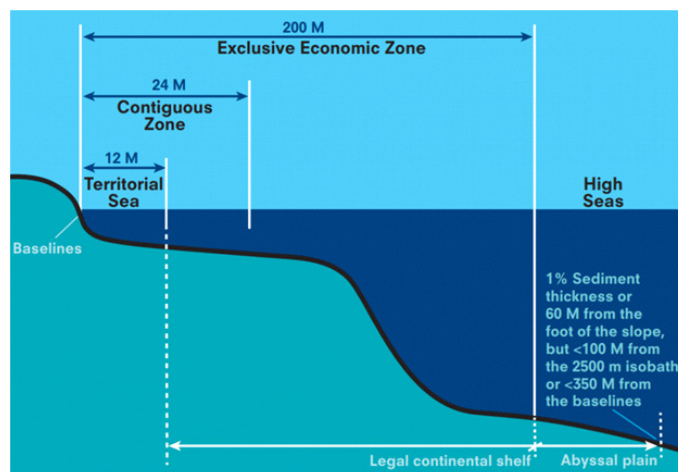
- Simultaneous polls will reduce enormous costs involved in separate elections.
- The system will help ruling parties focus on governance instead of being constantly in election mode.
- Simultaneous polls will boost voter turnout, according to the Law Commission.
- Reduce Policy paralysis as Imposition of Model Code of Conduct (MCC) over the state for a longer period of time leads to stoppage of developmental programs.

The arguments against Simultaneous Election:

- National and state issues are different, and holding simultaneous elections is likely to affect the judgment of voters.
- Since elections will be held once in five years, it will reduce the government's accountability to the people. Repeated elections keep legislators on their toes and increases accountability.
- When an election in a State is postponed until the synchronised phase, President's rule will have to be imposed in the interim period in that state. This will be a blow to democracy and federalism.

ANTI-MARITIME PIRACY BILL, 2019

In News: The Anti-Maritime Piracy Bill, 2019 has been listed for consideration and passing during the Monsoon session of the Parliament.



More on the Topic:

- The Bill enables Indian authorities to take action against piracy in the high seas. The Bill brings into law the UN Convention on the Law of the Sea. It applies to the sea beyond the Exclusive Economic Zone (EEZ), i.e., beyond 200 nautical miles from India's coastline.
- The Bill defines piracy as any illegal act of violence, detention or destruction against a ship, aircraft, person or property, for private purposes, by the crew or passengers of a private ship or aircraft.
- Piracy also includes inciting and intentionally facilitating such acts of violence, and voluntarily participating in the operation of a pirate ship or aircraft.
- Committing an act of piracy will be punishable with: (i) life imprisonment; or (ii) death, if the act of piracy causes or seeks to cause death.
- Participating, organising, aiding, supporting, attempting to commit, and directing others to participate in an act of piracy will be punishable with up to 14 years of imprisonment, and a fine.

Applicability of Bill:

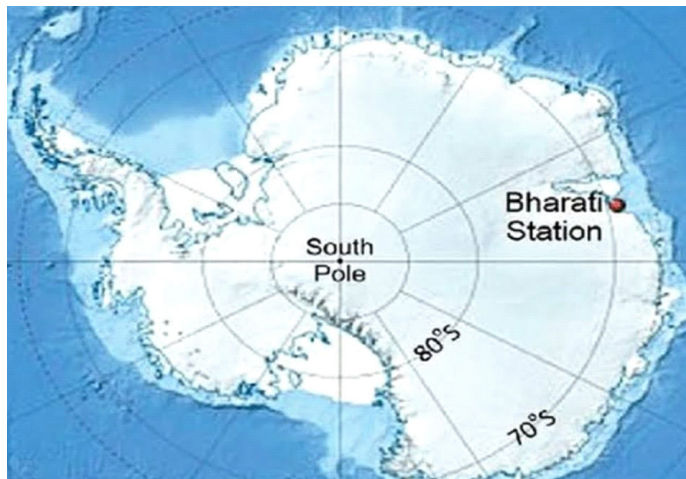
- The Bill will apply to all parts of the sea adjacent to and beyond the limits of the Exclusive Economic Zone (EEZ) of India, i.e., beyond 200 nautical miles from the coastline.
- The question is whether the Bill should cover the EEZ also, that is the area between 12 nautical miles and 200 nautical miles (from the coastline of India).

Context of the Bill:

- India currently does not have legislation on matters of piracy on the high seas.
- India ratified the UN Convention on the Law of the Sea in 1995 but was yet to enact it through the bill.
- Previously, pirates were prosecuted under the Indian Penal Code, 1860 (IPC). However, India's sovereignty is delimited by the outer boundary of its territorial waters— 12 nautical miles from the coast. Acts of piracy committed by a foreigner outside India's territorial waters cannot be an offence under the IPC, and those accused in piracy cases have been acquitted due to the lack of jurisdiction.

ANTARCTIC BILL

In News: Lok Sabha has passed the Indian Antarctic Bill 2022.



More on the Topic:

- It seeks to **give effect to the Antarctic Treaty**, the Convention on the Conservation of Antarctic Marine Living Resources and the Protocol on Environmental Protection to the Antarctic Treaty.
- It also seeks to protect the Antarctic environment and regulate activities in the region.
- The treaty came into force 61 years ago which aimed to **demilitarise Antarctica**, establish it as a zone free of nuclear tests and the disposal of radioactive waste, and ensure that it is used for peaceful purposes only; to promote international scientific cooperation in Antarctica; to set aside disputes over territorial sovereignty.

The bill prohibits certain activities in Antarctica including:

- (i) nuclear explosion or disposal of radioactive wastes,
- (ii) introduction of non-sterile soil, and
- (iii) discharge of garbage, plastic or other substance into the sea which is harmful to the marine environment.

Applicability:

- India joined it in August 1983. Now, this bill has been introduced to monitor and regulate activities at its research stations that are located in Antarctica.
- The provisions of the bill will apply to any person, vessel or aircraft that is a part of an Indian expedition to Antarctica under a permit issued under the bill.

Committee on Antarctic governance and environmental protection:

- The central government will establish a committee on Antarctic governance and environmental protection.
- The committee will be chaired by the Secretary of the Ministry of Earth Sciences.
- Ten members, not below the rank of joint secretary, will be nominated from various ministries and organisations such as defence, external affairs, National Centre for Polar and Ocean Research, and National Security Council Secretariat.
- In addition, two experts from Antarctic environment and geo-political fields will be nominated by the central government.

Penalties:

- The bill specifies penalties for contravention of its provisions.
- For instance, **conducting a nuclear explosion in Antarctica will be punishable with an imprisonment of 20 years** which may extend to life imprisonment and a fine of at least Rs 50 crore.
- Drilling for mineral resources or introducing non-native animals or plants in Antarctica without a permit will be punishable with imprisonment up to seven years and a fine between Rs 10 lakh and Rs 50 lakh.
- The central government may notify one or more sessions courts to be the designated court under the bill and specify its territorial jurisdiction to try offences punishable under the bill.

NYAYA MITRAS

In News: Nyaya Mitras have involved in commendable service in reducing pendency of cases across India.

More on the Topic:

- Nyaya Mitra was launched in April 2017,
- It aims at assisting the district judiciary in reduction of decade old pending court case.
- Districts are selected based on highest pendency of court cases over 10 years of period sourced from National Judiciary Data Grid (NJDG) database.
- Nyaya Mitra (NM) is a retired judicial officer / executive officer having legal degree / background who is located at High Courts/ District Courts.

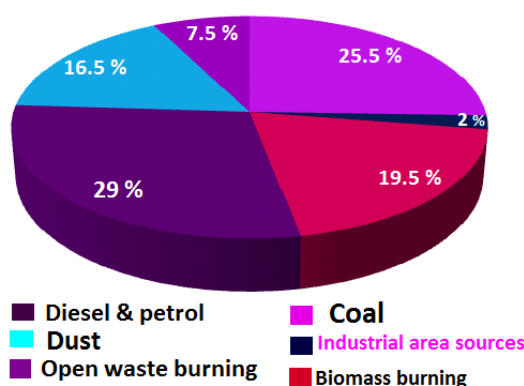
Key functions of the Nyaya Mitra includes:

- providing assistance to the Judiciary in reduction of decade old pending court case,
- liaising with the different departments to fast disposal of cases,
- referring cases to Lok Adalat etc.

COMPREHENSIVE POLICY TO COMBAT AIR POLLUTION IN DELHI-NCR

In News: The Commission for Air Quality Management in the National Capital Region and Adjacent Areas (CAQM) has developed a Comprehensive Policy to combat the threat of air pollution in Delhi-NCR

AIR POLLUTION IN DELHI SOURCES



More on the Topic:

- This policy includes sector-specific recommendations for Central Government Agencies and Departments, NCR State Governments, and GNCTD, as well as the Central Pollution Control Board (CPCB) and State Pollution Control Boards (PCBs) of the NCR, to prevent, control, and abate air pollution in the NCR.
- It covers pollution from sources such as industries, vehicles/transport, construction and demolition (C&D), dust from roads and open areas, municipal solid waste burning, crop residue burning, and so on.
- CAQM's policy also addresses thermal power plants (TPPs), clean fuels and electric mobility, public transportation, road traffic management, diesel generators (DGs), the use of firecrackers, and the reduction of air pollution through greening and plantation.

Important Aspects Addressed:

- Access to low-cost clean fuels and technology in industry, transportation, and households.
- Mobility transition includes mass transit, vehicle electrification, building walking and cycling infrastructure, and reducing personal vehicle usage, among other things.
- Circular economy for waste material recovery to avoid dumping and burning
- Dust control from C&D activities, roads/RoW, and open areas using appropriate technology, infrastructure, and greening measures

The Commission for Air Quality Management:

- The Commission for Air Quality Management was formed by an ordinance in October 2020, the "Commission for Air Quality Management (CAQM) in National Capital Region and Adjoining Areas Ordinance 2020".
- Chairperson: To be chaired by a government official of the rank of Secretary or Chief Secretary.
- It will be a permanent body and will have over 20 members.
- The Commission will be a statutory authority.
- The Commission will supersede bodies such as the central and state pollution control boards of Delhi, Punjab, Haryana, UP and Rajasthan.
- It will have the powers to issue directions to these state governments on issues pertaining to air pollution.

BIS INDIAN STANDARDS ON SAFETY ASPECTS OF TOYS

In News: Bureau of Indian Standards, the national standards body of India has published 10 Indian Standards on safety aspects of Toys related to physical safety, safety against chemicals, flammability, electrical safety etc.

More on the Topic:

- These standards prevent the use of unsafe and toxic materials in manufacturing of toys.
- Out of these 10 standards, 7 are the part of Quality Control Order (QCO) on 'Safety of Toys'.
- This Quality Control Order makes it mandatory that toys for children under 14 years of age conform to 7 Indian

Standards (List attached) for Safety of Toys and bear a Standard Mark (ISI Mark) under licence from BIS.

- This Government guideline came into force from 1st Jan 2021.
- No person is permitted to manufacture, import sell or distribute, store, hire, lease or exhibit for sale toys which do not bear ISI Mark under a licence from BIS.

BIS:

- BIS is the National Standard Body of India for the harmonious development of the activities of standardization, marking and quality certification of goods.
- The Bureau of Indian Standards (BIS) Act 2016 establishes the Bureau of Indian Standards (BIS) as the National Standards Body of India.

HAR GHAR JAL UTSAV

In News: The Centre has launched a special campaign, Har Ghar Jal Utsav, from July 25 to "certify" 1.54 lakh villages in the country that have reported 100 per cent coverage under the scheme.

More on the Topic:

- This campaign will look at bridging the gap between the reported and certified villages and prioritise the Har Ghar Jal certification, especially in those states where the coverage is significantly high, like Goa, Telangana, Haryana, Himachal Pradesh, Punjab, Gujarat, Bihar, and Manipur.
- The government has the ambitious target of covering every rural household in the country with tap drinking water supply by 2024 through Har Ghar Jal scheme.
- It has been initiated by the Union Government in 2019 under Jal Jeevan Mission.
- The coverage as of date stands at about 51 per cent, against just 17 percent when the campaign started in August 2019.

Jal Jeevan Mission:

- The Mission was launched on August 15, 2019.
- Implemented by the Ministry of Jal Shakti.
- To provide safe and adequate drinking water through household tap connections by 2024 to all rural households and public institutions; Gram Panchayat building, Primary School, Anganwadi centre, Health and wellness centres, etc.

Government Schemes

'E-SANJEEVANI' - FREE TELEMEDICINE SERVICE

In News: The National Health Authority (NHA) announced the successful integration of eSanjeevani with its flagship scheme Ayushman Bharat Digital Mission (ABDM).



More on the Topic:

- eSanjeevani service is available in two variants. The first one is eSanjeevani Ayushman Bharat-Health and Wellness Centre (AB-HWC) – the Doctor-to-Doctor telemedicine service through which the beneficiaries visiting a Health and Wellness Centre and can virtually connect to doctors/ specialists in the Hub that could be at tertiary healthcare facility/hospital/medical college.
- This enables the government to provide general and specialised health services in rural areas and isolated communities.
- The second variant, eSanjeevani OPD is serving patients across the country, connecting them directly to doctors from the comforts of their homes.
- Both versions – eSanjeevani AB-HWC and eSanjeevani OPD have been integrated with ABDM platform.

NATIONAL INSTITUTE OF RANKING FRAMEWORK (NIRF) 2022

In News: The results of the National Institute of Ranking Framework (NIRF) 2022, which ranks higher educational institutions across the country under various categories has been released recently.



More on the Topic:

- Indian Institute of Technology (IIT), Madras, is yet again the top higher educational institute in the country followed by the Indian Institute of Science (IISc), Bengaluru, and IIT Bombay.
- Institutes are also ranked across seven subject domains, namely engineering, management, pharmacy, law, medical, architecture and dental.

New changes for next Year:

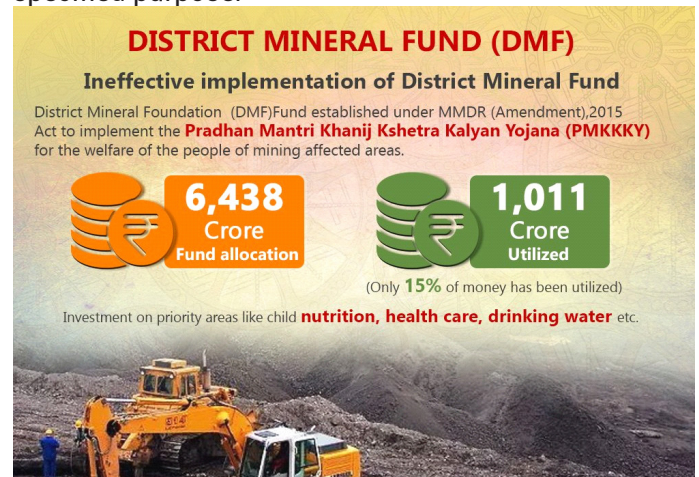
- Accreditation and assessment shall be mandatory, and every Higher Education Institution need to be accredited. Self-declaration and transparency
- By next year government will unify institutional accreditation presently are done by NAAC and programme accreditation presently being done by NBA.
- Ranking on Innovation done earlier by AICTE will henceforth integrated with NIRF. All institutions will be a part of the combined system of assessment, accreditation and rankings. Such a system will be transparent and objective.

Five Broad Categories of Parameters and Weightage:

- Teaching, Learning & Resources (TLR)
- Research and Professional Practice (RP)
- Graduation Outcomes (GO)
- Outreach and Inclusivity (OI)
- Peer Perception

DISTRICT MINERAL FUNDS

In News: The Centre has tightened the criteria for use of district mineral funds to ensure they are used for the specified purpose.



More on the Topic:

- DMF is intended for redevelopment of areas and people affected by mining activities.
- The fund is accrued from miners' contribution as a percentage of royalty.
- The district mineral foundations (DMFs) will now have to prepare a five-year perspective plan to ensure systematic development of the area affected by mining-related activities.

About District Mineral Fund:

- The Mining and Minerals Development and Regulation

(MMDR) Act, 2015, mandates every state to set up DMFs in each mining-affected area.

- Leaseholders are required to contribute to the not-for-profit DMFs between 10 and 30% of the royalty, in addition to the royalty paid to state governments.
- Using the funds generated, DMFs are expected to implement the Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY).
- DMF funds are treated as extra-budgetary resources.
- As per the DMF guidelines issued by the Centre, 60% of the fund needs to be used for high priority works such as drinking water supply, health, education, sanitation among others;
- while the rest 40% can be used in "other priority work" such as physical infrastructure, irrigation, energy and watershed development among others.
- According to the act the combination and functions of the DMF shall be prescribed by the states, the Centre has the power to give directions regarding composition and utilisation of funds.

DIGILOCKER

In News: Birth certificates of children born after August 2015 that were issued through the Civil Registration System (CRS) portal has been integrated with DigiLocker.



More on the Topic:

- It is a government-run mobile application that acts as a document wallet. Registered users on DigiLocker will be able to access the birth certificates online.
- Launched in 2015, DigiLocker is a platform to issue and verify government documents and certificates digitally, eliminating the use of physical documents.
- It is an initiative under the Digital India programme
- The initiative was launched by the Department of Electronics and Information Technology, under the Ministry of Communications and IT.
- It is aimed to help people by eliminating the use of physical documents and in sharing verified electronic documents across government agencies.
- DigiLocker can be used to securely store e-documents as well as store Uniform Resource Identifier (URI) link of e-documents issued by various issuer departments.
- The e-Sign facility provided as part of DigiLocker system can be used to digitally sign e-documents.

Civil Registration System (CRS) Portal:

- CRS is an online system for registration of births and deaths under the operational control of the Central government.
- The Registrar General of India (RGI) under the Ministry of Home Affairs operates the system.

PARIMAN PORTAL

In News: PARIMAN, The Geo-Portal for NCR made Public recently.



More on the Topic:

- For the purpose of effective utilization of Remote Sensing and GIS technology, a web geo-portal has been developed through National Informatics Centre (NIC), initially for use by NCR Participating states and the Office of NCRPB.
- It covers details of various sectors like Land Use, Transport, Industries, Water, Power, Health, Shelter, Heritage & Tourism, Disaster Management, etc
- This Geo-Portal will help to improve decentralized planning and management in NCR region.

E-VBAB OR E-VIDYABHARTI AND E-AAROgyABHARTI

In News: The Madagascar government and Telecommunications Consultants India Limited has signed a Memorandum of Understanding for participation in the Pan African e network project named e-VBAB or e-VidyaBharti and e-AarogyBharti.



More on the Topic:

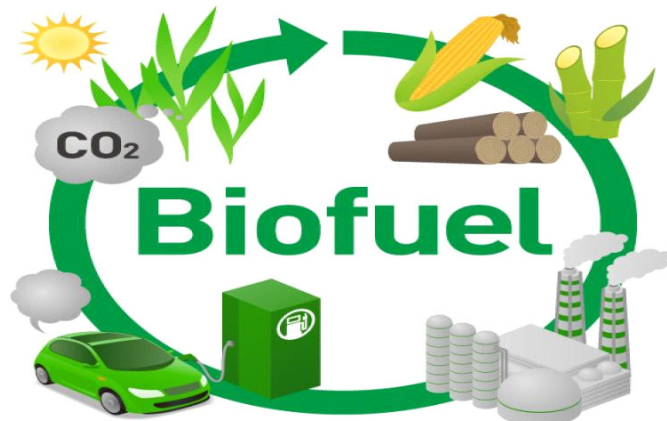
- This e-network aims at providing quality tele-education and telemedicine facility by linking select Indian Universities, Institutions and Super Specialty Hospitals to African educational institutions and hospitals
- Earlier avatar of this project was operated on satellite-based technology and covered 48 African countries, now been decided to establish two separate web-based portals – one each for tele-education and telemedicine.
- E-VBAB Network Project is primarily a technological upgrade and extension of the Pan-African e-Network Project (Phase 1) which was implemented in 48 partner countries across Africa from 2009 till 2017.
- Over the 5 years project duration, e-VBAB Network Project

will provide free tele-education courses in various academic disciplines to 4000 students every year from African countries.

- The Project will also be utilized for providing free Continuing Medical Education (1000 every year) to African doctors/nurses/para-medical staff. Further, Indian doctors, through this project will provide free medical consultancy to those African doctors who seek such consultancy.
- From India, a total of 26 universities are participating in the e-VBAB Network project, offering more than 300 courses in Management, Computer Science, Commerce, Science, Healthcare, Humanities and Arts.

PRADHAN MANTRI JI-VAN YOJANA

In News: Government had notified The Pradhan Mantri JI-VAN Yojana for providing financial support to integrated bio-ethanol projects.



More on the Topic:

- The scheme will be supported financially by Viability Gap Funding (VGF) to Second Generation (2G) Integrated Bioethanol Projects using lignocellulosic biomass and other renewable feedstock.
- Centre for High Technology (CHT), a technical body under the aegis of Ministry of Petroleum and Natural Gas (MoP&NG), will be the implementation Agency for the scheme.
- The current scheme envisages setting up of 12 Commercial scale Second Generation (2G) Bioethanol projects and 10 demonstration scale 2G Bioethanol projects based on non-food biomass feedstocks and other renewable feedstocks.

The objectives of the scheme are given below:

- Establish commercially viable projects for 2G Ethanol production.
- Provide remunerative income to farmers for their otherwise waste agriculture residues.
- Address concerns of environmental pollution caused by burning of biomass/ agriculture residues.
- Help in meeting the targets envisaged in Ethanol Blended Petrol (EBP) programme promoted by Government of India & Government of India vision of 10% reduction in import dependence by way of reducing the use of fossil fuels.
- To create rural & urban employment opportunities.
- To contribute to Swachh Bharat Mission by supporting the aggregation of non-food biofuel feedstocks such as waste biomass and urban waste.

- Indigenisation of second generation biomass to ethanol technologies.

NATIONAL ACTION FOR MECHANISED SANITATION ECOSYSTEM (NAMASTE) SCHEME

In News: Government has formulated a scheme "National Action Plan for Mechanized Sanitation Ecosystem (NAMASTE)", a joint project of Department of Drinking Water and Sanitation, Ministry of Social Justice and Empowerment and the Ministry of Housing and Urban Affairs (MoHUA),

More on the Topic:

- The objectives of the scheme are as follows,
- Zero fatalities in sanitation work in India.
- All sanitation work is performed by skilled workers.
- No sanitation workers come in direct contact with human faecal matter.
- Sanitation workers are collectivized into Self Help Groups (SHGs) and are empowered to run sanitation enterprises.
- All Sewer and Septic tank sanitation workers (SSWs) have access to alternative livelihoods.
- Strengthened supervisory and monitoring systems at national, state and Urban Local Body (ULB) levels to ensure enforcement and monitoring of safe sanitation work.
- Increased awareness among sanitation services seekers (individuals and institutions) to seek services from registered and skilled sanitation workers.

NATIONAL CHILD LABOUR PROJECT (NCLP) SCHEME

In News: The Centre has informed the Parliament that it does not have any data on child labour in the country and a reason for this is the drying up of budgetary provisions meant for the National Child Labour Project (NCLP) scheme, which was monitoring the problem for about three decades.

More on the Topic:

- Under NCLP Scheme, the children in the age group of 9-14 years are withdrawn from work and put into NCLP Special Training Centres, where they are provided with bridge education, vocational training, mid-day meal, stipend, health care etc. before being mainstreamed into formal education system.
- The children in the age group of 5-8 years are directly linked to the formal education system through a close coordination with the Sarva Shiksha Abhiyan.
- Further, to ensure the effective enforcement of the provisions of the Child Labour Act and smooth implementation of NCLP Scheme, a dedicated online portal named PENCiL (Platform for Effective Enforcement for No Child Labour) is developed in order to make the NCLP successful through better monitoring and implementation ensuring the timely disposal of work with transparency.
- Under this Scheme, funds are provided directly to the District Project Societies who in turn engage and allocate the funds to NGOs/Voluntary Agencies/Civil Societies Organisation etc. for running of Special Training Centres.

BHARATMALA PARIYOJANA PROGRAMME (BMP)

In News: As The government's ambitious road connectivity project under the Bharatmala Pariyojana programme (BMP) may face significant delay with completion expected only by FY28, a lag of nearly six years from the expected deadline.

More on the Topic:

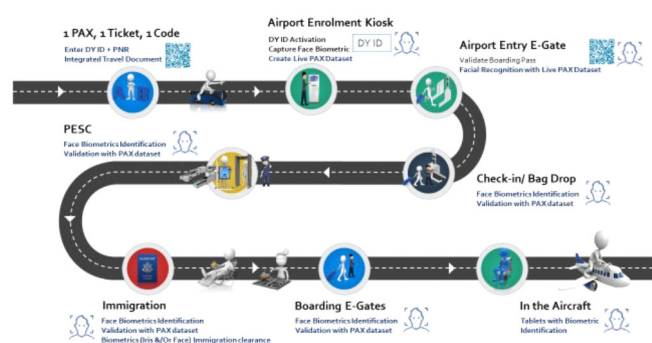
- The major reasons for delay can be attributed to delay in land acquisition, significant rise in land acquisition cost, and the covid-19 pandemic.
- The completion cost of BMP is estimated is 99% higher than the initial estimates owing to substantial rise in land acquisition cost, and steep increase in input costs.

About Bharatmala Pariyojana programme (BMP):

- The Bharatmala Pariyojana is a centrally-sponsored and funded Road and Highways project of the Government of India.
- The project comes under Ministry of Road Transport and Highways.
- Announced in July 2015, BMP involves the development of 24,800 km of national highways and a residual 10,000 km of highways pending under the erstwhile National Highway Development Program (NHDP) by FY2022.
- The programme is being implemented by three agencies, namely, the National Highways Authority of India (NHAI), the Roads Wing of the Ministry of Road Transport & Highways (MoRTH), and the National Highways & Infrastructure Development Corporation Limited (NHIDCL) with majority of the project awarding under BMP being undertaken by the NHAI.

DIGI YATRA

In News: 'Civil Aviation Ministry will roll out the DIGI YATRA project, aimed at achieving "contactless, seamless processing of passengers," at two airports — Varanasi and Bengaluru -- in August this year as part of its first phase.



More on the Topic:

- The contactless and seamless processing of passengers will be achieved via the facial recognition technology (FRT).
- The project will use facial features to establish the identity of the traveller, which will be linked to the boarding pass.
- Voluntary for passengers to choose whether to opt for facial recognition biometric for air travel.
- Real-time notifications about flight congestion and delays will be provided.
- Passengers will be notified when their luggage reaches the baggage claim belt.

INDIAN ECONOMY

BANKS BOARD BUREAU (BBB)

In News: The Centre has transformed the Banks Board Bureau (BBB) into Financial Services Institutions Bureau (FSIB) by making some amendments.

More on the Topic:

- Guidelines for selection of general managers and directors of public sector general insurance companies have been made part of FSIB.
- FSIB will be transformed as a single entity for making recommendations for appointments of whole time directors and non-executive chairman of banks and financial institutions.

About Banks Board Bureau:

- Banks Board Bureau (BBB) is an autonomous body of the Government of India tasked to Search and Select apposite personages for Board of Public Sector Banks, Public Sector Financial Institutions and Public Sector Insurance Companies and recommend measures to improve Corporate Governance in these Institutions.
- Central Government notified the amendment to the Nationalised Banks (Management and Miscellaneous Provisions) Scheme, 1980 providing the legal framework for composition and functions of the Banks Board Bureau on March 23, 2016. The Bureau accordingly started functioning from April 01, 2016 as an autonomous recommendatory body.
- The BBB works as step towards governance reforms in Public Sector Banks (PSBs) as recommended by P.J. Nayak Committee.

FINANCIAL STABILITY REPORT

In News: The Reserve Bank of India has released its Financial Stability Report.

More on the Topic:

- The gross non-performing assets (GNPA) ratio of scheduled commercial banks declined to a six-year low of 5.9 percent in March 2022 from 7.4 per cent in March 2021.
- Capital to risk weighted assets ratio (CRAR) of scheduled commercial banks (SCBs) rose to a new high of 16.7%. S
- Net non-performing assets (NNPA) ratio also fell by 70 basis points during FY22 and stood at 1.7 percent as on March-end.
- Provisioning Coverage Ratio (PCR) increased to 70.9% from 67.6%.

Report About Overall Banking Ecosystem:

- Indian banks are recovering from the pandemic that reduced borrowers' income.
- A combination of measures by the RBI and credit guarantee schemes by the government helped borrowers and banks throughout the pandemic.
- Banks made adequate provisions and raised capital to cushion their balance sheets.

- Non-performing assets of most banks have also declined.
- Banks' gross NPA ratio of large borrowers has been declining over the last two years to reach 7.7 percent in March 2022.

Risk Factors:

- **FinTech Companies:** the advent of FinTech has exposed the banking system to new risks which extend beyond prudential issues and often intersect with other public policy objectives relating to safeguarding of data privacy, cyber security, consumer protection, competition and compliance with anti-money laundering policies.
- Big techs can scale up rapidly and pose risk to financial stability, which can arise from increased disintermediation of incumbent institutions.
- **Crypto Currency:** Cryptocurrencies could result in instability over time and dollarisation (foreign money replacing domestic money) of the system as they create parallel currency systems, which can undermine sovereign control over money supply, interest rates and macroeconomic stability.
- The dangers posed by crypto assets to financial stability appear to be limited at the moment because the overall size of the crypto markets are small, just 0.4 per cent of global financial assets, and their interconnection with the traditional financial system is limited.

About Financial Stability Report:

- FSR is published twice each year by the RBI that presents an assessment of the health of the financial system. FSR details the current status of different financial institutions such as all the different types of banks and non-banking lending institutions.

NITI AAYOG LAUNCHES REPORT ON GIG ECONOMY IN INDIA

In News: The report, titled 'India's Booming Gig and Platform Economy' was published by the NITI Ayog.

More on the Topic:

- The report defines a gig worker as "someone who engages in income-earning activities outside of a traditional employer-employee relationship, as well as in the informal sector".
- Additionally, it defines those working with platforms such as Ola, Uber, Dunzo, Swiggy, Zomato and Urban Company as platform workers.
- It also termed platform labour as the "Fourth Industrial Revolution".
- The recommendations in the report are not binding on platform companies.

Major findings of the Report:

- An estimated 77 lakh gig workers were there in 2020-21, forming 2.6 percent of the non-farm workforce or 1.5 percent of the total workers in India.
- By 2029-30, it is expected to go up to 2.35 crore, or 6.7 percent of the non-agricultural workforce and 4.1 percent of total workers.
- Drivers and sales persons accounted for more than

52 percent of the gig workers in 2019-20.

- 47 percent of gig work currently is in medium skilled jobs, 22 percent in high-skilled, and about 31 percent in low-skilled jobs.
- NITI report is based on an estimation, and there is no official data to authoritatively estimate the extent of gig work in the country "thereby rendering the gig workforce invisible."

Challenges for Gig Workers:

- **Restrictive Accessibility** makes gig work a largely urban phenomenon, as access to the internet and digital technology can be a restrictive factor.
- **Job and income insecurity:** which is among the primary issues raised by gig workers, has been cited as a challenge.
- **Social Protection:** as workers are not employees and hence do not receive income security and social protection.
- **Occupational safety and health risks** includes road safety, theft and physical assault, discrimination or harassment. This is amplified for women in app-based taxi work and delivery.
- **Algorithmic management practices and performance evaluation:** workers may be under pressure due to algorithmic management practices and performance evaluation on the basis of ratings.

Recommendations by The Report:

- India requires a framework that balances the flexibility offered by platforms while also ensuring social security of worker. Currently, they work in a regulatory gray area.
- Paid sick leave, health access and insurance year-round, occupational disease and work accident insurance, retirement/pension plans and other contingency benefits should be provided to gig workers.
- Skill gaps should be bridged by carrying out assessments periodically and partnering with platform businesses for on boarding skilled women and persons with disabilities.
- Making aggregate data of gig and platform workers public to enable decision-making is important.
- Companies should carry out **gender sensitisation and accessibility awareness programmes** for workers and their families, particularly to promote the rights of women and persons with disabilities.
- It also suggests partnering with various stakeholders to upskill women and disabled persons.

Industrial Revolution 4.0:

- Industrial Revolution 4.0 refers to the fourth industrial revolution related to manufacturing and chain production.
- Industry 4.0 is a complex Cyber-Physical Systems which synergizes production with digital technologies, the Internet of Things, Artificial Intelligence, Big Data & Analytics, Machine Learning and Cloud Computing.
- The term 'Industry 4.0' was coined by the German government in 2011.

NATIONAL CONFERENCE OF SCHEDULED AND MULTI-STATE URBAN CO-OPERATIVE BANKS AND CREDIT SOCIETIES

In News: The National Conference of Scheduled and Multi-State Urban Co-operative Banks and Credit Societies was organized by the Ministry of Cooperation recently.



More on the Topic:

- The Conclave will felicitate Urban Cooperative Banks that have completed 100 years of service to society.
- There are 197 such banks in the country. This gives an indication of the deep roots of cooperatives and cooperative banks in the country.

About Urban Cooperative Banks:

- The term Urban Co-operative Banks (UCBs), though not formally defined, refers to primary cooperative banks located in urban and semi-urban areas.
- These banks, till 1996, were allowed to lend money only for non-agricultural purposes. This distinction does not hold today.
- The Cooperative banks are governed by the Banking Regulations Act, 1949 and Banking Laws (Cooperative Societies) Act, 1955.
- The cooperative banks have important role in providing the bargaining power to the poor, promoting leadership & financial inclusion, etc.

Background of Urban Cooperative Banks:

- These banks were traditionally centred around communities, localities work place groups. They essentially lent to small borrowers and businesses. Today, their scope of operations has widened considerably.
- The first known mutual aid society in India was probably the "Anyonya Sahakari Mandali" organised in the erstwhile princely State of Baroda in 1889 under the guidance of Vithal Laxman also known as Bhausaheb Kavthekar.

Recent Developments:

- In January 2020, the RBI revised the Supervisory action Framework (SAF) for UCBs.
- In June 2020, the Central government approved an Ordinance to bring all urban and multi-state cooperative banks under the direct supervision of RBI.

PURCHASING MANAGERS INDEX

In News: PM Activity in India's services sector rose to an 11-year high in June.

More on the Topic:

- The Purchasing Managers Index (PMI) is a measure of the prevailing direction of economic trends in manufacturing and service sector.
- The PMI is based on a monthly survey of supply chain managers across 19 industries, covering both upstream and downstream activity.
- PMI is ranked between 0 and 100.
- PMI above 50 represents an expansion, under 50 represents a contraction, and reading at 50 indicates no change.

ALTERNATIVE INVESTMENT FUND (AIF)

In News: SEBI has relaxed regulatory framework for AIFs targeting 'accredited investors'.



More on the Topic:

- AIFs that are 'large value funds for accredited investors' have been exempted from filing their placement memorandum by SEBI and merely have to intimate the regulator about the launch of their scheme.
- SEBI also relaxed the conditions for such funds which are close-ended in nature to extend their tenure beyond two years, provided appropriate disclosures are made.
- SEBI also has directed all AIFs to designate an employee as compliance officer, who shall be a person other than the CEO.
- The compliance officer shall be responsible for monitoring compliance with the provisions of the SEBI Act, AIF Regulations and circulars.

About Alternative Investment Fund:

- Alternative Investment Funds (AIF for short) are those funds created or established in India as a privately pooled investment vehicle in order to collect funds from specific investors as per a previously defined investment policy.

- Hence, in India, AIFs are private funds which are otherwise not coming under the jurisdiction of any regulatory agency in India.
- AIF does not include funds covered under the SEBI (Mutual Funds) Regulations, 1996, SEBI (Collective Investment Schemes) Regulations, 1999 or any other regulations of the Board to regulate fund management activities.

About accredited investors':

- An 'accredited investor' is also called qualified investor or professional investor.
- They are a class of investors who have an understanding of various financial products and the risks- returns associated with them and so, are able to take informed decisions regarding their investments.
- They can be an individual or a business entity that is allowed to trade unregistered securities with financial authorities.
- Accredited Investors are considered to be capable of dealing in relatively riskier investment products due to their financial capacity and ability to absorb possible financial losses.

FOREIGN CONTRIBUTION (REGULATION) ACT (FCRA)

In News: The Ministry of Home Affairs (MHA) has removed some crucial data from the Foreign Contribution (Regulation) Act (FCRA) website.



More on the Topic:

- The FCRA was enacted during the Emergency in 1976 amid apprehensions that foreign powers were interfering in India's affairs by pumping money into the country through independent organisations. These concerns were, in fact, even older — they had been expressed in Parliament as early as in 1969.
- The law sought to regulate foreign donations to individuals and associations so that they functioned "in a manner consistent with the values of a sovereign democratic republic".
- An amended FCRA was enacted in 2010 to "consolidate the law" on utilisation of foreign funds, and "to prohibit" their use for "any activities detrimental to national interest".
- The law was amended again in 2020, giving the government tighter control and scrutiny over the receipt and utilisation of foreign funds by NGOs.

How is FCRA registration granted?

- NGOs that want to receive foreign funds must apply online in a prescribed format with the required documentation.

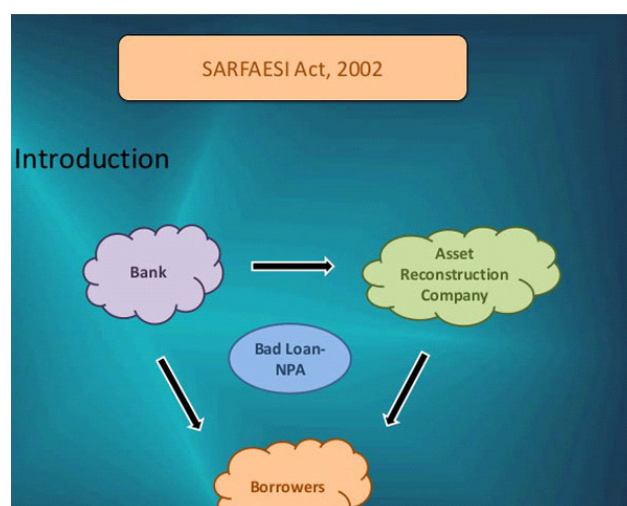
- FCRA registrations are granted to individuals or associations that have definite cultural, economic, educational, religious, and social programmes.
- Following the application by the NGO, the MHA makes inquiries through the Intelligence Bureau into the antecedents of the applicant, and accordingly processes the application.

About NGOs:

- NGOs are voluntary organizations, that work toward a social cause and social justice.
- They have assumed a significant space in civil society. NGOs with the support given by the government has been accelerating its development activities by taking up specific issues like poverty alleviation, casteism and discrimination, women rights, child labour, rural development, environmental issues etc.
- In the last two decades the role of NGOs has become significant in the social sector development-education, health etc

SECURITIZATION AND RECONSTRUCTION OF FINANCIAL ASSETS AND ENFORCEMENT OF SECURITY INTEREST ACT, 2002 (SARFAESI ACT)

In News: IDBI Bank has invoked SARFAESI act against a defaulter GTL Ltd.



More on the Topic:

- The Securitisation and Reconstruction of Financial Assets and Enforcement of Securities Interest Act, 2002 (also known as the SARFAESI Act) is an Indian law.
- It allows banks and other financial institutions to auction residential or commercial properties of defaulters to recover loans.
- The first asset reconstruction company (ARC) of India, ARCIL, was set up under this act.
- By virtue of the SARFAESI Act 2002, the Reserve Bank of India has the authority to register and regulate Asset Reconstruction Companies (ARCs).
- The SARFAESI act applies to the whole of India for the securitisation, reconstruction of financial assets and enforcement of the security interest.
- The act applies to all the financial institutions established as securitisation companies or asset reconstruction companies registered by the reserve bank of India.

RBI SETS UP SYSTEM TO SETTLE TRADE IN RUPEES

In News: The Reserve Bank of India (RBI) has put in place a mechanism to facilitate international trade in rupees (INR), with immediate effect.

More on the Topic:

- All exports and imports under this arrangement may be denominated and invoiced in rupee (INR) and the exchange rate between the currencies of the two trading partner countries may be market determined.
- Indian importers undertaking imports via this mechanism will make payment in INR which will be credited into the Special Vostro account of the correspondent bank of the partner country, against the invoices for the supply of goods or services from the overseas seller.
- Indian exporters using the mechanism will be paid the export proceeds in INR from the balances in the designated Special Vostro account of the correspondent bank of the partner country.

Regulatory Measures:

- Before putting in place this mechanism, banks will be required to take prior approval from the Foreign Exchange Department of Reserve Bank of India.
- The RBI's move to set up International Trade Settlement mechanism in INR would facilitate trade with countries under sanction like Iran and Russia.

Why This Move?

- Ever since sanctions were imposed on Russia, trade has been virtually at standstill with the country due to payment problems.
- As a result of the trade facilitation mechanism introduced by the RBI we see the payment issues with Russia easing.

Significance of system to settle trade in rupees:

- The move would also reduce the risk of forex fluctuation specially looking at the Euro-Rupee parity.
- Amid ongoing rupee weakness, the new move is appeared to be aimed at reducing demand for foreign exchange, by promoting rupee settlement of trade flows.
- While incremental for now, we see these measures as useful long-term steps, which can enable greater use of INR in foreign trade.

DEPRECIATION OF RUPEE

In News: The Reserve Bank of India (RBI) has announced a host of measures to enhance forex inflows to protect the value of rupee, which is witnessing a recent depreciation against the US dollar.



More on the Topic:

- Currency depreciation is a fall in the value of a currency in terms of its exchange rate versus other currencies. Currency depreciation can occur due to factors such as economic fundamentals, interest rate differentials, political instability, or risk aversion among investors.

Adverse Effects of Currency Depreciation:

- The current account deficit is bound to widen, depleting foreign exchange reserves and weakening the rupee.
- With higher landed prices of crude oil and other crucial imports, the economy is definitely inching towards cost-push inflation.
- Cost-push inflation (also known as wage-push inflation) occurs when overall prices increase (inflation) due to increases in the cost of wages and raw materials.
- Companies may not be allowed to fully pass on the burden of high costs to consumers, which, in turn, affects government dividend earnings, raising questions about budgeted fiscal deficits.

RBI Measures to Improve the Situation:

- Exemption from Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) on Incremental FCNR(B) and NRE Term Deposits:
- NRIs can open an NRE account – introduced in 1970 – with funds remitted to India through a bank abroad. This is a repatriable account and transfer from another NRE account or FCNR(B) account is also permitted.
- NRO accounts may be opened / maintained in the form of savings, recurring or fixed deposit accounts. These are Rupee accounts opened for the purpose of depositing income earned in India. These accounts can be held jointly with NRI / resident Indians.
- India has eased rules for foreign investors to invest in Indian debt instruments.

GENDER BUDGETING

In News: The NITI Aayog has proposed formulation of the Gender Budgeting Act for mainstreaming gender-based budgeting in government bodies across all states and Union Territories.

More on the Topic:

- Gender Budgeting is an approach to government fiscal policy that seeks to use a country's budget(s) as a tool to resolve societal gender inequality and promote inclusive development. It is an outcome-oriented expenditure allocation.
- Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels to achieve gender equality.

Need for Gender Budgeting:

- Gender budgeting primarily helps to dismantle gender inequalities. Gender inequalities are still visible in the modern society and are clearly demonstrated in entrepreneurship opportunities, labor participation, remuneration, education, health outcomes, governance, and personnel representation in top management positions.

- The auditing of gender budgets allows for the visualization of women's unpaid work of social reproduction and its contribution to the well-being of the entire society.

Gender Budgeting Shortcomings in India:

- In India, the Ministry of Women and Child Development (MWCD) is the primary agency for strategic coordination and the effective implementation of Gender Responsive Budgeting (GRB).
- The funds allocated for GRB are still confined to 5 per cent of the public expenditure and shrink to less than one per cent of GDP.
- Apart from the inadequate allocation for GRB, the gap between the allocation and the utilization of funds remains a daunting challenge.
- According to the government, 89 per cent of the Nirbhaya Fund (a fund allocated for women's safety) have remained unutilized by the States.
- In addition to this, in the last decade, approximately 90% of the GRB expenditure has been limited to only four major ministries - Rural Development, Education, Health and MWCD.
- The impediments in women's empowerment extend beyond the scope of these ministries.

Way Ahead:

- Policies should be charted out both for the short and long span.
- It is imperative to implement agencies to not only lay the foundation for policies, but to be vigilant till the final execution.
- There is a need to increase the budget allocation of gender-responsive schemes significantly.
- A shift in focus on the measurement of outcome and impact on the ground rather than the expenditure incurred is needed.
- Intersectional policy research should be undertaken to aid evidence-based gender policy formulation for it to curb gender inequalities and contribute to overall development.

MASALA BONDS

In News: The Reserve Bank of India has recommended that the government approach the Brics Bank, now known as the New Development Bank (NDB), to sell rupee-denominated bonds in overseas markets.

More on the Topic:

- Masala Bonds were introduced in India in 2014 by International Finance Corporation (IFC). The IFC issued the first masala bonds in India to fund infrastructure projects.
- They are debt instruments which help to raise money in local currency from foreign investors.
- Both the government and private entities can issue these bonds. Investors outside India who would like to invest in assets in India can subscribe to these bonds.
- Any resident of that country can subscribe to these bonds which are members of the Financial Action Task Force.

How it Benefits the Issuer?

- Indian entities or companies issue masala bonds outside India to raise money. The issue of these bonds is in Indian currency rather than local currency.
- Thus, if the rupee rate falls, the investor will bear the loss.

OPEN ACREAGE LICENSING PROGRAMME (OALP)

In News: The Petroleum Ministry has launched OALP Bid Round-8.



Ministry of Petroleum & Natural Gas Government of India

More on the Topic:

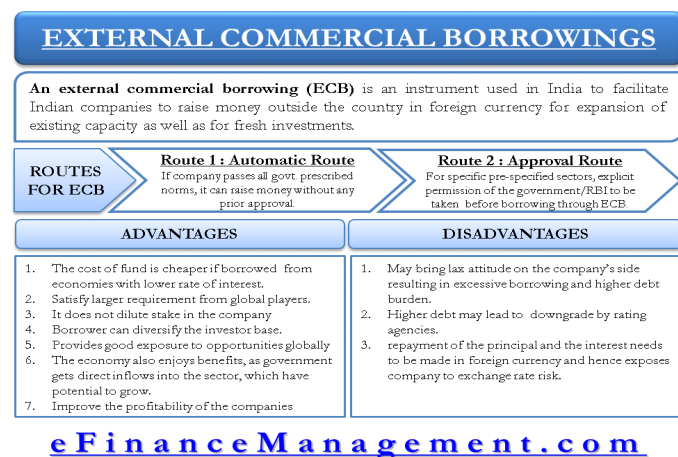
- The Hydrocarbon Exploration and Licensing Policy (HELP) was promulgated on 30 March 2016. Since then seven rounds of Open Acreage Licensing Programme (OALP) have already been concluded.
- OALP gives an option to a company to select the exploration blocks on its own, without waiting for the formal bid round from the Government.
- Under OALP, a bidder intending to explore hydrocarbons may apply to the Government seeking exploration of any new block which was not already covered by exploration.
- The Government will examine the interest and if it is suitable for award, then the government will call for competitive bids after obtaining necessary environmental and other clearances.
- OALP was introduced as part of the new fiscal regime in exploration sector called Hydrocarbon Exploration and Licensing Policy (HELP).
- So that, it will enable a faster survey and coverage of the available geographical area which has potential for oil and gas discovery.

HELP Policy?

- HELP is a uniform policy for granting licenses for exploration of hydrocarbons inside India and its Exclusive Economic Zone. The following are the main features of this policy:
- A single licensing format for exploration, production and subsequent marketing of all hydrocarbons.
- Open acreage policy for granting exploration blocks.
- Easy to understand revenue sharing model which is also easy to administer.
- Freedom from government regulation in pricing and marketing on hydrocarbons produced from such exploration

EXTERNAL COMMERCIAL BORROWING

In News: The Reserve Bank of India last week relaxed norms for companies raising external commercial borrowings (ECBs), as part of a set of measures to stem the slide in the rupee.



More on the Topic:

- External commercial borrowings (ECBs) are loans in India made by non-resident lenders in foreign currency to Indian borrowers.
- They are used widely in India to facilitate access to foreign money by Indian corporations and PSUs (public sector undertakings).
- ECBs include commercial bank loans, buyers' credit, suppliers' credit, securitized instruments such as floating rate notes and fixed rate bonds etc., credit from official export credit agencies and commercial borrowings from the private sector window of multilateral financial Institutions such as International Finance Corporation (Washington), ADB, AFIC, CDC, etc.
- ECBs cannot be used for investment in stock market or speculation in real estate.
- External Commercial Borrowing in India can be accessed via two routes viz. Automatic Route and Approval Route.
- The DEA (Department of Economic Affairs), Ministry of Finance, Government of India along with Reserve Bank of India, monitors and regulates ECB guidelines and policies.

Advantages of ECBs:

- ECBs provide opportunity to borrow large volume of funds
- The funds are available for relatively long term
- Interest rate are also lower compared to domestic funds
- ECBs are in the form of foreign currencies. Hence, they enable the corporate to have foreign currency to meet the import of machineries etc.
- Corporate can raise ECBs from internationally recognised sources such as banks, export credit agencies, international capital markets etc.

Concerns Regarding External Commercial Borrowing:

- The External commercial borrowings increase the external debt of the country.
- That is why it has to be matched with growth of foreign exchange reserves in the country so as to maintain solvency.
- Also increase in ECB is accompanied with increase in currency risk as there will be depreciation in rupee,

which will lead to increased burden on the borrower as the value of the rupee depreciates.

- Thus, increased dependence on ECB is less favourable for borrowing country's view. If ECBs are not controlled, there can be huge debt causing problems for economy.

FALLBACK LIABILITY

In News: Parliamentary Standing Committee on Commerce has dismissed e-commerce players' argument that they have no control over the items sold on their platform.

More on the Topic:

- Known as "fallback liability", the Draft e-commerce rules (released in 2021) held e-commerce marketplace responsible if a seller on its platform failed to deliver the goods or services ordered by a consumer "due to negligent conduct, omission or commission of any act by such seller", causing loss to the consumer.
- Fall-back liability makes the e-commerce firms liable in case a seller on their platform fails to deliver goods or services due to negligent conduct, which causes loss to the customer.

PARTICIPATORY NOTES

In News: Investment in the Indian capital markets through participatory notes (P-notes) declined.

More on the Topic:

- P-notes are issued by registered Foreign Portfolio Investors (FPIs) to overseas investors who wish to be a part of the Indian stock market without registering themselves directly. They, however, need to go through a due diligence process.

How Do Participatory Notes Work?

- Participatory notes are offshore derivative instruments with Indian shares as underlying assets.
- Brokers and foreign institutional investors registered with the Securities and Exchange Board of India (SEBI) issue the participatory notes and invest on behalf of the foreign investors.
- Brokers must report their participatory note issuance status to the regulatory board each quarter.
- The notes allow foreign investors with high net worth, hedge funds, and other investors, to participate in the Indian markets without registering with the SEBI.
- Investors save time, money and scrutiny associated with direct registration.

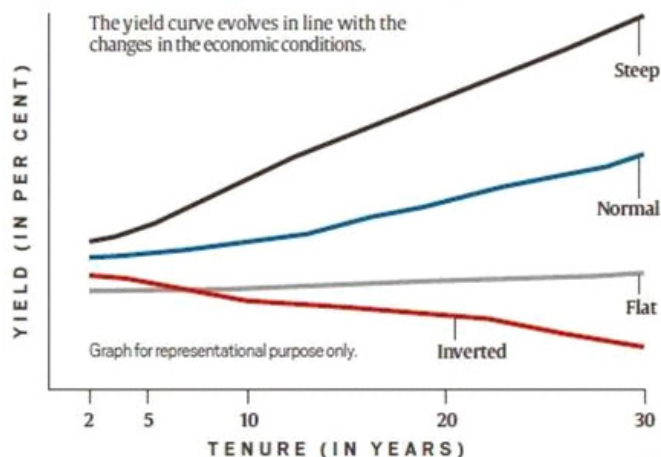
Concerns:

- SEBI has no jurisdiction over participatory note trading. Although foreign institutional investors must register with the Indian regulatory board, the participatory notes trading among foreign institutional investors are not recorded. Officials fear this practice may lead to the P-Notes being used for money laundering or other illegal activity.

YIELD INVERSION, SOFT-LANDING AND REVERSE CURRENCY WAR

In News: The three words Yield inversion, soft-landing and reverse currency war are constantly in news.

DIFFERENT TYPES OF YIELD CURVES



More on the Topic:

- Bond yield is the amount of return an investor realizes on a bond. Required yield refers to the amount of yield a bond issuer must offer to attract investors.
- When investors buy Bonds, they essentially lend bond issuers money. In return, bond issuers agree to pay investors interest on bonds throughout their lifetime and to repay the face value of bonds upon maturity. The money that investors earn is called yield.
- A yield curve is a graphical presentation of the term structure of interest rates, the relationship between short-term and long-term bond yields. It is plotted with bond yield on the vertical axis and the years to maturity on the horizontal axis.

Soft Landing:

- A soft landing, in economics, is a cyclical slowdown in economic growth that avoids recession.
- A soft landing is the goal of a central bank when it seeks to raise interest rates just enough to stop an economy from overheating and experiencing high inflation, without causing a severe downturn.
- Soft landing may also refer to a gradual, relatively painless slowdown in a particular industry or economic sector.

Reverse Currency War:

- Currency war, also known as competitive devaluations, is a condition in international affairs where countries seek to gain a trade advantage over other countries by causing the exchange rate of their currency to fall in relation to other currencies.
- A reverse currency war, on the other hand, involves competitive appreciation. Here, countries think their trading partners are deliberately trying to strengthen their currencies in order to rein in inflation.
- This could describe the period that began in 2021, when inflation returned as a serious problem in most countries.
- In reverse currency war countries work to make their currency stronger. Rather than boosting growth, the goal of any such move is to help tame inflation, since a stronger currency means that imports are relatively cheaper.

ZERO COUPON, ZERO PRINCIPAL BOND DECLARED SECURITIES

In News: The Finance Ministry has declared zero coupon zero principal instruments (ZCZP) as securities.

More on the Topic:

- Zero coupon zero principal instrument means an instrument issued by a Not for Profit Organisation (NPO) which will be registered with the social stock exchange segment of a recognised stock exchange.
- These instruments will be governed by rules made by the Securities and Exchange Board of India (Sebi).

The Social Stock Exchange:

- The Social Stock Exchange (SSE) is a novel concept in India and such a bourse is meant to serve private and non-profit sector providers by channelling greater capital to them.
- The idea was floated by Finance Minister Nirmala Sitharaman in her Budget Speech 2019-20.
- Social enterprises eligible to participate in the SSE should be entities -- NPOs and for-profit social enterprises -- having social intent and impact as their primary goal.
- Also, such an intent should be demonstrated through its focus on eligible social objectives for the under served or less privileged populations or regions.
- The social enterprises will have to engage in a social activity out of the list of 15 broad activities approved by Sebi.
- NPOs desirous of raising funds on the SSE will required to be registered with the exchange.

FARM LOAN WAIVER AND THE REALITY

In News: As per study by State Bank of India's researchers, only about half of the intended beneficiaries of farm loan waivers announced by nine States since 2014, have actually received debt write-offs.

More on the Topic:

- The poorest implementation of farm loan waiver schemes in terms of proportion of eligible farmers who had received the announced benefits, were in Telangana (5%), Madhya Pradesh (12%), Jharkhand (13%), Punjab (24%), Karnataka (38%) and Uttar Pradesh (52%).
- By contrast, farm loan waivers implemented by Chhattisgarh in 2018 and Maharashtra in 2020, were received by 100% and 91% of the eligible farmers, respectively.

The Possible Reasons:

- Rejection of farmers' claims by State Governments, limited or low fiscal space to meet promises, and change in Governments in subsequent years are the possible reasons.

Other Findings:

- Apart from benefits not reaching the targeted farmers, the report also flagged concerns about whether they actually help farmers in genuine distress.
- Loan waivers destroy the credit culture which may harm the farmers' interest in the medium to long term.
- It also squeezes the fiscal space of governments to increase productive investment in agriculture infrastructure.

RBI observations on Farm Loan Waiver:

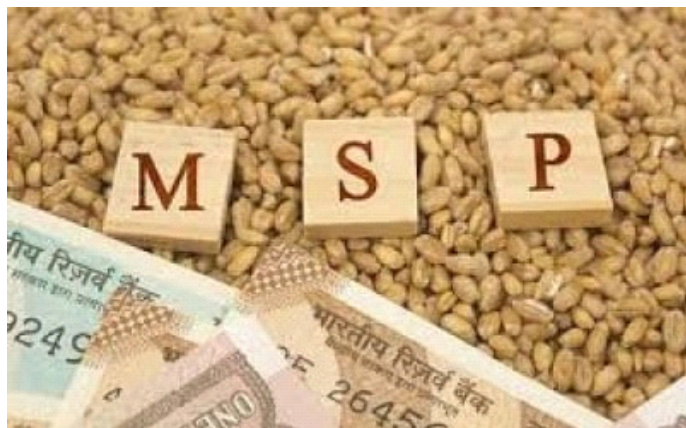
- RBI, loan waivers not only inhibit investment in the farm sector but put pressure on the fiscal of states which undertake farm loan waiver.
- In every state election during the last five years, loan waiver promise made by one political party or other.
- Also, loan waivers, as the RBI has repeatedly argued, vitiate the credit culture, and stress the budgets of the waiving state or central government.

Way Ahead:

- A waiver only improves a farmer's financial health for a short period of time and "in a matter of time that beneficiary farmer is indebted again and driven to appoint of needing another round of waivers soon.
- Creating a real-time dynamic distress index of farmers and its continuous monitoring is needed. It could integrate available high frequency data on weather conditions, existing and upcoming climatic conditions, debt burden on farmers, and data on agricultural commodities.
- Long-term solutions are needed to solve farmer woes.
- Lasting solutions like building irrigation capabilities and cold storage chains, increased crop insurance coverage, farm infrastructure building, tech-enabled productivity improvement and opening the sector to market forces and open trade can help the farmers in the long run as a better option.

GOVERNMENT PANEL ON MSP & NATURAL FARMING

In News: The government has notified a committee to "promote zero budget based farming", to "change" crop pattern keeping in mind the changing needs of the country, and to make MSP (minimum support price) more "effective and transparent".



More on the Topic:

Mandates on MSP:

- The committee will provide "suggestions to make available MSP to farmers of the country by making the system more effective and transparent" and will also give suggestions on "practicality to give more autonomy to Commission for Agricultural Costs and Prices (CACP) and measures to make it more scientific."
- The committee will recommend measures to "strengthen the Agricultural Marketing System as per the changing requirements of the country to ensure higher value to the farmers through remunerative prices of their produce by taking advantage of the domestic and export opportunities."

Mandates on zero budget based farming:

- The committee has been tasked to provide suggestions on 5 points regarding natural farming including "suggestions for programmes and schemes for value chain development, protocol validation & research for future needs and support for area expansion under the Indian Natural Farming System by publicity and through involvement and contribution of farmer organizations".

MSP:

- Minimum support price (MSP) is a "minimum price" for any crop that the government considers as remunerative for farmers and hence deserving of "support".
- It is also the price that government agencies pay whenever they procure a particular crop.
- The Commission for Agricultural Costs & Prices (CACP) recommends MSPs for 22 mandated crops and fair and remunerative price (FRP) for sugarcane.
- CACP is an attached office of the Ministry of Agriculture and Farmers Welfare. It is an advisory body whose recommendations are not binding on the Government.
- The Cabinet Committee on Economic Affairs (CCEA) of the Union government takes a final decision on the level of MSPs.
- CCEA is chaired by the Prime Minister of India.

Zero Budget Natural Farming (ZBNF):

- Zero Budget Natural Farming (ZBNF) means raising crops without using any fertilizers and pesticides or any other external materials. The word Zero Budget refers to the zero cost of production of all crops.

NATURAL RESOURCE ACCOUNTING

In News: The Government Accounting Standards advisory board (GASAB) has come up with a Natural Resource Accounting (NRA) for tracking and maintaining the natural resources of India.

Advantages

- Resource management.
- Policy planning.
- Identification and accounting the natural resources within the economy.
- Monitoring sustainable development goals.

More on the Topic:

- GASAB had prepared templates for the asset accounts for mineral and energy resources which were field-tested and reviewed by the experts in the consultative committee.
- As on date, all 28 states and one Union Territory (J&K) have prepared the asset accounts for 2020-2021.
- The asset accounts captured details of 34 major minerals, 58 minor minerals and all four fossil fuels.

What is Natural Resource Accounting:

- Natural resource accounting is an accounting system that deals with stocks and stock changes of natural assets, comprising biota (produced or wild), subsoil assets (proved reserves), water and land with their aquatic and terrestrial ecosystems.
- It is a process of estimating the value of natural resource depletion and environment degradation due to economic activities.

- It is frequently used in the sense of physical accounting as distinguished from monetary (environmental) accounting.
- NRA aims to provide a framework for organising information on the status, use, and value of natural resources and environmental assets as well as expenditures on environmental protection and resource management.
- Asset accounts is the first stage of NRA with the final third stage being environmental accounting.

Significance of Natural Resource Accounting:

- Natural resource accounting inter-alia refers to the **inter connection and linkages in the economy and our environment or surrounding**.
- It helps to organising information on the status, use, and value of natural resources and environmental assets as well as expenditures on environmental protection and resource management.
- NRA Sound database to help **policy makers to understand the potential impact of their decisions**.
- NRA helps to identify where to respond by policy makers with respect to climate change.
- Several of these accounts are closely related to **the social and economic attributes, making them a useful tool for the Policy**.
- It helps India to achieve international commitments. India is a signatory to the September 2016 UN General Assembly Resolution "Transforming the World, the 2030 agenda for Sustainable Development" which requires the preparation of Natural Resource Accounts(NRA).

GREEN GRID INITIATIVE

In News: India announced the launch of the Green Grids Initiative - One Sun, One World, One Grid (GGI-OSOWOG) in partnership with the United Kingdom recently.

More on the Topic:

- GGI-OSOWOG was conceived in 2018 to **develop global interconnected solar energy systems**. In May 2021, India and the United Kingdom committed to launching GGI at CoP26.
- The initiative aims to **build a framework for global cooperation on the effective utilisation of renewable resources** and to help ensure that clean and efficient energy is a reliable option for all nations to meet their energy requirements by 2030.
- This project aspires to **harness the sun's energy and build a global interconnected electricity grid to accelerate the transition to renewable energy**.
- The initiative is **expected to connect more than 80 countries across a large geographical area, with varying levels of sunlight**.
- A transitional system will enable countries with low levels of sunlight to obtain energy from areas with an excess of it.

The development of the grids will take place in three stages:

- The interconnection of the Indian grids with the Middle East, South Asia and Southeast Asian (MESASEA) grids
- MESASEA grids' interconnection with the African power grid
- Finally, global interconnectivity

Opportunities:

- GGI can transform the traditional energy system by **replacing thermal power plants with solar energy**, making India more resilient against extreme weather conditions and less dependent on fossil fuels.
- Lately, solar energy has been improving the lives of millions of people in rural India, enabling them to carry out activities and improving their standard of living in an environmentally friendly manner.
- An example of this is the **implementation of solar-powered agriculture pumps** to extract groundwater, which are more environmentally friendly than traditional diesel ones.

Challenges:

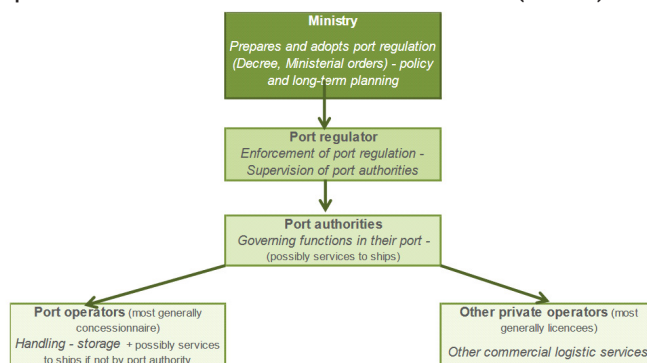
- A majority of the solar energy infrastructure is located in desert regions, which brings dust deposits on panels. **A layer of dust decreases solar power conversion efficiency by 40 per cent.**
- There are also hidden environmental costs of setting up solar energy infrastructure.
- Solar energy technologies such as batteries and panels use energy-intensive raw materials and several chemicals and heavy metals that need to be handled and disposed of correctly.

Way Ahead:

- Before GGI is implemented, a lot of factors need to be reconsidered. **Environmental costs of solar power, efficiency issues, energy losses due to conversion and transfer, and the problem of waste management** are barriers that need to be addressed urgently by the implementing bodies.
- The initiative has opened many opportunities for India to put itself on the global stage of renewable energy.
- With the recent coal shortage serving as a reality check alongside the global race to Net Zero, India's transition to renewable energy should be expedited.

LANDLORD MAJOR PORT MODEL

In News: Jawaharlal Nehru Port (JNP) has become the first major landlord port in India following the awarding of a private tender to expand Jawaharlal Nehru Port Container Terminal (JNPCT).



More on the Topic:

- In the landlord port model Public Private Partnership, the publicly governed port authority acts as a regulatory body and as landlord while private companies carry out port operations—mainly cargo-handling activities.
- Here, the port authority maintains ownership of the port while the infrastructure is leased to private firms that

provide and maintain their own superstructure and install own equipment to handle cargo.

- In return, the landlord port gets a share of the revenue from the private entity.
- The role of the landlord port authority would be to carry out all public sector services and operations such as the award of bids for cargo terminals and dredging.

Jawaharlal Nehru Port (JNP):

- Jawaharlal Nehru Port Trust (JNPT) or JLN Port, is located in Navi Mumbai's Raigad district, this port on the Arabian Sea is accessed via Thane Creek.
- Mumbai Port is India's largest port by size and shipping traffic. The port is situated in a natural harbour with water reaching depths of 10-12 meters, allowing easy docking and passage for large cargo ships.

What is a public-private partnership (PPP)?

- A public-private partnership (PPP) is a funding model for public infrastructure projects and initiatives such as a new telecommunications system, public transportation system, airport or power plant.
- Government agencies represent the public partner at a local, state and/or national level. The private partner can be a privately-owned business, public corporation or consortium of companies with a specific area of expertise.

GREEN ENERGY OPEN ACCESS RULES

In News: Ministry of Power has notified Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022.

More on the Topic:

- Objective of the Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022 is to accelerate our renewable energy programmes.
- According to the rules, green open access is allowed to any consumer. Limit of open access transaction has also been decreased from 1 MW (megawatt) to 100 kW for green energy.
- This will also enable small consumers to purchase renewable power by means of open access.
- There will be transparency in approval process of open access applications. According to the rules, approvals are required to be granted in 15 days, otherwise it deemed to have been approved subject.
- It will be done through a national portal.
- Tariff for the green energy will be determined by appropriate commission.
- Rules provides for cap on increasing cross-subsidy surcharges and do away with additional surcharge.
- It will incentivise the consumers to go green as well addresses the issues pressing the growth of open access in India.
- Consumers will receive certificates if they consume green power.

ENVIRONMENT AND ECOLOGY

UN OCEAN CONFERENCE

In News: The Second United Nations Ocean Conference has concluded with Lisbon declaration.

More on the Topic:

- The 2nd UNOC was co-hosted by Portugal and Kenya.
- Representatives of governments, heads of state, NGO's and other entities came together to achieve a common goal, Sustainable Development Goal (SDG) No. 14, which strives to protect life below water.
- UNESCO launched its key State of the Ocean Report (pilot edition) during the event. The report recommended following actions,
- Strengthen the ocean science-policy interface.
- Act to create a theoretical basis for sustainable ocean planning and management, within and beyond areas of national jurisdiction.

The Lisbon Declaration:

- The Conference saw the unanimous adoption of the Lisbon Declaration, a suite of science-based and innovative actions, taking into account the capacity challenges facing developing countries, in particular, Small Island Developing States and Least Developing Countries, at the frontline of the devastating impacts of the ocean emergency.
- As part of it, over 150 countries collectively agreed to scale up science-based and innovative actions to address ocean emergency, supporting the implementation of SDG-14.
- Countries agreed on actions ranging from strengthening data collection, recognizing the role of indigenous people in sharing innovation and practices to reducing greenhouse gas emissions from international maritime transportation, especially shipping.
- They also agreed to promote innovative financing solutions to achieve sustainable ocean-based economies and encourage women and girls' meaningful participation in the ocean-based economy.

India's Commitment at the conference:

- India committed to a Coastal Clean Seas Campaign and will work toward a ban on single use plastics, beginning with plastic bags.

Sustainable Development Goal No.14:

- Sustainable Development Goal No.14, it aims to preserve life below the surface of the water and is further divided into a number of targets.

STOCKHOLM +50 CONFERENCE

In News: The Stockholm +50 conference is being held in Sweden.

More on the Topic:

- The conference is being held to commemorate 50 years of the Stockholm Conference — the first United Nations conference on environment.

- Theme of Stockholm+50: A healthy planet for prosperity of all – our responsibility, our opportunity.

About Stock Holm Conference:

- It is also known as **United Nations Conference on the Human Environment**.
- The 1972 Stockholm conference was the **first globally to put the spotlight on environmental issues** and present 26 principles on conserving the environment.
- It also **marked the start of a dialogue between industrialized and developing countries** on the link between economic growth, the pollution of the air, water, and oceans and the well-being of people around the world.
- Key principles of the conference included assistance to developing countries, safeguarding wildlife and natural resources, control pollution and assert human rights.
- One of the major results of the Stockholm conference was the **creation of the United Nations Environment Programme (UNEP)**.
- Then Prime Minister Indira Gandhi was the only foreign head of government out of 113 nations to attend the conference.

GLOBAL BIODIVERSITY FRAMEWORK

In News: The six-day meeting of the open-ended working group on the Post-2020 Global Biodiversity Framework failed to achieve as much as was expected.

More on the Topic:

- The objective of the meeting was to reach a consensus on the text of the framework, which is to be finalised at the 15th Conference of the Parties (CoP15) to the Convention on Biological Diversity (CBD).

Post-2020 Global Biodiversity Framework:

- The framework must aim to halt biodiversity loss by 2030 and achieve recovery by 2050, which requires additional investment in nature equivalent to between 0.7 and 1% of annual global GDP.
- Targets in the framework should be measurable, underpinned by science, and have explicit outcomes.

The Convention on Biological Diversity (CBD):

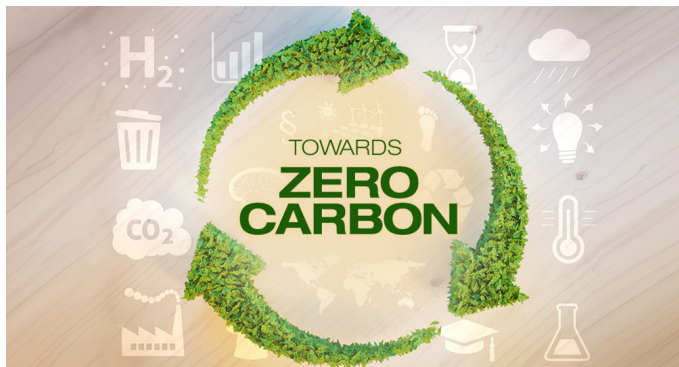
- The Convention on Biological Diversity (CBD) is the international legal instrument for "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources."
- At the Earth Summit that was held in Rio De Janeiro in 1992, the CBD was opened for signature.
- In the year 1993, the CBD came into force.
- The only UN member state that has not ratified this convention is the United States.
- The CBD has two supplementary agreements, the **Nagoya Protocol** and the **Cartagena Protocol**.
- Its overall objective is to encourage actions, which will lead to a sustainable future.
- The CBD's governing body is the **Conference of the Parties (COP)**. This ultimate authority of all governments (or Parties)

that have ratified the treaty meets every two years to review progress, set priorities and commit to work plans.

- The Secretariat of the Convention on Biological Diversity (SCBD) is based in Montreal, Canada.

AGRIFOOD COMPANIES' CARBON NEUTRAL EFFORTS

In News: According to a report from the European Bank for Reconstruction and Development and the United Nations Food and Agriculture Organization Agrifood companies' efforts to achieve carbon neutrality have been uneven.



More on the Topic:

- Farmers and agribusinesses face barriers to carbon neutrality. These include land property rights, infrastructure and access to technology, adoption costs and access to finance.
- Another problem for carbon-neutral efforts is that **consumers are often unwilling to pay a premium for carbon-neutral products**.
- Besides technical and methodological problems, the lack of a clear governance framework hinders more decisive action on the part of agrifood businesses and also fails investors and consumers.

Global agrifood system-Statistics:

- Account for 21-37% of total anthropogenic GHG emissions
- Are affected by warming through changing rainfall patterns and supply chain disruptions.

The report identified five action areas to reduce the distance towards achieving carbon neutrality in agrifood systems:

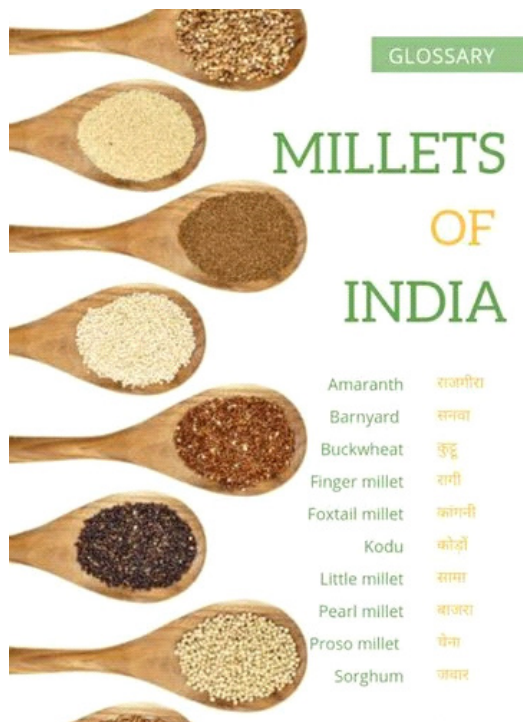
- Strategically target carbon neutrality
- Improve tools and methods
- Develop and promote sound governance mechanisms for low-carbon pathways
- Direct support for decarbonisation efforts
- Develop capacities and share knowledge

About Carbon Neutrality:

- Carbon neutrality is a state of net-zero carbon dioxide emissions. This can be achieved by balancing emissions of carbon dioxide with its removal or by eliminating emissions from society.

NATIONAL CONFERENCE ON MILLETS

In News: Union Ministry of Food Processing Industries has inaugurated the National Conference on Millets on the theme 'The Future Super Food for India' recently.



More on the Topic:

- Millets have been among the oldest eatables in the country.
- It is a crop which can be grown well in dry areas or even on lands with deficient and low fertility thus is known as the superfood of India.
- Due to their short growing season, millets can develop from seeds to ready-to-harvest crops in just about 65 days and this characteristic of the millets is of vital importance in thickly populated regions of the world.
- If stored properly, millets can keep well for two years or beyond. There is a need to mainstream millets to improve India's nutrition outcomes.

Significance of Millet Cultivation:

- They are adapted to wide range of temperatures.
- Millets act as a prebiotic feeding micro-flora in our inner ecosystem.
- Millets have low burden on land and being native crops, they require minimum amount of water and are mostly rain fed.
- They require minimum maintenance and in overall growing millets is economically prudent.
- They are resistant to climate change and extreme weather events.

Major Millet Growing States of India:

- India is now the 5th largest exporter of millets globally. The major millets producing states in India include Haryana, Uttar Pradesh, Chhattisgarh, Gujarat, Rajasthan, Madhya Pradesh, Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu and Telangana.

Government Initiatives:

- Under the National Food Security Mission (NFSM) - Special focus on millets for promoting its cultivation.
- Millets have been included in price support and Public distribution system.

URANIUM MINING RAJASTHAN

In News: The Rajasthan government has entered into the field of uranium mining by issuing a letter of intent (LoI) to Uranium Corporation of India.

More on the Topic:

- Rajasthan has come on the world map with huge reserves of uranium, found at Rohil (Khandela Tehsil) in Sikar district.
- After Jharkhand and Andhra Pradesh, **Rajasthan is the third state where uranium** which is considered one of the rare minerals in the world has been found.
- Currently, excavation of uranium is going on at Jadugoda in Jharkhand as well as Andhra Pradesh.
- In India, Uranium deposits occur in the Dharwar rocks.

Largest Producers of Uranium in the World:

- The largest producers of uranium in the world are **Kazakhstan, Canada and Australia**, while this mineral has also been found in Niger, Russia, Namibia, Uzbekistan, the US and Ukraine.

Significance of Uranium:

- Uranium is mainly used for **generating electricity** and also for **nuclear energy, medicines, defence equipment and photography**, among others.

Laws Associated with Uranium Excavation:

- Uranium is a major mineral, it is managed by the Union Government under provisions of Mines and Minerals (Development and Regulation) Act, 1957.
- The policy and legislation relating to Major minerals are managed by the Ministry of Mines But Uranium being an atomic mineral is managed by the Department of Atomic Energy (DAE).
- Many of these mineral deposits are found in rich forest reserves and thus approval of Union Ministry of Environment, Forest and Climate Change becomes necessary.

YASUNI NATIONAL PARK

In News: Oil Exploration at the Yasuni National Park is threatening its existence.



More on the Topic:

- The Yasuni National Park and Biosphere Reserve is a Humid Tropical Rain Forest located in the Amazon region of Ecuador.
- Yasuni National Park is home to 40% of Ecuador's crude oil reserves-in the Ishpingo-Tiputini-Tambococha (ITT) oil fields.

Significance:

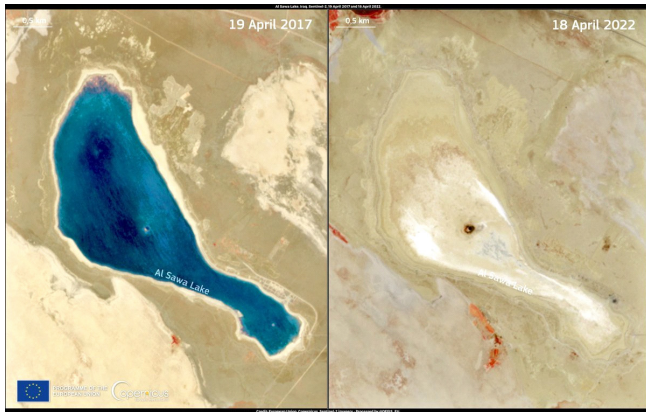
- Different studies estimate that there are 150 species of

amphibians, around 600 species of birds, and more than 3,000 plant species here, making it one of the most biodiverse areas on the planet.

- Similarly, there is an uncontacted indigenous population living in voluntary isolation in its forests, who also need to be protected

LAKE SAWA

In News: Iraq's 'pearl of the south' Lake Sawa dry amid water crisis.

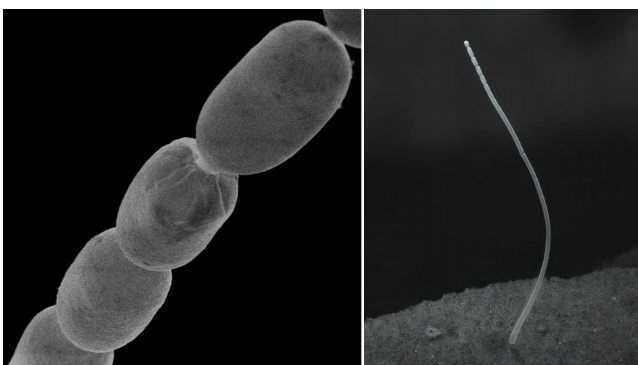


More on the Topic:

- Lake Sawa is only the latest casualty in this broad country-wide struggle with water shortages.
- The reasons for the dry up include human activity and climate change.
- It is formed over limestone rock and studded with gypsum formations; the lake has no inlet or outlet.
- It was declared a Ramsar site in 2014.

LARGEST BACTERIA IN THE WORLD

In News: World's Largest Bacterium was Discovered in Caribbean Mangrove Swamps.



More on the Topic:

- The bacterium, roughly the shape and size of an eyelash, was first discovered in 2009 in the mangrove swamps of Guadeloupe, an island in the Lesser Antilles.
- The bacteria appeared as long translucent centimeter-long strings on decaying leaf matter in the water.
- The new species is named as *Thiomargarita magnifica*, meaning "sulfur pearl".
- These bacteria are about 5,000 times larger than most bacteria.

Structure of the Bacteria:

- Inside the gigantic cell, they found an unusual structure. It has a large central compartment, or vacuole. Vacuoles are frequently generalist, multi-functional spaces within cells that contain fluids, waste or collections of enzymes. The vacuole in these cells, however, is strange in that it runs the entire length of the cell and takes up most of the cell's volume.
- *T. magnifica* did not have nuclei or mitochondria. The team found sulfur granules inside.
- It reproduces by constricting one end before the cell splits in two.

Difference from Other Bacteria:

- Bacteria are commonly thought to be "bags of enzymes," where there is no nucleus or Golgi apparatus or any other organelles, and DNA simply floats freely through the cell.
- However, *T. magnifica* not only contains DNA within a membrane, but also ribosomes—which create proteins—cohabitating with the genome.

DIRECT-SEEDED RICE METHOD

In News: Punjab's attempt to bring paddy cultivation under direct-seeded rice (DSR) method didn't become successful.

More on the Topic:

- High temperatures and deficient rainfall are mainly to blame, said farmers.
- Other challenges included closed canals, erratic electricity supply for operating tube wells for irrigation and issue of weeds and rats.

About DSR Technique:

- DSR, also called the 'broadcasting seed technique', is a water-saving method of sowing paddy.
- Seeds are directly drilled into the fields in this method. This saves groundwater, as opposed to the traditional water-intensive method, under which rice seedlings are transplanted from a nursery to waterlogged fields.
- In this process, paddy is sown earlier than in the transplantation method. The field is then laser-levelled and pre-sowing (rauni) irrigation is done.
- Weed management plays a big role in harvesting a successful crop in DSR. This is because the technique doesn't require flood irrigation for three weeks after sowing, and weeds tend to grow easily, unlike the conventional method.

VARROA MITE

In News: Varroa Mites have been detected at Australia.



More on the Topic:

- These parasites are deadly and could have a detrimental impact on Australian honey bees.
- The Varroa mite, or Varroa destructor, is a parasitic insect that lives off honey bee larvae and adult honey bees.
- These tiny red pests look similar to ticks and like ticks can carry harmful viruses. If a honey bee contracts a virus in the larval stage, adult honey bees can emerge malformed and weak.
- If each new generation continues to emerge weak, this can lead to the colony collapsing.

Significance of Honey Bees:

- Bees are vital to our survival. They help pollinate our food and keep our ecosystem in balance. Without them, there would be massive food shortages and ecological collapse

SUSTAINABLE USE OF WILD SPECIES – IPBES REPORT

In News: A report released by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has stated that about 50,000 wild species' sustainable use globally can meet the needs of billions of people.

More on the Topic:

Important Observations In The Report:

- One out of five persons source their food from wild plants, algae and fungi, while 2.4 billion depend on firewood for cooking and around 90 per cent of the 120 million population pursuing fisheries rely on small-scale fishing.
- The use of wild species defines identities and livelihoods and also holds cultural significance.
- Certain species have cultural importance as they offer multiple benefits that define tangible and intangible features of people's cultural heritage.
- Helping indigenous and local communities maintain their ability to use wild species sustainably and protecting their cultural practices associated with them would ensure their survival.
- The use of wild species is also a source of culturally meaningful employment for such communities and they have engaged in the trade of wild species and materials since millennia.

The Threats Faced by Wild Species:

- Overexploitation is identified as the main threat to wild species in marine ecosystems and second greatest threat in terrestrial and freshwater ecosystems.
- Drivers like landscape and seascape changes, climate change, pollution and invasive alien species impact abundance and distribution of wild species.
- Fairness, rights and equitable distribution of benefits are essential to ensure the sustainable use of wild species.

About IPBES:

- The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services is an intergovernmental organization established to improve the interface between science and policy on issues of biodiversity and ecosystem services.

Headquarters: Bonn, Germany

OZONE HOLE IN THE TROPICS

In News: Canada-based scientists have claimed they have detected a large, all-season ozone hole in the lower stratosphere over the tropics.

More on the Topic:

- Newly discovered ozone hole has been there since the 1980s and unlike the Antarctic one, this ozone hole is present all year round.
- The presence of this new hole could have disastrous consequences for life on Earth.
- The tropics constitute half the planet's surface area and are home to about half the world's population.

Significance of the Discovery:

- The depletion of the ozone layer can lead to increased ground-level UV radiation, which can increase risk of skin cancer and cataracts in humans, as well as weaken human immune systems, decrease agricultural productivity, and negatively affect sensitive aquatic organisms and ecosystems.

About Ozone Layer:

- The ozone layer or ozone shield is a region of Earth's stratosphere that absorbs most of the Sun's ultraviolet radiation.
- It contains a high concentration of ozone in relation to other parts of the atmosphere, although still small in relation to other gases in the stratosphere.

Ozone Layer Depletion:

- Ozone layer depletion is the gradual thinning of the earth's ozone layer in the upper atmosphere caused due to the release of chemical compounds containing gaseous bromine or chlorine from industries or other human activities.
- When chlorine and bromine atoms come into contact with ozone in the stratosphere, they destroy ozone molecules.
- One chlorine atom can destroy over 100,000 ozone molecules before it is removed from the stratosphere.
- Ozone can be destroyed more quickly than it is naturally created.
- Some compounds release chlorine or bromine when they are exposed to intense UV light in the stratosphere.

Ozone Depleting Substances:

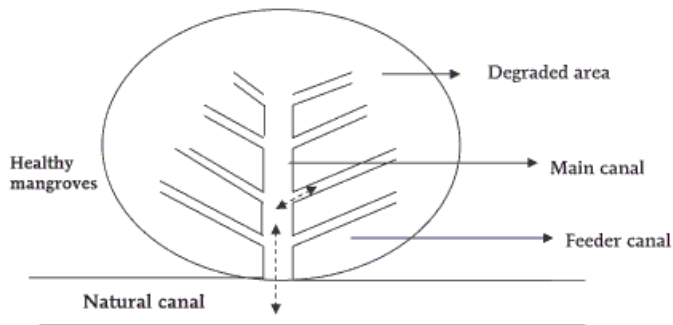
- These compounds contribute to ozone depletion, and are called ozone-depleting substances (ODS).
- ODS that release chlorine includes chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), carbon tetrachloride, and methyl chloroform.
- ODS that release bromine includes halons and methyl bromide. Although ODS are emitted at the Earth's surface, they are eventually carried into the stratosphere in a process that can take as long as two to five years.
- Not all chlorine and bromine sources contribute to ozone layer depletion. For example, researchers have found that chlorine from swimming pools, industrial plants, sea salt, and volcanoes does not reach the stratosphere.
- In contrast, ODS are very stable and do not dissolve in rain. Thus, there are no natural processes that remove the ODS from the lower atmosphere.

The Montreal Protocol:

- The Montreal Protocol is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion.
- It was agreed on 16 September 1987, and entered into force on 1 January 1989.

THE FISHBONE CHANNEL PLANTATION METHOD

In News: The fishbone channel plantation method has been used to revive mangroves in the Krishna Wildlife Sanctuary in Andhra Pradesh.



More on the Topic:

- The water from creeks in Bhitarkanika are being diverted to gaps in mangroves through fish bone shaped channels, so that the saline barren land becomes fertile to support planted mangrove species. The shape allows the water to reach every nook and corner of the area.
- The fishbone channel plantation technique is used to artificially inundate areas that do not get regular tidal inundation.
- By flooding dried-up wetlands near the intertidal zones, new mangroves can be reforested.

THE SINGALILA NATIONAL PARK

In News: The Singalila National Park has started an ambitious programme to augment the wild red panda population.



More on the Topic:

- In the first re-wilding programme of red pandas (*Ailurus fulgens*) in India, the Padmaja Naidu Himalayan Zoological Park has started an ambitious programme to release 20 of these furry mammals in about five years to the forests.
- The number of red pandas has been declining in the wild,

even in the Singalila and Neora Valley National Parks, the two protected areas where the endangered mammal is found in the wild in West Bengal.

- Recent studies estimate that there are 38 of them in Singalila and 32 in Neora.

About Red Pandas:

- Categorised as an endangered species as per IUCN Red List of Threatened Species, red pandas are shy, solitary and arboreal animals and considered an indicator species for ecological change.
- They are also one of the most iconic species in terms of their importance to global conservation.
- India is home to both the (sub) species – Himalayan red panda (*Ailurus fulgens*) and the Chinese red panda (*Ailurus styani*) and the Siang river in Arunachal Pradesh splits the two phylogenetic species.

BANNI GRASSLANDS

In News: The Gujarat forest department will restore 10,000 hectares of the Banni grasslands in the coming year, and every year in the coming decade.



More on the Topic:

- Besides having 40 species of grass and 99 species of flowering plants, Banni is also home to the Indian wolf, jackal, Indian fox, desert fox, desert cat, caracal, hyena, chinkara, Nilgai, wild boar, Indian hare, common monitor lizard – and the cheetah before it became extinct.
- Banni also has 273 bird species and in years of good rainfall, is home to thousands of migratory birds.

Threats faced by the Grassland:

- The landscape of Banni has shown drastic changes with the deterioration of the grassland taking place due to "heavy uncontrolled grazing", widespread ingress of *Prosopis juliflora* (a harmful exotic tree species), dams constructed on rivers flowing towards Banni, periodic occurrence of droughts and continuous increase in soil salinity.

NATURAL FARMING

In News: Prime Minister Narendra Modi lauded the experiments of natural farming in Surat district of Gujarat.

More on the Topic:

- Natural farming as an ecological farming approach was established by Masanobu Fukuoka (1913–2008), a Japanese farmer and philosopher, introduced in his 1975 book *The One-Straw Revolution*.
- Natural farming is popularly known as "do nothing" farming and it is an environmentally sustainable way of growing food.
- The most critical aspect of natural farming is to let nature play a dominant role to the maximum extent possible.
- Natural Farming is a chemical-free way of traditional

farming method. It is considered as agro-ecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity.

Importance of Natural Farming:

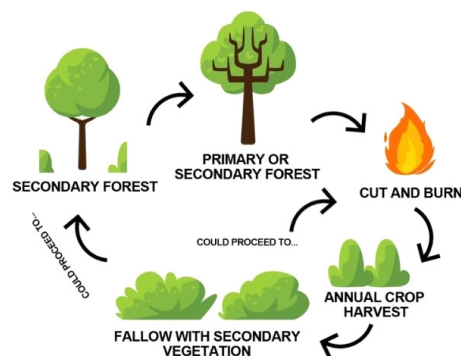
- **Improve Yield:** Farmers practising Natural Farming reported similar yields to those following conventional farming. In several cases, higher yields per harvest were also reported.
- **Increased Farmers' Income:** Natural Farming aims to make farming viable and aspirational by increasing net incomes of farmers on account of cost reduction, reduced risks, similar yields, incomes from intercropping.
- **Minimized Cost Of Production:** Natural Farming aims to drastically cut down production costs by encouraging farmers to prepare essential biological inputs using on-farm, natural and home-grown resources.
- **Ensures Better Health:** As Natural Farming does not use any synthetic chemicals, health risks and hazards are eliminated. The food has higher nutrition density and therefore offers better health benefits.
- **Environment Conservation:** Natural Farming ensures better soil biology, improved agrobiodiversity and a more judicious usage of water with much smaller carbon and nitrogen footprints.
- **Rejuvenates Soil Health:** The most immediate impact of Natural Farming is on the biology of soil—on microbes and other living organisms such as earthworms. Soil health depends entirely on the living organisms in it.
- **Livestock Sustainability:** The integration of livestock in the farming system plays a important role in Natural farming and helps in restoring the ecosystem. Ecofriendly bio-inputs, such as Jivamrit and Beejamrit, are prepared from cow dung and urine, and other natural products.

Surat Model of Natural Farming:

- In March 2022 PM Modi exhorted at least 75 farmers in each village to adopt the natural way of farming.
- Taking the leap, Surat District undertook a concerted and coordinated effort to sensitise and motivate different stakeholders and institutions like farmer groups, elected representatives, village-taluka-district committees, Agriculture Produce Marketing Committees (APMCs), Cooperatives, Banks etc, in the district to help farmers in adoption of Natural Farming.
- Subsequently, at least 75 farmers were identified in each Gram Panchayat and were motivated and trained to undertake Natural Farming.
- This resulted in more than 40,000 farmers from over 550 panchayats taking up natural farming in a short span of time.

PODU CULTIVATION

In News: The Telangana government had decided to move landless, non-tribal farmers engaged in shifting cultivation (Podu) inside forests to peripheral areas in an effort to combat deforestation.



More on the Topic:

- According to government, People that anyone who wishes to give up podu farming and move out of the forest would be given land for free, along with additional benefits.
- Podu cultivation is a type of shifting cultivation that employs methods like slash and burns. This is extensively used by the tribes living in the forests of Odisha, Andhra Pradesh and Telangana.

India and Shifting Cultivation:

- India has nearly 1.73 million hectares under shifting cultivation, where plots of land are cultivated temporarily and then abandoned for years so that the land becomes fertile again.
- An estimated 6.23 lakh families are involved in this activity, 90% of which is in the Northeast based on 2003 data.
- Jhum, Vevar and Dahiyaa, Deepa, Zara and Erka, Batra, Podu, Kumari, Kaman, Vinga and Dhavi are the other names of shifting cultivation practiced in India.

TOBACCO CROP

In News: The Andhra Pradesh Markfed has exported tobacco to the United States, possibly for the first time for a government agency, creating a new opportunity for farmers.

More on the Topic:

- Andhra Pradesh is a major tobacco-producing state in India.
- Tobacco is primarily grown in India's southern states of Karnataka and Andhra Pradesh, where the weather is favourable for the crop. Tobacco from India is known for its high quality, and the country ranks among the top revenue earners in the world.
- Ninety three varieties of Tobacco including including FCV , Burley , Natu , Lanka, types are cultivated in India.

About Tobacco Crop:

- Tobacco was brought to India by the Portuguese.
- Its leaves are used in making cigarettes, cigar, beedi etc. Its stem is used as potash fertilizer and its powder as an insecticide.

Conditions of Growth:

- It requires temperatures of 15°C to 40°C and rainfall of about 50cm or irrigation facilities. More than 100cm of annual rainfall and frost is harmful for the crop.
- Fertile soils with good drainage are ideal as it is an exhaustive crop

- Important Producing States are Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu and Bihar.

NONYLPHENOL

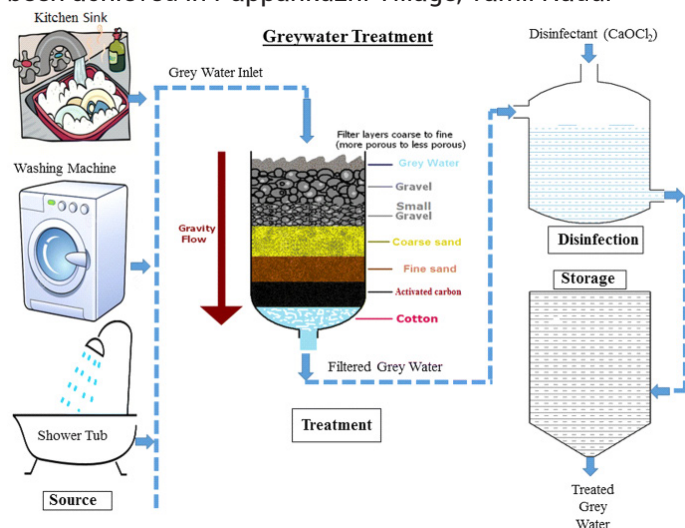
In News: A study has found the presence of high levels of toxic chemical nonylphenol in drinking water across the nation.

More on the Topic:

- Nonylphenol is a toxic chemical and a well-known endocrine disruptor associated with a number of adverse effects on human health. Daily intake of nonylphenol through drinking water can have adverse health impacts on citizens.
- The United Nations Environment Programme (UNEP) has also designated nonylphenol as a chemical of global concern.
- Nonylphenol is commonly used in the production of Nonylphenol Ethoxylates (NPEs). NPEs are used as surfactants as well as in day-to-day consumer products such as detergents, wetting agents and dispersants.
- NPEs enter the environment and ultimately break down to nonylphenols that can enter different environmental matrices such as water and soil.
- The chemical can also possibly be released during industrial cleaning processes and from wastewater produced during production of NPEs.

GREY WATER MANAGEMENT

In News: 100% Saturation of Grey Water Management has been achieved in Pappankuzhi Village, Tamil Nadu.



More on the Topic:

- It is achieved with the coordinated efforts of community members and government representatives.
- About 42,000 litres of greywater are effectively treated each day in the hamlet by the system, which consists of community soak pits and individual residence soak pits with either horizontal or vertical type filters.
- Grey water management is a key component of the Swachh Bharat Mission – Grameen (SBM-G) Phase II campaign of the Government of India.

What is grey water?

- The waste-water that is not contaminated with urine or faeces is referred to as grey water. This includes water that has been used for bathing, dishwashing, laundry and other household usages.

Consequences of Mishandling Of Grey Water:

- Unpleasant & dirty surroundings
- Health Implications a. Mosquitoes / Vector breeding: Spread of diseases
- Pollution of water bodies
- Loss of precious natural resource i.e. WATER.

Benefits of addressing Grey Water Crisis:

- Saving on fresh water use can significantly reduce household water bills, but also has a broader community benefit in reducing demands on public water supply.
- Reducing the amount of wastewater entering sewers or on-site treatment systems.
- High nitrogen and phosphorus content when used in irrigation can make a good nutrient or fertiliser source.

BACILLUS THURINGIENSIS ISRAELENSIS

In News: The Indian Council of Medical Research (ICMR)'s research centre in Puducherry has developed a technology to produce *Bacillus thuringiensis israelensis* (Bti strain VCRC B-17), a strain of bacteria that kills mosquito and black fly larvae without harming other animals.

More on the Topic:

- VCRC's Bti technology is equivalent to the WHO standard strain of bacteria in terms of its effectiveness.
- India's Bti B-17 strain is extensively tested and is now designated as the Indian Standard strain by the Central Insecticide Board of India.

About *Bacillus thuringiensis israelensis*:

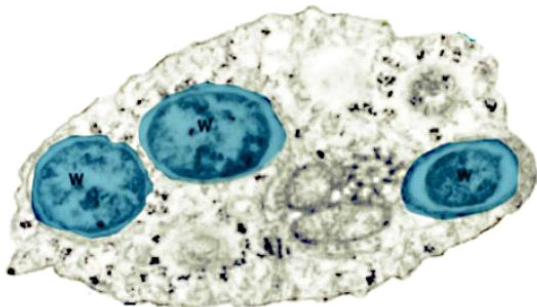
- The Bti bacteria has been in use for decades for mosquito control and is considered safe for other animals and the environment.
- This mosquito larvicidal activity of Bti is due to a toxin present in the bacterium. When ingested by mosquito larvae, the bacterial toxins destroy their gut within 10-30 minutes upon ingestion.

Significance:

- The commercial production of Bti is a shot in the arm for India's fight against vector-borne diseases such as malaria, filariasis, Japanese encephalitis, dengue, chikungunya and Zika.
- According to the World Health Organization (WHO), vector-borne diseases account for more than 17% of all infectious diseases, causing more than 700,000 deaths annually. They can be caused by parasites, bacteria or viruses.
- The estimated market size for Bti technology is about 1,000 crores annually in India.

WOLBACHIA BACTERIA

In News: Scientists at the Vector Control Research Centre (VCRC) of ICMR have cross-bred local *Aedes aegypti* mosquitoes (which transmit dengue, chikungunya and Zika virus) with mosquitoes that carry the Wolbachia bacteria from Australia's Monash University.



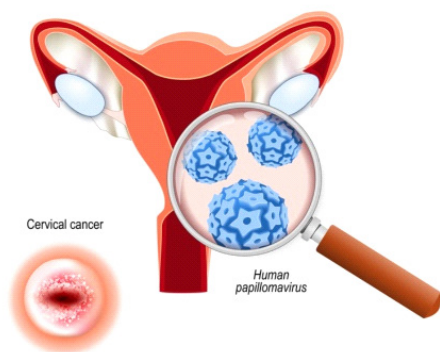
More on the Topic:

- Intended to put an end to dengue, chikungunya and Zika domestic vectors will be infected with a bacterium that will—in around six months' time—begin eliminating these viruses in them.
- The bacteria blocks the proliferation of harmful viruses but does not harm the mosquitoes themselves.
- Wolbachia is a bug which is found in 60% of insects naturally. But in the *Aedes* mosquito, this bug is in very low frequencies.

CERVAVAC VACCINE

In News: Cervavac, India's first quadrivalent human papilloma-virus vaccine (qHPV) has received Drugs Controller General of India's (DGCI) approval for market authorization.

CERVICAL CANCER



More on the Topic:

- It is intended to protect women against cervical cancer.
- Human papillomavirus (HPV) is the most common sexually transmitted infection (STI).
- There's no cure for the virus.
- It is one of the common infection of the reproductive tract.
- Most sexually active women and men get infected at some point and some may even get repeatedly infected.
- A vaccine that prevents the HPV strains most likely to cause genital warts and cervical cancer is recommended for boys and girls.

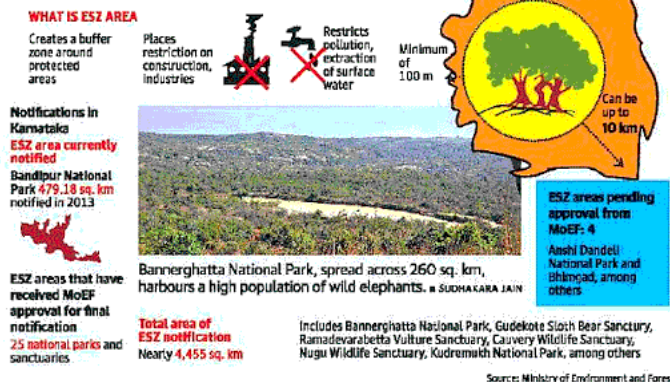
About Cervical Cancer:

- Cervical cancer is a type of cancer that occurs in the cells of the cervix — the lower part of the uterus.
- Various strains of the human papillomavirus (HPV), a sexually transmitted infection, play a role in causing most cervical cancer.

ECO-SENSITIVE ZONES

In News: Farmers in Kerala continue to protest across several high ranges of the state against the Supreme Court's recent order to establish 1-km Eco-Sensitive Zones around all protected areas, wildlife sanctuaries and national parks.

Eco-Sensitive Zone area



More on the Topic:

- The widespread unrest, which has hit districts like Idukki, Kottayam, Pathanamthitta and Wayanad, is borne out of the fear of farmers losing their livelihood, and has found support from the state government, opposition parties and the Catholic Church.
- The Union government said that it will hold discussions with the Kerala government and file an affidavit in the Supreme Court on the matter.

What are Eco-Sensitive Zones?

- As per the National Wildlife Action Plan (2002-2016), issued by the Union Ministry of Environment, Forest and Climate Change, land within 10 km of the boundaries of national parks and wildlife sanctuaries is to be notified as eco-fragile zones or Eco-Sensitive Zones (ESZ).
- While the 10-km rule is implemented as a general principle, the extent of its application can vary. Areas beyond 10-km can also be notified by the Union government as ESZs, if they hold larger ecologically important "sensitive corridors."

Why are Eco-Sensitive Zones created?

- ESZs are created as "shock absorbers" for the protected areas, to minimize the negative impact on the "fragile ecosystems" by certain human activities taking place nearby.
- Furthermore, these areas are meant to act as a transition zone from areas requiring higher protection to those requiring lesser protection.
- The guidelines also state that the ESZs are not meant to hamper the daily activities of people living in the vicinity, but are meant to guard the protected areas and "refine the environment around them".
- To do so, the guidelines list the activities prohibited in an ESZ, such as commercial mining, saw mills, commercial

use of wood, etc., apart from regulated activities like felling of trees.

- Lastly, there are permitted activities like ongoing agricultural or horticultural practices, rainwater harvesting, organic farming, among others.

BIOMASS CO-FIRING IN POWER PLANTS

In News: Ministry of Power has asked states to formulate time-bound plans to ensure the utilisation of biomass for co-firing in thermal power plants ahead of the Kharif harvest season.

More on the Topic:

- Biomass co-firing is the practice of substituting a part of the fuel with biomass at coal thermal plants.
- Biomass co-firing stands for adding biomass as a partial substitute fuel in high efficiency coal boilers.
- Coal and biomass are combusted together in boilers that have been designed to burn coal. For this purpose, the existing coal power plant has to be partly reconstructed and retrofitted.
- Co-firing is an option to convert biomass to electricity, in an efficient and clean way, and to reduce GHG (Green house Gases) emissions of the power plant.

Significance of Biomass Co firing:

- It will reduce stubble burning related air pollution.
- This assumes significance because the air pollution level rises after the Kharif harvest season in autumn and winters. The stubble burning by farmers contributes to pollution to a great extent.
- The move is also intended to reduce carbon footprint of thermal power generation.
- Biomass co-firing is a globally accepted cost-effective method for decarbonising a coal fleet.
- Owing to the rising prices of imported coal, biomass co firing will reduce the economic burden as well.

Challenges:

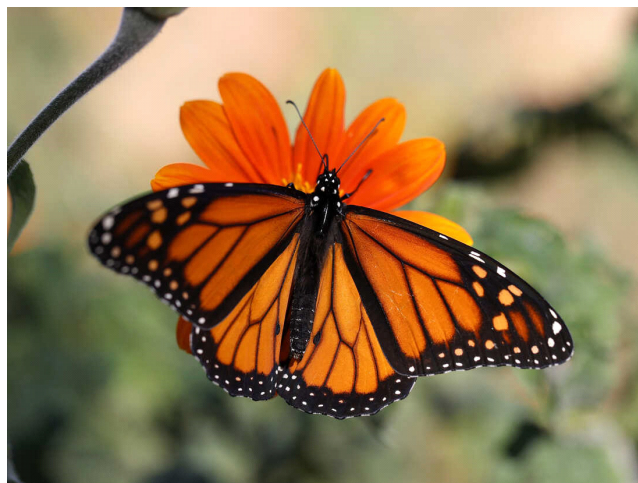
- Existing infrastructure of thermal power plants are not suited for biomass co-firing.
- Around 95,000-96,000 tonnes of biomass pellets are required per day for co-firing, But India's pellet manufacturing capacity is 7,000 tonnes per day at present despite a surplus 228 million tonnes of agricultural residue available in the country.
- It is challenging to store biomass pellets for long durations at the plant sites since they absorb moisture from air quickly and become useless.

Way Ahead:

- There is need for infrastructure upgradation.
- The supply demand mismatch of bio mass pellets has to be systematically solved.
- Platforms need to be established to ensure farmers have an intrinsic role in this business model of pellet manufacturing and co-firing in power plants.

MIGRATORY MONARCH BUTTERFLIES

In News: The migratory monarch butterfly, a sub-species of the monarch butterfly that travels around 4,000 kilometres across America each year, has been classified 'endangered' in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species.



More on the Topic:

- Monarchs, the most recognisable species of butterfly, are important pollinators and provide various ecosystem services such as maintaining the global food web. Their population in the continent has declined 23-72 per cent over the last decade.
- Most of these butterflies winter in the California coast and forests in central Mexico. A smaller population of the species is also found in countries like Australia, Hawaii and India.
- These butterflies follow a unique lifestyle: They traverse the length and breadth of the American continent twice a year, feasting on nectar from a variety of flora. But they breed in only one particular plant — the milkweeds. The monarch larvae feed on this species on hatching.
- The removal of this breeding ground by farmers because they are 'weed' is an important driving factor for the dwindling numbers.
- Habitat destruction and climate change are mainly responsible for pushing the insect towards extinction.

SNOW LEOPARD

In News: A recent study by the Zoological Survey of India (ZSI) on snow leopard (Panthera uncia) has thrown up interesting insights its relationship with its prey species.



More on the Topic:

- The study under National Mission on Himalayan Studies revealed a strong link between habitat use by Snow Leopard and its prey species Siberian ibex and blue sheep.
- Predators such as snow leopards regulated the populations of herbivores such as the blue sheep and Siberian ibex, **thereby safeguarding the health of grasslands.**
- A long-term absence of snow leopards could cause trophic cascades as ungulate populations would likely increase, **leading to depletion of vegetation cover.**

About Snow Leopard:

- Classified as 'Vulnerable' by the International Union for Conservation of Nature (IUCN) Red list and listed in **Schedule-I species** of the Indian Wildlife (Protection) Act, 1972, snow leopards are elusive mountain cats.

SALT WATER CROCODILES

In News: A record number of saltwater crocodiles laid eggs during the nesting season this year in Bhitarkanika National Park situated in Odisha's Kendrapara district.



More on the Topic:

- The number of crocodile nests has increased this year due to good weather. The nests are usually prepared with mangrove twigs, leaves, mud, etc.
- The nests are usually **made on high ground to protect them from inundation** during high tide in the rainy season. The high ground also enables the nests to get direct sunlight.
- A female crocodile lays 50-60 eggs in a nest. One out of 500 crocodile hatchlings in the wild turns adult.
- The female guards the eggs from predators like jackals, wild dogs, fishing cats, vultures, water monitors, wild boars and other animals.

Salt Water Crocodile:

- Apart from the eastern coast of India, the saltwater crocodile is extremely rare on the Indian subcontinent.
- The saltwater crocodile is also found in Bangladesh. A large population is present within the **Bhitarkanika Wildlife Sanctuary** of Odisha while smaller populations occur throughout the Sundarbans.
- Populations are also present within the mangrove forests and other coastal areas of the **Andaman and Nicobar Islands in India.**

Conservation Status:

- IUCN : Least Concern

- IWPA : Schedule I
- CITES : Appendix I

Major Threats:

- **Illegal hunting** for its meat and eggs, as well as for its commercially valuable skin.
- **Habitat loss and habitat alterations.**
- Negative attitude towards the species make conservation measures difficult to implement.

THE KALI BEIN RIVER

In News: The Punjab CM was admitted to hospital, days after drinking a glass of water directly from the Kali Bein.

More on the Topic:

- Kali Bein is a 165-km rivulet starts from Hoshiarpur, runs across four districts and meets the confluence of the rivers Beas and Sutlej in Kapurthala.
- Along its banks are around 80 villages and half a dozen small and big towns. Waste water from there as well as industrial waste used to flow into the rivulet via a drain, turning its **waters black, hence the name Kali Bein (black rivulet).**

Significance of Kali Bein:

- The Kali Bein is of great significance to Sikh religion and history, because the first Guru, Nanak Dev, is said to have got enlightenment here.

PADDY CULTIVATION

In News: The overall crop coverage of rice cultivation of rice has decreased. Deficient rainfall in Uttar Pradesh and Bihar is among the reasons.

More on the Topic:

- Even though there is fall in rice cultivation there won't be any strategic shortage of rice.
- Government has nearly three-and-a-half times the minimum level of rice stocks, to meet both "operational" (public distribution system) and "strategic reserve" (exigency) requirements for the quarter.

Rice Economics of India:

- **Paddy is India's largest agricultural crop** (accounting for over 40% of the total foodgrain output), with the country also being the world's biggest exporter.
- Unlike with wheat, the options for import in rice due to any production shortfall are limited, when India's own share in the global trade of the cereal is more than 40%.

About Paddy Cultivation:

- Temperature needed is between 22-32°C with high humidity.
- Rainfall required amounts to Around 150-300 cm.
- Deep clayey and loamy soil is the preferred soil type.
- Top Rice Producing States are West Bengal, Punjab, Uttar Pradesh, Andhra Pradesh and Bihar in decreasing order.
- In states like Assam, West Bengal and Odisha, three crops of paddy are grown in a year. These are **Aus, Aman and Boro.**

LUMPY SKIN DISEASE

In News: Lumpy Skin Disease has killed 999 Cattle In Gujarat.

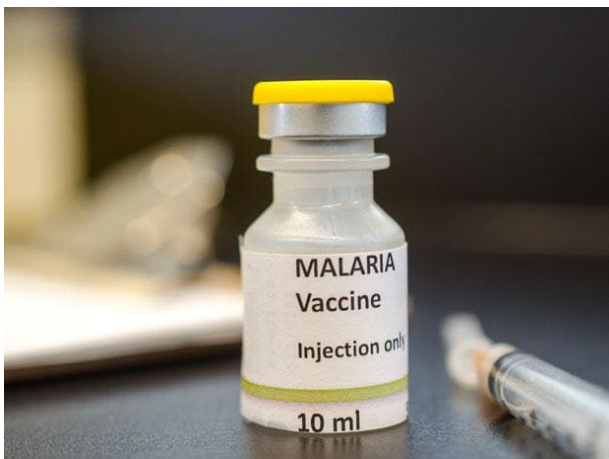


More on the Topic:

- Lumpy skin is a viral disease spread by mosquitoes, flies, lice, wasps, by direct contact among the cattle, and through contaminated food and water.
- The main symptoms are fever in animals, discharge from eyes and nose, salivation from mouth, soft blisters like nodules all over the body, reduced milk production, difficulty in eating, which sometimes lead to the animal's death.
- Lumpy skin disease virus is capable of infecting humans with direct transmission without the need for an insect vector; most probably by inhalation and certainly by direct contact with infected materials, infected persons [man to man], and as laboratory-acquired infection.

AFRICA'S 1ST MALARIA VACCINE

In News: Gavi, the global vaccine alliance, announced \$160 million in international support July 21, 2022 for the rollout of the first malaria vaccine in Africa from 2022-2025.



More on the Topic:

- Malaria remains a primary cause of childhood illness and death in sub-Saharan Africa.
- In 2020, nearly half a million African children died from malaria or one child died of malaria every minute.

About Malaria:

- Malaria is a disease caused by a Plasmodium parasite
- It is usually transmitted by the bite of infected female Anopheles mosquitoes.
- The severity of malaria varies based on the species of Plasmodium – Plasmodium falciparum and Plasmodium vivax are fatal

- Symptoms of the disease includes chills, fever and sweating, usually occurring a few weeks after being bitten.
- It is both preventable and curable.
- The parasites' life cycle includes mosquitoes, human liver, and human blood stages.

Malaria and India:

- India accounted for 83% of estimated cases and about 82% of all malaria deaths in WHO South-East Asia Region (WMR 2021).
- Children under five are the most vulnerable group accounting for about two thirds of all malaria deaths.
- India launched the National Framework for Malaria Elimination (NFME), 2016-2030 to eliminate malaria in a phased manner.

MONKEYPOX DECLARED AS PUBLIC HEALTH EMERGENCY

In News: Monkey pox is declared as public health emergency of international concern (PHEIC) recently.

More on the Topic:

- The PHEIC is WHO's highest level of alert and the announcement can unlock funding and global efforts to collaborate on sharing vaccines and treatments.
- Once it spreads internationally, it is declared as a Pandemic. So far this year, there have been 15000 cases of monkeypox in more than 60 countries.

About Monkey pox:

- It is a viral disease that spreads via close contact and tends to cause flu-like symptoms and pus-filled skin lesion.
- The current outbreak is unlike any previous one outside of Africa in that there is sustained person-to-person transmission of the infection.
- Monkeypox is not a novel disease. It was first isolated in the late 1950s from a colony of monkeys.
- The virus is in the same genus as variola (causative agent of smallpox) and vaccinia viruses (the virus used in one of the available smallpox vaccines).
- There is a significant role of animals in the spread of monkeypox. Man and monkeys are both accidental hosts and wild rodents are usually seen harbouring this virus.

KALA-AZAR OR BLACK FEVER

In News: Eleven districts of Bengal reported at least 65 cases of black fever or 'Kala-Azar disease in the last couple of weeks.

More on the Topic:

- A disease caused by infection with leishmania parasites.
- Visceral leishmaniasis is spread by sandfly bites. This type of leishmaniasis affects the internal organs, usually the spleen, liver and bone marrow.
- Some people have no symptoms. For others, symptoms may include fever, weight loss and swelling of the spleen or liver.
- Medication exists to kill the parasites. If left untreated, severe cases are typically fatal.

GEOGRAPHY

KARAKORAM ANOMALY

In News: Scientists have found out that Karakoram Anomaly is affected by Western disturbances.



More on the Topic:

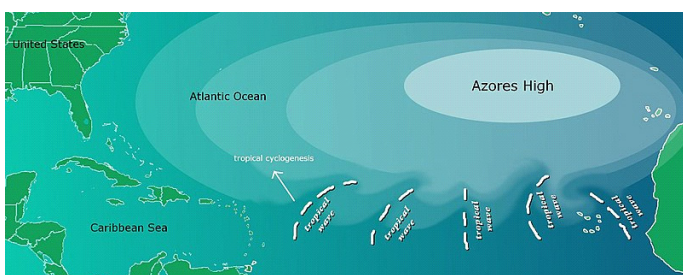
- Scientists have defined The Karakoram Anomaly (KA) as the stability or abnormal growth of glaciers in the central Karakoram, in contrast to the retreat of glaciers in nearby mountainous ranges of the Himalayas and other mountainous ranges of the world.
- While previous studies have highlighted the role of temperature in establishing and sustaining the anomaly over the years, it is for the first time that the impact of precipitation in feeding the anomaly has been highlighted.
- Calculations by the scientists reveal that **contribution of WDs in terms of snowfall volume over the core glacier regions of Karakoram have increased by about 27% in recent decades**, while precipitation received from non-WD sources have significantly decreased by around 17%, further strengthening their claims.

Significance of The glaciers in the Himalayas:

- The Himalayas are home to the third-largest deposit of ice and snow in the world.
- Only Antarctica and the Arctic have more. These glaciers feed some of the planet's most important river systems, directly and indirectly supplying billions of people with water, energy, and incomes.
- Clearly, the Himalayan glaciers are an essential part of life for the eight surrounding countries, as well as further beyond.

AZORES HIGH

In News: An extremely large 'Azores High' (a subtropical weather phenomenon) has resulted in abnormally dry conditions across the western Mediterranean, including the Iberian Peninsula, primarily occupied by Spain and Portugal.



More on the Topic:

- Azores High is a subtropical high pressure system that extends over the eastern subtropical North Atlantic and western Europe during winter.
- It is associated with anticyclonic winds in the subtropical North Atlantic.
- It is formed by dry air aloft descending the subtropics and coincides with the downward branch of the Hadley Circulation.

SEISMOLOGICAL OBSERVATORY AT UDHAMPUR

In News: Ministry of Earth Science has inaugurated a seismological observatory at Udhampur in Jammu and Kashmir.

More on the Topic:

- The observatory will help in collecting, collating, and integrating various data sets to provide site-specific risk maps as per user needs.
- It is part of an effort titled "Seismic Microzonation", which aims to generate vital geotechnical and seismological parameters for developing earthquake risk-resilient building design codes for structures and infrastructures.
- It has also initiated action to set up an Earthquake Early Warning System (EEWS) on a pilot basis for a small area in the Himalayas.
- Jammu and Kashmir is the westernmost extension of the Himalayas.
- Udhampur district lies between the two major seismogenic faults namely the Main Frontal Thrust (MFT) and the Main Boundary Thrust (MBT) which are among the potential factors for generating earthquakes in the J&K region.
- The new seismological observatory will help further strengthen the region's earthquake monitoring.

DISASTER MANAGEMENT

ASSAM FLOOD

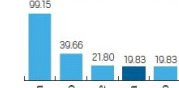
In News: In recent years the extent of devastation due to floods has increased significantly in the state of Assam.

AREA OF INFLUENCE

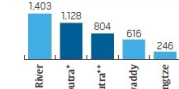


STRONGEST & SILTIEST

AVERAGE DISCHARGE AT MOUTH (1,000 CUBIC m/sec)



SEDIMENT YIELD (TONNES PER sq km PER YEAR)



*At Bahadurabad, Bangladesh; **At Pandu, Guwahati

More on the Topic:

- According to the National Commission on Floods, around 40 per cent of Assam's land is prone to floods. It amounts to around 10 per cent of the total flood-prone area of the country.
- The State suffers an annual loss to the tune of Rs 200 crore on an average due to floods.
- According to Central Water Commission data from 1953 to 2016, 26 lakh people are affected every year in Assam on an average, while 47 persons and 10,961 animals die and the State incurs damage of up to Rs 128 crore.
- For a population of over 3 crores, this leaves a huge impact on the economy of Assam.

Why Assam is Flood Prone?

Natural causes:

- Assam, situated at the foothills of the Himalayas, comprises two valleys, Brahmaputra and Barak, named after the respective rivers and two hill districts, along with a huge network of over 20 large rivers and 50 tributaries. This makes the state naturally prone to flood when it rains and river overflows.
- Brahmaputra river flows through Assam. As it is coming from the Kailash range at an elevation of over 5,000 m, the river gets highly sedimented and this sediment is deposited at the river beds. Thus elevating the river beds and reducing its water carrying capacity.
- Additionally, the monsoon is intense in the Northeast. During monsoon, highly sedimented river water from the Himalayas combines with rain-fed water bodies in India, resulting in water spilling over land in the narrow valleys, leading to floods.
- Assam lies in a seismically active zone. An increase in construction activities in the recent area has resulted in frequent landslides.
- As sedimented rivers move through the state along with their tributaries, they take with them soil and sediment from banks. This is known as river bank erosion.
- Soil erodes and rivers expand as it gets more area and this results in flooding. The width of Brahmaputra has increased

up to 15km due to bank erosion at some places in Assam.

Man Made Causes:

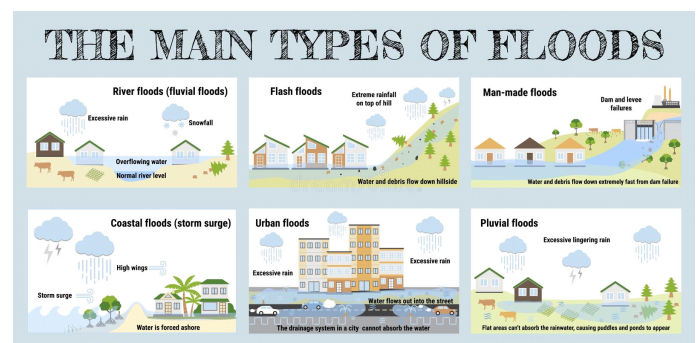
- Embankments are constructed to confine the course of a river. This has evolved to be an added challenge over time in Assam.
- Other man-made factors like deforestation, hill cutting, encroachments and destruction of wetlands have also worsened the flood situation.
- Embankments led to encroachment of river banks with an increasing number of people building houses and setting up establishments close to the river.
- There has also been a population boom in the State which has put more pressure on the State's ecology.
- Climate change is set to lead to more frequent and severe floods in Assam, as per a report on climate change by the State government.

Way Ahead:

- The State's unique topography, climate and socio-economic conditions make it more vulnerable to disasters like floods, with over one-third of the population living below the poverty line.
- In a master plan on the river in 1982, the Brahmaputra Board suggested that dams and reservoirs should be built to mitigate floods.
- A flood hazard atlas for Assam proposes non-structural measures to mitigate the impact of floods like flood forecasting and warning, flood profiling, and regulation of reservoirs. These measures, however, are yet to be translated on the ground.
- Wetlands and local water bodies should be revived in Assam to improve the drainage system, which can act as an exit for excess water and prevent waterlogging.

FLASH FLOOD

In News: Two flash floods occurred at separate places in Himachal Pradesh's Kullu and Chamba districts recently.



More on the Topic:

- Cloudburst is considered as the reason for the flood.
- A flash flood is a rapid flooding of low-lying areas: washes, rivers, dry lakes and depressions. It may be caused by heavy rain associated with a severe thunderstorm, hurricane, or tropical storm, or by meltwater from ice or snow flowing over ice sheets or snowfields. Flash floods may also occur after the collapse of a natural ice or debris dam, or a human structure such as a man-made dam.

Effects of Flash Flood:

- The effects of flash floods can be catastrophic and show extensive diversity, ranging from damages in buildings and infrastructure to impacts on vegetation, human lives and livestock. The effects are particularly difficult to characterize in urban areas
- Flash floods can also deposit large quantities of sediments on floodplains and can be destructive of vegetation cover not adapted to frequent flood conditions.
- Flash floods can cause rapid soil erosion.

About Cloudburst:

- The India Meteorological Department (IMD) defines it as unexpected precipitation exceeding 100mm (or 10 cm) per hour over a geographical region of approximately 20 to 30 square km. Significant amounts of rainfall such as this can result in floods.
- instances of cloudbursts involve heavy rain in a short period, but all instances of heavy rain in a short period are not cloudbursts if they do not fit this criterion.

Why Cloudburst are more in Hilly Areas?

- Cloudburst are more likely to occur in mountainous zones mainly because of terrain and elevation.
- This is because, in hilly areas, sometimes saturated clouds ready to condense into rain cannot produce rain, due to the upward movement of the very warm current of air.
- Instead of falling downwards, raindrops are carried upwards by the air current. New drops are formed and existing raindrops increase in size. After a point, the raindrops become too heavy for the cloud to hold on to, and they drop down together in a quick flash.

India- Flood Statistics:

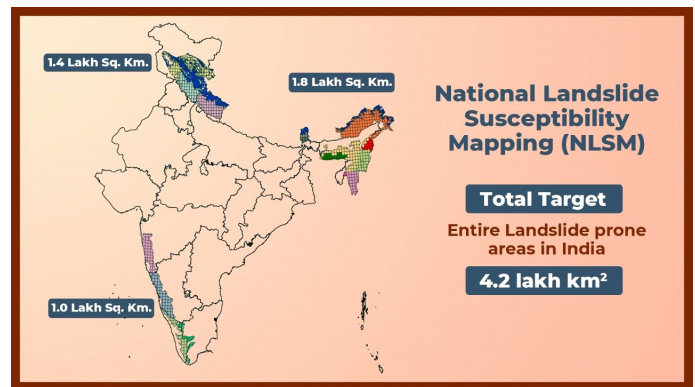
- Between An average every year, 75 lakh hectares of land is affected, 1600 lives are lost and the damage caused to crops, houses and public utilities is Rs. 1805 crores due to floods.
- The frequency of major floods is more than once in five years.
- Between 1970 and 2004, 3 floods occurred per year on an average. However, between 2005 and 2019, the yearly average rose to 11. 19 districts were affected annually on an average until 2005. After 2005, the number jumped to 55.
- 2017 analysis suggests that 4.48 million Indians are exposed to riverine floods, the highest in the world.

MANIPUR LANDSLIDE

In News: A massive landslide has occurred at Manipur's Noney district.

More on the Topic:

- A landslide is defined as the movement of a mass of rock, debris, or earth down a slope under the direct influence of gravity.
- Landslides are generally classified by type of movement (slides, flows, spreads, topples, or falls) and type of material (rock, debris, or earth). Sometimes more than one type of movement occurs within a single landslide.



Causes of Landslide:

- Gravity is the primary driving force for a landslide to occur, but there are other factors affecting slope stability that produce specific conditions that make a slope prone to failure.
- In many cases, the landslide is triggered by a specific event (such as a heavy rainfall, an earthquake, a slope cut to build a road, and many others), although this is not always identifiable.

India specific data on landslides:

- Landslides and avalanches are among the major hydro-geological hazards that affect large parts of India.
- Around 15% of the country's region is prone to landslides. The Himalayas of Northwest and North-east India and the Western Ghats are two regions of high vulnerability.
- Some major recent incidents are Kerala (2018), Himachal Pradesh (2018), etc.

About Financial Stability Report:

- FSR is published twice each year by the RBI that presents an assessment of the health of the financial system. FSR details the current status of different financial institutions such as all the different types of banks and non-banking lending institutions.

National Landslide Susceptibility Mapping (NLSM):

- Geological Survey of India has launched and undertook a national programme on landslide susceptibility mapping – Macro scale (1:50,000) National Landslide Susceptibility Mapping (NLSM) with an aim to cover the 0.42 million sq. km landslide prone areas of the country. This national programme was formally launched in 2014.

GLOBAL PLATFORM FOR DISASTER RISK REDUCTION 2022

In News: The Global Platform for Disaster Risk Reduction, 2022 (GP 2022) took place in Indonesia recently.

More on the Topic:

- GP2022 is the main global forum to assess and discuss progress on the implementation of the Sendai Framework for Disaster Risk Reduction.
- The outcome of GP2022 was summarised in the co-chairs' Bali Agenda for Resilience.

- The takeaways of the document were:
- There is a need for a **whole-of-society approach** to disaster risk reduction (DRR), ensuring no one is left behind
- DRR must be at the core of development and finance policies, legislation and plans to achieve the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDG)
- The real cost of disasters is that of inaction, which must be weighed against investments in DRR.
- Current greenhouse gas emission levels far exceed their mitigation, resulting in an increase in frequency and intensity of catastrophic events
- A participatory and human rights-based approach in DRR planning and implementation is crucial as people are affected differently by disasters
- There is a need for the development of multi-hazard early warning systems, inclusive of communities most at risk.

Sendai Framework for Disaster Risk reduction:

- SFDRR is an international Treaty that was approved by UN member states in March 2015 at the Third World Conference on Disaster Risk Reduction held in Sendai, Japan.
- It is a **voluntary and non-binding treaty** which recognizes that the UN member State has the primary role to reduce disaster risk.
- It has framework for 15-year i.e. 2015 to 2030.
- It calls for **sharing the responsibility with other stakeholders including local government, the private sector and other stakeholders.**

Four specific priorities of Sendai Framework:

- Understanding disaster risk
- Strengthening disaster risk governance to manage disaster risk
- Investing in disaster risk reduction for resilience
- Enhancing disaster preparedness for effective response and recovery, reconstruction and rehabilitation.

INTERNATIONAL RELATIONS

THE TWO STATE SOLUTION

In News: US President Joe Biden this week expressed support for the two-state solution regarding the Israel-Palestine conflict.



More on the Topic:

- The two-state solution refers to an arrangement where Israeli and Palestinian states co-exist in the region.
- However, such a solution has not materialised over the decades.

The Israel Palestine Conflict?

- The land to which Jews and Palestinians lay claim to was under the Ottoman Empire and then the British Empire in early 20th century.
- Palestinian people the Arab people from the same area want to have a state by the name of Palestine in that area. The conflict between Israelis and Palestinians is over who gets what land and how it's controlled.
- Jews fleeing the persecution in Europe at the time wanted to establish a Jewish state on the land which they believe to be their ancient homeland. The Arab at the time resisted.
- In 1917's **Balfour Declaration**, the United Kingdom declared its support for the establishment of a "national home for the Jewish people" in Palestine. Arabs resisted it which led to violence.
- In 1923, the **British Mandate for Palestine** came into effect. The document was issued by the League of Nations, the failed predecessor of the United Nations (UN).

- In 1936, after several rounds of violence between Jews and Arabs, the Peel Commission, set up by the UK government, recommended the partition of Palestine into Jewish and Arab states.
- The final proposal was passed in November 1947. It called for the partition of Palestine into Arab and Jewish states, with the city of Jerusalem governed by an international arrangement. This was rejected by the Arabs.
- In May 1948, Israel declared its independence. The Arab countries of Lebanon, Syria, Iraq, and Egypt invaded the newly-declared country immediately.
- When the war ended, Israel gained some territory formerly granted to Palestinian Arabs under the UN resolution in 1947.

Why the two-state solution has not materialised by now?

- There is no consensus as to how to draw the lines dividing the two proposed states.
- Both Israel and Palestinians claim Jerusalem as their capital and call it central to their religion and culture. Division of Jerusalem is a contentious issue.
- Settlement of refugees who fled during war is also a bottle neck.

NORD STREAM 1 GAS LINK

In News: The Nord Stream 1, Germany's main source of gas from Russia, was shut down for scheduled maintenance work.



More on the Topic:

- While there have been attempts to reduce the dependence on Russian gas, Germany, which is Europe's biggest economy, continues to heavily rely on it.
- The Nord Stream 2 pipeline, which was completed in September 2021 and would double the flow of direct Russian gas to Germany, was suspended in February, in response to the invasion of Ukraine.
- Nord Stream 1 is underwater gas pipeline that runs from Vyborg in northwest Russia to Lubmin in northeastern Germany via the Baltic Sea.

INTERPOL'S INTERNATIONAL CHILD SEXUAL EXPLOITATION (ICSE) INITIATIVE

In News: India's Central Bureau of Investigation has joined the Interpol's International Child Sexual Exploitation (ICSE) initiative.

More on the Topic:

- This move will allow CBI to collaborate with investigators in other countries for detecting child sex abuse online and identifying abusers, victims, and crime scenes from audio-visual clips using specialised software.
- India is the 68th country to have access to this database and software. Interpol's website said that on average, the database helps identify seven child victims everyday globally.

What is Interpol?

- Interpol is the world's largest international police organisation with 195 member countries, and is headquartered in Lyon, France.
- Each member country hosts an Interpol National Central Bureau that connects their national law enforcement to it and in India, the CBI is that nodal agency.

JAPAN'S 'ASIA ENERGY TRANSITION INITIATIVE'

In News: Japan plans to expand its clean energy transition support 'Asia Energy Transition Initiative' to India.



More on the Topic:

- Japan's 'Asia Energy Transition Initiative' initially targeted supporting countries in the Association of South East Asian Nations (ASEAN) pushing towards net-zero carbon emissions.
- Following are included in the project.
- Support drawing roadmaps for energy transitions
- Asian version of transition finance: US\$10 billion finance support (e.g.) renewable energy, energy efficiency, LNG etc.
- Technology development and deployment, utilizing the achievement of 2 trillion-yen fund (e.g. Offshore wind power generation, Fuel-ammonia, Hydrogen etc.
- Capacity building of decarbonisation technologies, and knowledge sharing through Asia CCUS network.

LANCANG-MEKONG COOPERATION (LMC)

In News: Myanmar held its first multinational ministerial meeting, of LMC countries, since military takeover.



(Source: State Bureau of Surveying and Mapping, designed by Pamela Tobey)

More on the Topic:

- Lancang-Mekong Cooperation grouping is a Chinese led initiative.
- It was established in 2016 for cooperation between the riparian states of the Lancang River and Mekong River.
- The Lancang is the part of the Mekong that flows through China.
- Cambodia, Laos, Myanmar, Vietnam and Thailand are five downstream countries of the Mekong River.
- The central purpose of the format is for China to manage water flow from its hydropower dams with the other riparian states.
- It aims to push forward pragmatic projects to benefit the six countries.
- China has built seven mega dams on the Lancang-Mekong and according to the US-based NGO International Rivers, 20 are under construction or planned in Yunnan, Tibet and Qinghai.
- LMC Special Fund was created in 2016 to aid in small and medium-sized projects by the Lancang-Mekong countries.

CASPIAN SUMMIT

In News: The 6th Caspian Summit will begin today in Ashgabat, Turkmenistan.



More on the Topic:

- The group, made up of Turkmenistan, Russia, Iran, Kazakhstan, and Azerbaijan, aimed to formalize the legal status of the Caspian Sea following the USSR's collapse.
- The previous meeting in 2018 removed the requirement for prior approval to construct underwater gas pipelines through the sea.
- This removal enables the construction of projects such as the **Trans-Caspian Gas Pipeline**—a proposed gas pipeline connecting Turkmenistan to Azerbaijan – which could allow connections to existing pipelines in Georgia and Turkey. This prospect would allow Europe to meet its energy needs while bypassing Russia.

Caspian Sea:

- The Caspian Sea is the Earth's largest inland body of water, when measured by surface area.
- It lies at the **junction of Europe and Asia**, with the Caucasus Mountains to the west and the steppes of Central Asia to the east.
- It is bordered by Russia to the northwest, Azerbaijan to the west, Iran to the south, Turkmenistan to the southeast and Kazakhstan to the northeast.

DIGITAL NOMADS

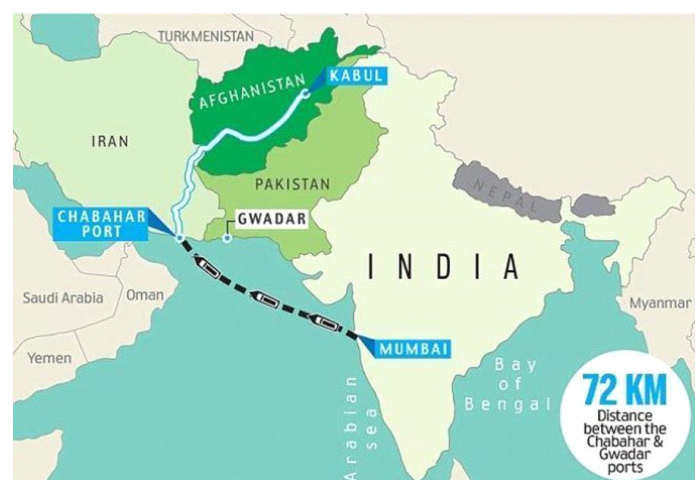
In News: Indonesia has announced "Digital Nomad Visas" for travellers to attract foreign tourists.

More on the Topic:

- Digital Nomads are those who choose to work remotely and independently. Besides working in one place, they chose to spend their earned income in the country they are travelling to.
- Unlike other remote workers who usually stay in one place and do work, digital nomads travel and explore while working.
- If Indonesia get millions of travellers through this visa, then, it would create a million jobs for Indonesians as the borders have now opened for foreign tourists.

CHABAHAH PORT

In News: India and Iran has discussed progress in the development of Chabahar port.



More on the Topic:

- Chabahar Port is a seaport in Chabahar located in southeastern Iran, on the Gulf of Oman.
- It serves as Iran's only oceanic port, and consists of two separate ports named Shahid Kalantari and Shahid Beheshti.
- It is only about 170 kilometres west of the Pakistani port of Gwadar, being developed by China; this makes it ideal for keeping track of Chinese or Pakistani military activity based out of Gwadar.

Strategic Importance:

- The port can be easily accessed from India's western coast, bypassing Pakistan.
- It is considered to be a major transit point to connect with several Central Asian countries.
- Being close to Afghanistan and the Central Asian countries of Turkmenistan, Uzbekistan etc., it has been termed the "Golden Gate" to these land-locked countries.
- The port and the rail project (Chabahar to Zahedan to Zaranj near Afghanistan border) will enhance connectivity, energy supplies and trade
- The port is also a key link in the International North South Transport Corridor (INSTC), a multi-modal network of ships, rail and road routes to move freight between India to Russia via Iran.

ONE COUNTRY, TWO SYSTEMS'

In News: Chinese President has defended his vision of the "one country, two systems" framework of Hong Kong.

More on the Topic:

- Supreme Court has directed that the State has to act as a trustee for the benefit of the general public in relation to the natural resources so that sustainable development could be achieved in the long term.
- Eco-Sensitive Zones (ESZs) or Ecologically Fragile Areas (EFAs) are areas in India notified by the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India around Protected Areas, National Parks and Wildlife Sanctuaries.

Significance of Eco Sensitive Zones:

- The purpose of declaring ESZs is to create some kind of "shock absorbers" to the protected areas by regulating and managing the activities around such areas.
- They also act as a transition zone from areas of high protection to areas involving lesser protection.
- They also help in reducing man animal conflict.
- They aid in in-situ conservation as well.
- It will also reduce the impact of urbanisation and other developmental activities on protected areas.

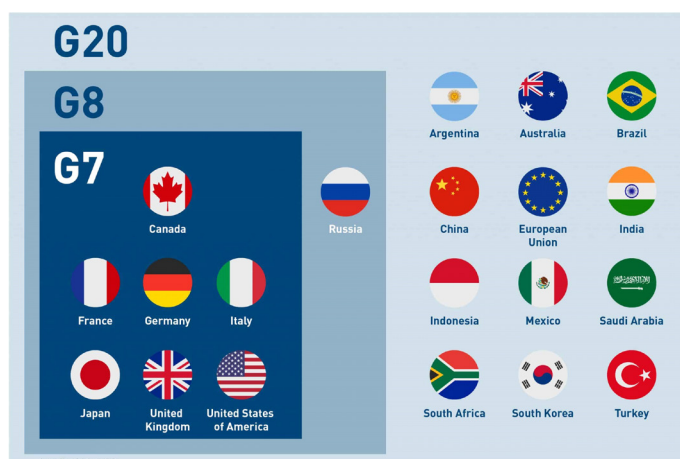
Environment Protection Act and Eco Sensitive Zone:

- The Environment (Protection) Act, 1986 does not mention the word "Eco-Sensitive Zones".

- However, Section 3(2)(v) of the Act, says that Central Government can restrict areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards.
- Besides Rule 5(1) of the Environment (Protection) Rules, 1986 states that central government can prohibit or restrict the location of industries and carrying on certain operations or processes on the basis of considerations like the biological diversity of an area, maximum allowable limits of concentration of pollutants for an area, environmentally compatible land use, and proximity to protected areas.
- The above two clauses have been effectively used by the government to declare ESZs or EFAs.

PARTNERSHIP FOR GLOBAL INFRASTRUCTURE AND INVESTMENT

In News: The G7 countries have officially launched the Partnership for Global Infrastructure and Investment (PGII) recently.



More on the Topic:

- It is a joint initiative to fund infrastructure projects in developing countries.
- The project, is being seen as the bloc's counter to China's 'Belt and Road Initiative'.
- The stated purpose of both the PGII and the BRI is to help secure funding for countries to build critical infrastructure such as roads, ports, bridges, communication setups, etc. to enhance global trade and cooperation.
- Unlike BRI initiative, proposed G7 funding would depend largely on private companies.

Specialty of PGII:

- G7 informed the PGII is meant to be transparent, focused on building climate change-resilient infrastructure, and help in achieving objectives of gender equality and health infrastructure development.

Location of The Project:

- Apart from India, projects have been announced in countries across West Africa, Southeast Asia, and South America.

About China's BRI?

- China began the Belt and Road Initiative in 2013. It aims to revive the ancient trade routes crossing to and from China—from Rome in Europe to East Asia.
- Under this, the Chinese government helped in providing loans for infrastructure projects to various countries, and in many cases, Chinese companies were awarded contracts for carrying out the work. This helped China mark its footprints at a global level.
- However, China was criticised for providing unsustainable debts to countries that will be unable to repay them.

PARTNERS IN THE BLUE PACIFIC' INITIATIVE

In News: Amid China's aggressive push to increase its Pacific sphere of influence, the US and its allies, Australia, New Zealand, Japan and the United Kingdom have launched a new initiative called 'Partners in the Blue Pacific'.



More on the Topic:

- The PBP is a five-nation "informal mechanism" to support Pacific islands and to boost diplomatic, economic ties in the region.
- It simply means that through the PBP, these countries together and individually will direct more resources here to counter China's aggressive outreach.
- The areas where PBP aims to enhance cooperation include "climate crisis, connectivity and transportation, maritime security and protection, health, prosperity, and education".

US and China's Strategies In the Pacific:

- The US has long maintained a balance of power in the region with its hub-and-spoke system where America is the hub and its allies are spokes whose security is guaranteed by the US military power.
- China is also believed to be trying to make its own version of the same system, even as it insists the sole aim of the US policy of having overwhelming influence in the region is to contain Beijing's rise.

Why is the Pacific region strategically important?

- Among the 10 largest standing armies in the world, 7 reside in the Indo-Pacific; and 6 countries in the region possess nuclear weapons.
- Nine of the world's 10 busiest seaports are in the region, and 60 percent of global maritime trade transits through Asia, with roughly one-third of global shipping passing through the South China Sea alone.

EU'S AMBITIOUS DRAFT LAW TO RESTORE NATURE

In News: The European Commission (EC), the European Union's executive arm, unveiled a landmark legislation to restore nature and mitigate climate change on the European continent.

More on the Topic:

- The draft law calls for halving pesticide use across Europe by 2030 and dismantling big dams to make rivers free-flowing, among other things. The proposal is aimed at contributing to the continuous, long-term and sustained recovery of biodiverse and resilient nature across the EU's land and sea areas by restoring ecosystems.
- It is also expected to contribute to achieving the EU's climate mitigation and climate adaptation objectives.
- The Intergovernmental Panel on Climate Change in its sixth assessment has called for urgent restoration of degraded ecosystems to mitigate climate change.
- The Glasgow climate pact too had underlined the significance of natural ecosystems for climate mitigation and adaptation.

CHINA PAKISTAN ECONOMIC CORRIDOR

In News: China and Pakistan has invited third country to join the CPEC amid inordinate delays and deepening fund crisis.

More on the Topic:

- The CPEC is the central focus of China's ambitious Belt and Road Initiative (BRI), which aims to reintroduce historic trade networks by creating a modern-day Silk Road that links it to the south and southeast Asia, the Middle East, Africa, and Europe
- It refers to a clutch of major infrastructure works currently under way in Pakistan, intended to link Kashgar in China's Xinjiang province to Gwadar deep sea port close to Pakistan's border with Iran.
- Several other road, rail and power projects are associated with the corridor, and the project seeks to expand and upgrade infrastructure across the length and breadth of Pakistan, and to widen and deepen economic ties with its "all-weather friend", China.

How Pakistan benefits from CPEC?

- Besides the potential for growth, power and jobs, Pakistan also expects the CPEC to bind it in an even tighter embrace with close friend China, giving it greater strategic leverage with both India and the United States in the Indian Ocean region.

How China will Benefit from CPEC?

- Gwadar lies close to the Strait of Hormuz, a key oil shipping lane. It could open up an energy and trade corridor from the Gulf across Pakistan to western China, that could also be used by the Chinese Navy.
- The CPEC will give China land access to the Indian Ocean, cutting the nearly 13,000 km sea voyage from Tianjin to the Persian Gulf through the Strait of Malacca and around India, to a mere 2,000 km road journey from Kashgar to Gwadar.
- For Chinese companies, the massive scale of the CPEC provides investment opportunities for several years to come.

- The development of Kashgar as a trade terminus will **reduce the isolation of the restive Xinjiang province**, deepen its engagement with the rest of China.

India's Reaction:

- India has always opposed the CPEC, since it passes through Pakistan Occupied Kashmir (PoK) breaching Indian Sovereignty as it is an integral part of India.

SHANGHAI COOPERATION ORGANIZATION

In News: The holy city of Varanasi showcasing India's culture and traditions over the ages will be declared the first "Cultural and Tourism Capital" of the Shanghai Cooperation Organisation.

More on the Topic:

- The Beijing-headquartered Shanghai Cooperation Organisation (SCO) is an eight-member economic and security alliance comprising China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, India and Pakistan.
- The official working language of the SCO Secretariat is Russian and Chinese.
- The SCO is the successor to the Shanghai Five, a mutual security agreement formed in 1996 between China, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.
- On 15 June 2001, the leaders of these nations and Uzbekistan met in Shanghai to announce a new organisation with deeper political and economic cooperation; the SCO Charter was signed on 7 July 2002 and entered into force on 19 September 2003.
- Its membership has since expanded to eight states, with India and Pakistan joining on 9 June 2017. Several countries are engaged as observers or partners.

SCIENCE AND TECHNOLOGY

INDIA'S GSAT-24 SATELLITE

In News: New Space India Limited (NSIL) launched GSAT-24 in its first "demand-driven" communication satellite mission post space sector reforms



More on the Topic:

- The entire satellite capacity on-board GSAT-24 will be leased to its committed customer Tata Play, the DTH business of Tata Group, for meeting their DTH application needs.
- GSAT-24 is a 24-Ku band communication satellite weighing 4180 kg with Pan-India coverage for meeting DTH application needs.

About NSIL:

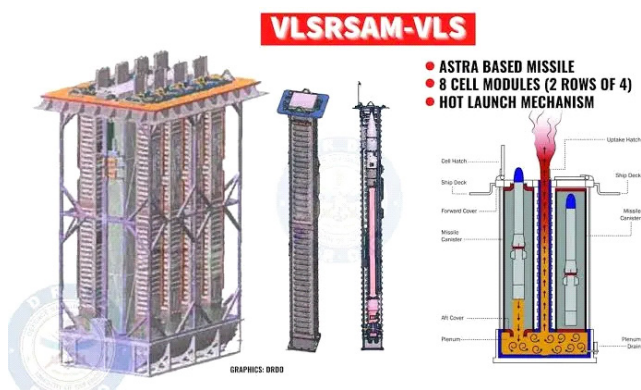
- NSIL, incorporated in March 2019, is a Central Public Sector Enterprise (CPSE), under Department of Space (DOS) and is the commercial arm of ISRO.
- Its primary responsibility is of enabling Indian industries to take up high technology space-related activities and is also responsible for the promotion and commercial exploitation of the products and services emanating from the Indian space program.

About Demand Driven Model:

- In June 2020, NSIL was mandated to undertake operational satellite missions on a "demand driven" model, wherein it has the responsibility to build, launch, own & operate satellites and provide services to its committed customer.
- Demand-driven' mode basically means when satellite is launched, one will know who the end customers are going to be and what's the kind of utilisation and commitment.
- Earlier, the mode was more supply driven, with capacity being leased after the launch with largely no firm commitment by customers beforehand.

VERTICAL LAUNCH SHORT RANGE SURFACE TO AIR MISSILE (VL-SRSAM)

In News: India has recently successfully flight-tested the Vertical Launch Short Range Surface to Air Missile.

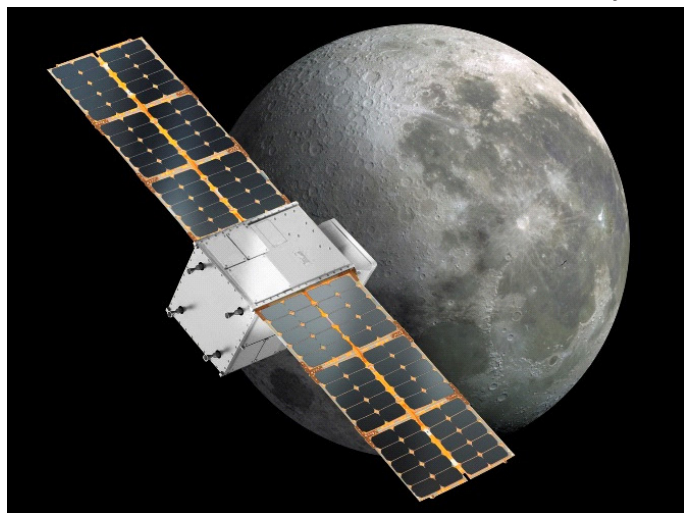


More on the Topic:

- It is **A surface-to-air missile** developed by Defence Research and Development Organisation (DRDO).
- **VL-SRSAM is a canisterised system**, which means it is stored and operated from specially designed compartments. In the canister, the inside environment is controlled, thus making its transport and storage easier and improving the shelf life of weapons.
- The VL-SRSAM system has been designed to strike at the high-speed airborne targets at the range of 40km to 50km and at an altitude of around 15km.
- The missile is for **neutralizing various aerial threats at medium and close ranges**, including fighter aircraft and sea skimming anti-ship missiles.

NASA'S CAPSTONE MISSION

In News: NASA's CAPSTONE was Launched recently.



More on the Topic:

- **Cislunar Autonomous Positioning System Technology Operations and Navigation Experiment**, is designed to test a unique, elliptical lunar orbit known as a near-rectilinear halo orbit (NRHO) which is significantly elongated, and is located at a precise balance point in the gravities of Earth and the Moon. This offers stability for long-term missions like Gateway.
- NASA's CubeSat designed to test a unique lunar orbit is safely in space and on the first leg of its journey to the Moon.
- The spacecraft is heading toward an orbit intended in the future for Gateway, a lunar space station built

by the agency and its commercial and international partners that will support NASA's Artemis program, including astronaut missions.

ISRO'S POEM

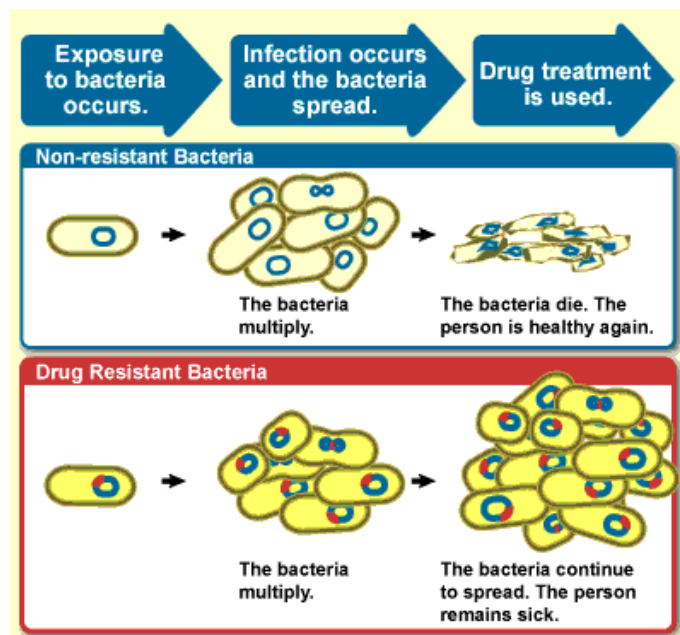
In News: ISRO's POEM programme was launched recently.

More on the Topic:

- The PSLV Orbital Experimental Module is a platform that will help perform in-orbit experiments using the final, and otherwise discarded, stage of ISRO's workhorse rocket, the Polar Satellite Launch Vehicle (PSLV).
- The PSLV is a four-stage rocket where the first three spent stages fall back into the ocean, and the final stage (PS4) – after launching the satellite into orbit – ends up as space junk.

DRUG-RESISTANT TYPHOID STRAINS

In News: According to a large genome sequencing study, the effectiveness of antibiotics for typhoid fever is threatened by the emergence of resistant strains.



More on the Topic:

- The genome analysis has revealed that resistant strains – almost all originating in South Asia – have spread to other countries 197 times since 1990.
- Strains were classified as Multi Drug Resistant if they had genes giving resistance to antibiotics ampicillin, chloramphenicol, and trimethoprim/ sulfamethoxazole.

About Typhoid fever:

- Typhoid fever is a bacterial infection that can spread throughout the body, affecting many organs.
- Without prompt treatment, it can cause serious complications and can be fatal. It's caused by a bacterium called Salmonella typhi.
- It is usually contracted by ingestion of food or water that is contaminated with the excrements of people.
- Typhoid fever causes 11 million infections and more

than 100,000 deaths per year. South Asia accounts for 70% of the global disease burden.

CRISPR TECHNOLOGY

In News: July 2022 marks ten years since CRISPR-Cas9 was repurposed as a gene editing system.

More on the Topic:

- Nobel Prize for Chemistry, 2020 was awarded to Emmanuelle Charpentier and Jennifer A Doudna for development of CRISPR-cas9 technique.
- Other genome editing systems include TALENs, Zinc-Finger Nucleases etc.

About CRISPR Technology:

- CRISPR gene editing is a genetic engineering technique in molecular biology by which the genomes of living organisms may be modified.
- It is based on a simplified version of the bacterial CRISPR-Cas9 antiviral defense system.
- By delivering the Cas9 nuclease complexed with a synthetic guide RNA (gRNA) into a cell, the cell's genome can be cut at a desired location, allowing existing genes to be removed and/or new ones added in vivo.
- The Cas9 protein is used as a pair of scissors to cut off a part from the strand. Strand when broken has self-repairing tendency.
- This way a damaged DNA strands can be removed and help the human body restore to healthy state

Significance:

- The technique is considered highly significant in biotechnology and medicine as it enables editing genomes in vivo very precisely, cheaply, and easily.
- It can be used in the creation of new medicines, agricultural products, and genetically modified organisms, or as a means of controlling pathogens and pests.
- It also has possibilities in the treatment of inherited genetic diseases as well as diseases arising from somatic mutations such as cancer.

Examples of CRISPR used techniques:

- It is being tried out in agriculture primarily to increase plant yield, quality, disease resistance, herbicide resistance and domestication of wild species.
- CRISPR/Cas9 has also been seen as a promising way to create potential genome editing treatments for diseases such as HIV, cancer or sickle cell disease.
- Germline Editing means deliberately changing the genes passed on to children and future generations – in other words, creating genetically modified people.
- It is the most of the ethical discussions related to genome editing center around human germline editing. This is because changes made in the **germline would be passed down to future generations.**

NATIONAL INTERNET EXCHANGE OF INDIA

In News: Two new Internet Exchange points (IXP) of NIXI at Durgapur and Vardhman has been initiated recently.

More on the Topic:

- Internet exchange points are common grounds of IP networking, allowing participant Internet service providers to exchange data destined for their respective networks.
- The primary purpose of an IXP is to allow networks to interconnect directly, via the exchange, rather than going through one or more third-party networks. The primary advantages of direct interconnection are cost, latency, and bandwidth.

The National Internet Exchange of India (NIXI):

- National Internet Exchange of India (NIXI) is a **not-for-profit Company under the aegis of the Ministry of Electronics and Information Technology (MeitY)** with the mission to make the internet accessible to everyone.
- Registered on 19 June 2003, its primary purpose is to facilitate exchange of domestic internet traffic between the peering ISPs, Content players and any other organizations with their own AS number.
- This enables more efficient use of international bandwidth, saving foreign exchange and also improves the Quality of Services (QoS) for internet users by avoiding multiple international hops and thus reducing latency.
- Since March 2012, NIXI has been running the **National Internet Registry (NIR)** as Indian Registry for Internet Names and Numbers (IRINN). IRINN is responsible for allocation of IP addresses and AS Numbers within the country.

JAMES WEBB TELESCOPE

In News: NASA's James Webb Space Telescope has delivered the deepest and sharpest infrared image of the distant universe so far.

More on the Topic:

- Known as Webb's First Deep Field, image shows the galaxy cluster SMACS 0723 as it appeared 4.6 billion years ago.
- Light from these galaxies took billions of years to reach us.
- We are looking back in time to within a billion years after the big bang when viewing the youngest galaxies in this field.
- **The light was stretched by the expansion of the universe to infrared wavelengths that Webb was designed to observe.** Researchers will soon begin to learn more about the galaxies' masses, ages, histories, and compositions.

The James Webb Space Telescope:

- The James Webb Space Telescope is **the world's premier space science observatory.** Webb will solve mysteries in our solar system, look beyond to distant worlds around other stars, and probe the mysterious structures and origins of our universe and our place in it.

- Webb is an international program led by NASA with its partners, ESA (European Space Agency) and CSA (Canadian Space Agency).


AUTONOMOUS NAVIGATION FACILITY, TIHAN

In News: India's first Autonomous Navigation facility, TiHAN was at the IIT Hyderabad campus recently.

WILL HELP REPLICATE REAL-LIFE SCENARIOS

- The new hub has been established in two acres of land within the campus and the facilities are planned in phases
- It will facilitate research grounds to investigate the functioning of unmanned and connected vehicles in a controlled environment

- It will help replicate different scenarios, ranging from frequently occurring to extreme cases that may ensue in real-life traffic operations
- All smart poles within the institute are enabled with communication providing technology with some poles designed with sprinklers to simulate rain scenario



More on the Topic:

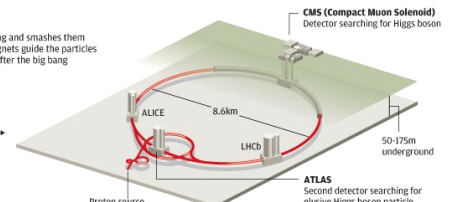
- Developed at a budget of Rs. 130 crores by the Union Ministry of Science & Technology, TiHAN (Technology Innovation Hub on Autonomous Navigation) is a multi-disciplinary initiative that will make India a global player in the futuristic and next generation 'smart mobility' technology.
- TiHAN is a Testbed that will provide a unique platform for high quality research between academia, industry and R&D labs both at the national and international level, thus making India a global leader in autonomous navigation technologies.
- This testbed includes simulation platforms that allow for non-destructive testing of algorithms and prototypes. Several real-world scenarios can be emulated on the testbed.
- In terrestrial systems, a few examples of these scenarios are Smart Cities, Signalised Intersections, Autonomous Vehicle Interactions with Cyclists and Pedestrians, Wireless Networking among vehicles and Road-Side Units, etc.
- The autonomous vehicle testbed also provides dummy signboards, pedestrians, overpasses, and bikers to test all real-world conditions.

LARGE HADRON COLLIDER

In News: Scientists working with the Large Hadron Collider (LHC) have discovered three subatomic particles never seen before as they work to unlock the building blocks of the universe, the European nuclear research centre CERN.

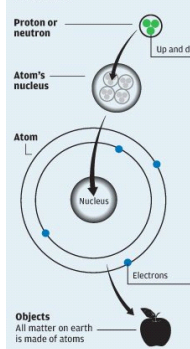
CERN's Large Hadron Collider

Accelerates two beams of protons around a 27km ring and smashes them together at 99.99% the speed of light. Its 9,200 magnets guide the particles through a vacuum, recreating conditions moments after the big bang

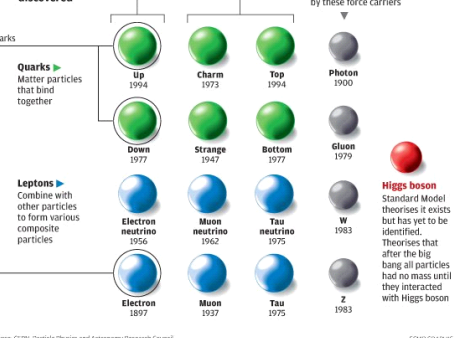


Higgs boson: the missing piece of the Standard Model of physics

Building blocks of matter on earth
Things on earth are constructed using three of the basic particles, Up and Down Quarks and Electrons



Particles and the years they were discovered



More on the Topic:

- The 27 kilometre-long (16.8 mile) LHC at CERN is the machine that found the Higgs boson particle, which along with its linked energy field is thought to be vital to the formation of the universe after the Big Bang 13.7 billion years ago.
- Present findings include a new kind of "pentaquark" and the first-ever pair of "tetraquarks", adding three members to the list of new hadrons found at the LHC.
- They will help physicists better understand how quarks bind together into composite particles.

About Quarks:

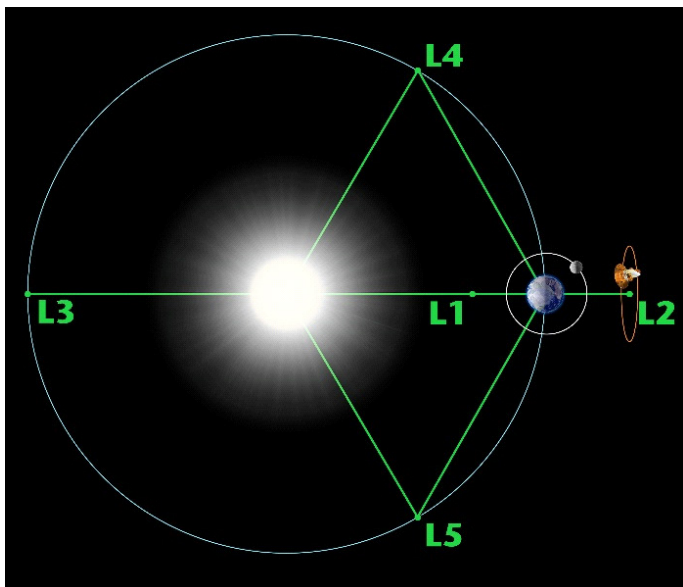
- Quarks are elementary particles that usually combine in groups of twos and threes to form hadrons such as the protons and neutrons that make up atomic nuclei.
- More rarely, however, they can also combine into four-quark and five-quark particles, or tetraquarks and pentaquarks.

Large Hadron Collider:

- The Large Hadron Collider is a giant, complex machine built to study particles that are the smallest known building blocks of all things.
- Structurally, it is a 27-km-long track-loop buried 100 metres underground on the Swiss-French border.
- In its operational state, it fires two beams of protons almost at the speed of light in opposite directions inside a ring of superconducting electromagnets.
- Scientists will record and analyse the data, which are expected to throw up evidence of "new physics" — or physics beyond the Standard Model of Particle Physics, which explains how the basic building blocks of matter interact, governed by four fundamental forces.

ADITYA-L1

In News: Aditya-L1 Science Support Cell (AL1SSC) recently conducted a workshop for students from various institutes and universities to expose them to the basic processes of the Aditya-L1 mission.



More on the Topic:

- The Aditya-L1 is India's first mission to study the Sun.
- It will be built in collaboration between the Indian Space Research Organisation (ISRO) and various Indian research institutes.
- It is India's first solar mission.
- The project provides scientists with the opportunity to take part in space-based instrumentation and observations.
- The Aditya-L1 project will enable a comprehensive understanding of the Sun's dynamical processes and address some of solar physics' outstanding problems.
- The Aditya-L1 mission will be inserted in a halo orbit around the L1 point, which is about 1.5 million km from Earth.

NETWORK SOLUTION - GIGAMESH

In News: "Giga Mesh" which is an Innovative Wireless Product will soon solve Internet Woes of Rural India.

More on the Topic:

- GigaMesh, developed by Astrome, supported by ART PARK, is world's first multi-beam E-band Radio that is able to communicate from one tower to multiple towers simultaneously while delivering multi GBPS throughput to each of these towers.
- A single GigaMesh device can provide up to forty links with 2+ Gbps capacity, communicating up to a range of ten kilometres. This flexibility in range makes it suitable for both decongesting the dense urban networks and extending rural coverage.
- With India's huge population in the rural segment, Astrome can help improve domestic internet connectivity.
- GigaMesh is an innovative wireless product that gives fibre-like bandwidth at fraction of cost of fibre to help telecom operators deliver reliable low-cost internet services to suburban and rural areas.

SODIUM-ION BATTERY

In News: According to a study by University of Houston Sodium-based battery technology might soon be a viable alternative to lithium-based ones

Parameters	Lead Acid Batteries	Lithium-ion Batteries	Sodium-ion Batteries
Cost	Low	High	Low
Energy Density	Low	High	Moderate/High
Safety	Moderate	Low	High
Materials	Toxic	Scarce	Earth-abundant
Cycling Stability	Moderate (high self-discharge)	High (negligible self-discharge)	High (negligible self-discharge)
Efficiency	Low (< 75%)	High (> 90%)	High (> 90%)
Temperature Range	-40 °C to 60 °C	-25 °C to 40 °C	-40 °C to 60 °C
Remarks	Mature technology; fast charging not possible	Transportation restrictions at discharged state	Less mature technology; easy transportation

More on the Topic:

- A newly invented electrolyte makes it significantly more viable to produce sodium ion-based batteries commercially and on a larger scale.
- It enables reversible sodium plating and stripping at a greater current density.
- While lithium does have many advantages, lithium carbonate prices are at an all-time high.
- The rising costs are due to pandemic-related supply-chain bottlenecks, the Russia-Ukraine conflict and increased demand from businesses.

Why Sodium Ion Batteries?

- Sodium is abundant in the nature.
- Lesser cost of extracting than lithium (least 20 percent).
- Na Ion batteries are Greener and sustainable battery system Contain non-flammable solid electrolytes that exhibit high safety.
- Mining lithium has high environmental costs. Lithium extraction and mining also involve a lot of chemicals leaching and spilling into the ecosystem around its mines.
- Lithium is expensive with reserves localized only in certain parts of Chile, Australia, Argentina, and China.

About Sodium-ion Batteries:

- Sodium-ion (Na-ion) batteries are solid-state batteries, and use solids instead of liquids to ferry ions through their core.
- It has three components: A negatively charged anode made up of hard carbons; A positively charged cathode constituting sodium-containing layered materials; Electrolyte that allows electrons to move.

RARE EARTH MINERALS

In News: India and Australia have discussed about the cooperation in rare earth minerals, especially lithium.

Rare earth minerals

- ▶ 17 metals
- ▶ Key components in high-tech products
- ▶ China supplies at least 95% of world's rare earths

Examples of products containing rare earth elements:



Smartphones
scandium
yttrium
lanthanum
neodymium



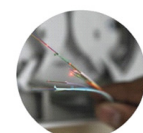
Wind turbines
dysprosium
neodymium
praseodymium
terbium



Energy-efficient fluorescent light bulbs
europium
terbium
yttrium



Hybrid vehicles
dysprosium
lanthanum
neodymium
praseodymium



Fibre optics
erbium
europium
terbium
yttrium

Source: USGS, ocs.org, chemmatters

© AFP

More on the Topic:

- Rare earth elements (REE) are a group of seventeen chemical elements that occur together in the periodic table, 15 lanthanides (Z=57 through 71), Scandium and Yttrium.
- They are not rare in quantity, in fact, some of them are very abundant in earth's crust for example cerium is more abundant than copper and lead. However, their extraction is very difficult.
- All are metals and have many similar properties which often cause them to be found together in geologic deposits. That is why they are also known as rare earth metals.
- They are also referred to as "rare earth oxides" because many of them are sold as oxide compounds.
- Samarium (Sm), scandium (Sc), terbium (Tb), thulium (Tm), ytterbium (Yb), yttrium (Y), cerium (Ce), dysprosium (Dy), erbium (Er), europium (Eu), gadolinium (Gd), holmium (Ho), lanthanum (La), lutetium (Lu), neodymium (Nd), praseodymium (Pr), promethium (Pm).

Significance of Rare Earth Minerals:

- They have distinctive electrical, metallurgical, catalytic, nuclear, magnetic and luminescent properties.
- They are strategically very important due to their use of emerging and diverse technologies which cater to the needs of current society.
- Its usage range from daily use (e.g., lighter flints, glass polishing mediums, car alternators) to high-end technology (lasers, magnets, batteries, fibre-optic telecommunication cables).
- Even futuristic technologies need these REMs (For example high-temperature superconductivity, safe storage and transport of hydrogen for a post-hydrocarbon economy, environmental global warming and energy efficiency issues).
- The global demand for REMs has increased significantly in line with their expansion into high-end technology, environment, and economic areas

LOW TEMPERATURE THERMAL DESALINATION (LTTD) TECHNOLOGY

In News: The National Institute of Ocean Technology (NIOT) Chennai has developed a Low Temperature Thermal Desalination (LTTD) technology for conversion of sea water to potable water and this has been successfully demonstrated in the Lakshadweep islands.

\dot{m}_t	110	kg/s	$\dot{W}_{sp, vp}$	12.5	kWh/m ³				
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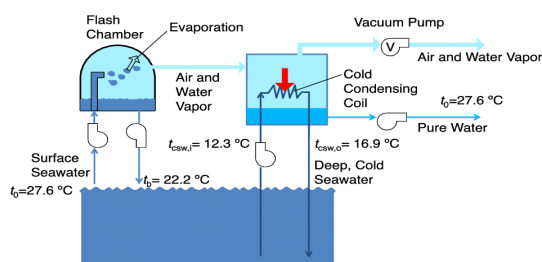


Figure 1. Diagram of LTTD system

More on the Topic:

- The Desalination Plant is based on Low Temperature Thermal Desalination (LTTD) technology which takes away the salt or saline water and converts it into potable water.
- It works on the notion that; water evaporates at lower temperatures, at low pressures.
- It utilizes vacuum pumps for creating a low pressure and low-temperature environment, resulting into evaporation of water at a temperature gradient of 8°C .
- Cooling water is supplied from deep sea depths, which is pumped up to condense evaporated water vapor. We get purified water from the resulting condensate.

MIST SUBMARINE CABLE SYSTEM

In News: Expert appraisal Committee (Ministry of forest and Climate Change) has given the coastal Regulatory Zone clearance for the 8100 KM long Myanmar/Malaysia-India-Singapore Transit (MIST) Submarine cable System connecting Tuas (Singapore) to Mumbai.



More on the Topic:

- MIST will directly connect Singapore, Malaysia, Myanmar, Thailand and India (Mumbai and Chennai) and deliver a design capacity of more than 216 terabits per second (Tbps).
- The project is officially known as the Myanmar/Malaysia-India-Singapore Transit (MIST) Submarine Cable System and is being executed by the global technology provider NEC Corp.
- The cable system will terminate in Mumbai at Versova beach and will boost telecom connectivity between India and other Asian countries, namely Myanmar, Thailand, Malaysia and Singapore.

Submarine cable system:

- Submarine cable systems generally use optical fibre cables to carry international traffic.
- A submarine cable system consists of a communication cable laid on the sea bed between cable landing stations (CLS) on the land to carry telecommunication signals across stretches of ocean.

CAR-T CELL THERAPY

In News: Two biotech startups in India are conducting clinical trials to establish the efficacy and safety of their versions of Chimeric Antigen Receptor-T cell (CAR-T) therapy before the cutting edge immunotherapy is commercially available for cancer patients.

More on the Topic:

- Chimeric Antigen Receptor (CAR)-T cells are a patient's own immune cells that are genetically engineered in the laboratory to fight cancer.
- A specific type of white blood cells called T cells are changed in the lab so they can find and destroy cancer cells.
- T cells are taken from a patient's blood and are changed in the lab by adding a gene for a receptor (called a chimeric antigen receptor or CAR), which helps the T cells attach to a specific cancer cell antigen.
- The CAR-T cells are then transferred back to the patient through a procedure similar to blood transfusion.
- Once inside, these cells work like a "living drug" against cancer cells.
- Since different cancers have different antigens, each CAR is made for a specific cancer's antigen.
- The CAR T-cell therapies to treat leukaemia or lymphoma are made to attach to the CD19 antigen and would not work for a cancer that does not have the CD19 antigen.

STEALTH FRIGATE INS DUNAGIRI

In News: India has launched the Indian Navy Ship (INS) Dunagiri into the Hooghly River recently.



More on the Topic:

- The ship is one of seven stealth frigates that India is constructing under Project 17A.
- It is named after a mountain range in the state of Uttarakhand.
- The main weapon and sensor suite of P-17A ships are BrahMos SSM, LRSAM (Forward & Aft configuration) with MF STAR radar, indigenous Sonar, and Triple tube Heavy Torpedo launcher.

The first three ships under Project 17A were:

- INS Nilgiri
- INS Himgiri
- INS Udaygiri

REPORTS AND INDICES

THE ENERGY PROGRESS REPORT 2022

In News: Tracking SDG 7 – The Energy Progress Report 2022 was published recently by the collaboration of the World Bank, WHO, UNSD, IEA (International Energy Agency) and IRENA

(International Renewable Energy Agency).

TRACKING SDG7 THE ENERGY PROGRESS REPORT 2022



A joint report of the custodian agencies



More on the Topic:

- Important findings by the report are as follows:
- At today's rate of progress, the world is still not on track to achieve the SDG 7 goals of ensuring access to affordable, reliable, sustainable and modern energy by 2030.
- Globally, 733 million people still have no access to electricity, and 2.4 billion people still cook using fuels detrimental to their health and the environment.
- The COVID-19 pandemic has been a key factor in slowing progress toward universal energy access.
- At the current rate of progress, 670 million people will remain without electricity by 2030.
- The access gap has widened across regions. The 20 countries with the least access to electricity are home to 76 percent of the global population left in the dark.
- Nearly 90 million people in Asia and Africa who had previously gained access to electricity, can no longer afford to pay for their basic energy needs.

WORLD DRUG REPORT 2022

In News: UN Office on Drugs and Crime (UNODC) has released its World Drug Report 2022.

More on the Topic:

- The cocaine manufacture reached a record high in 2020.
- Trafficking of cocaine mainly through marine containers, likely continued to increase in 2020 despite the pandemic as global cocaine seizures reached record high.
- The Middle East and South-East Asia are emerging grounds for synthetic drugs manufacturing.
- India is the world's single-largest opiate market. Opiates coming from Afghanistan have increased thereby increasing trafficking and associated organised crimes.

HARNESSING GREEN HYDROGEN—OPPORTUNITIES FOR DEEP DECARBONISATION IN INDIA” – NITI AAYOG REPORT

In News: The NITI Aayog, in its report titled 'Harnessing Green Hydrogen – Opportunities for Deep Decarbonisation in India', said the government should focus on enabling a cost reduction pathway for green hydrogen production in India.

Color	GREY HYDROGEN	BLUE HYDROGEN	TURQUOISE HYDROGEN*	GREEN HYDROGEN
Process	SMR or gasification	SMR or gasification with carbon capture (85-95%)	Pyrolysis	Electrolysis
Source	Methane or coal	Methane or coal	Methane	Renewable electricity

Note: SMR = steam methane reforming.
*Turquoise hydrogen is an emerging decarbonisation option.

More on the Topic:

- The report predicted that **hydrogen demand in India could grow more than four-fold by 2050**, representing almost 10 per cent of global hydrogen demand.
- In the longer term, steel and heavy-duty trucking are likely to drive the majority of demand growth, accounting for almost 52 per cent of total demand by 2050,

Recommendations:

- NITI Aayog has recommended **tax breaks like reduction or exemption of GST and custom duties on green hydrogen production.**
- It has also proposed **setting up green hydrogen corridors and offering grants to startups** working on green hydrogen solutions domestically.
- There is a need to facilitate investment through demand aggregation and dollar-based bidding for green hydrogen.
- Encourage market development** using the industrial cluster, and viability gap funding.
- Initiate Green Hydrogen standards and a labelling programme.**

Green Hydrogen:

- Green hydrogen is hydrogen gas produced through electrolysis of water – an energy intensive process for splitting water into hydrogen and oxygen – using renewable power to achieve this.
- Green hydrogen is crucial for sectors such as fertilizers, refining, methanol, maritime shipping etc.

Government Measures:

- National Hydrogen Energy Board (2003)** for implementing and monitoring the National Hydrogen Energy Road Map and the National Hydrogen Energy and Fuel Cell Programme
- Ministry of Power (MoP) Green Hydrogen Policy (GHP)** has set a target of 5 million tonnes per annum (MTPA) of green hydrogen production by 2030, more than 80% of the current hydrogen demand in the country.
- High-level steering committee** under the chairmanship of Dr K. Kasturirangan for Hydrogen and Fuel cells.

PERFORMANCE GRADING INDEX FOR DISTRICTS

In News: The Department of School Education and Literacy, Ministry of Education (MoE) has released the Performance Grading Index for Districts (PGI-D) for 2018-19 and 2019-20.



More on the Topic:

- GI-D assesses the performance of school education system at the district level by creating an index for comprehensive analysis.
- Based on the success of State PGI, 83-indicator based PGI for District (PGI-D) has been designed to grade the performance of all districts in school education. The data is filled by districts through online portal.
- PGI-D grades the districts into ten grades; highest achievable grade is Daksh, which is for districts scoring more than 90% of the total points in that category or overall.
- The lowest grade in PGI-D is called Akanshi-3 which is for scores upto 10% of the total points.

Objective of the PGI-D:

- Ultimate objective of PGI-D is to help the districts to priorities areas for intervention** in school education and thus improve to reach the highest grade.
- The PGI-D is expected to help the state education departments to identify gaps at the district level and improve their performance in a decentralised manner.
- The indicator-wise PGI score **shows the areas where a district needs to improve.**
- The PGI-D will reflect the relative performance of all the districts in a uniform scale which encourages them to perform better.

Indicators Used in the Ranking:

- The structure comprises of total weightage of 600 points across 83 indicators, which are grouped under six categories which includes outcomes, effective classroom transaction, infrastructure facilities and student's entitlements, school safety and child protection, digital learning and governance process.
- These categories are further divided into 12 domains.

State's Performance in the Ranking:

- Three districts from Rajasthan performed the best in the assessment.
- The three districts Sikar, Jhunjhunu, and Jaipur figured in 'Utkarsh' grade in 2019-20 in contrast to a year before when no district featured in that category.
- Rajasthan has the highest 24 districts in this grade, followed by Punjab (14), Gujarat (13), and Kerala (13).
- The districts with the lowest scores (1 out of 50) in this category were:
- South Salmara-Mankachar (Assam), Alirajpur (Madhya Pradesh), North Garo Hills and South Garo Hills in Meghalaya, and Khowai (Tripura) in 2019-20.

UN HABITAT - WORLD CITIES REPORT 2022

In News: The United Nations-Habitat's World Cities Report 2022 was released recently.

More on the Topic:

- The global urban population is back on track to grow by another 2.2 billion by 2050.
- Rapid urbanisation was only temporarily delayed by the COVID-19 pandemic.
- By 2035, the percentage of population in India at mid-year residing in urban area will be 43.2 per cent.

Global Scenario:

- With existing urban populations continuing to grow naturally through rising birth rates, particularly in lower income countries, the urban population is forecast to grow from 56 per cent of the global total in 2021 to 68 per cent by 2050.
- Urbanisation remains a powerful 21st century mega-trend.
- In last two decades, India and China experienced rapid urbanisation and economic growth. As a result, number of people living in poverty reduced.
- India's urban population is estimated to stand at 675 million in 2035, the second highest behind China's one billion.

Challenges:

- **Urban poverty and inequality** are the most intractable and highly complex problems.
- **Overcrowded slums** in Mumbai, Nairobi, Rio de Janeiro, chronic homelessness in London etc highlights that, tackling urban poverty and inequality are key priorities to building inclusive and equitable urban futures.

UN-Habitat:

- The United Nations Human Settlements Programme is the United Nations programme for human settlements and sustainable urban development.
- It was established in 1978 as an outcome of the First UN Conference on Human Settlements and Sustainable Urban Development (Habitat I) held in Vancouver, Canada, in 1976.
- It is mandated by the United Nations General Assembly

to promote socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all.

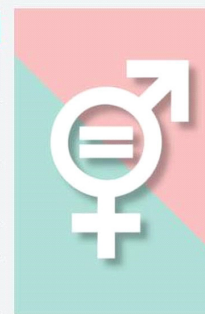
THE GLOBAL GENDER GAP INDEX

In News: The Global Gender Gap Index for 2022 was released by the World Economic Forum (WEF) recently.

The gender score | India ranked 135 in gender parity out of 146 countries, according to the Global Gender Gap Report 2022 released by the World Economic Forum. A look at India's ranking in the four sub-indexes based on which the overall ranking was determined

India	Rank 2022*
Global gender gap index	135
Economic participation and opportunity	143
Educational attainment	107
Health and survival	146
Political empowerment	48

*out of 146 countries



More on the Topic:

- Globally, pandemic-led disruptions and a weak recovery has delayed time to gender parity by 132 years as compared to the 136 years estimated in 2021.
- India was ranked at 135 out of 146 countries. In 2021, India was ranked 140 out of 156 countries.
- On each of the four sub-indices as well as on the overall index the GGG index provides scores between 0 and 1, where 1 shows full gender parity and 0 is complete imparity.

How has India fared on different sub-indices?

- **India has approximately 662 million (or 66.2 crore) women.** In 2022, India's overall score has improved from 0.625 (in 2021) to 0.629.
- **1. Political Empowerment:** This includes metrics such as the percentage of women in Parliament, the percentage of women in ministerial positions etc. Of all the sub-indices, this is where India ranks the highest (48th out of 146).
- **2. Economic Participation and Opportunity:** This includes metrics such as the percentage of women who are part of the labour force, wage equality for similar work, earned income etc.
- Here, too, India ranks a lowly 143 out of the 146 countries in contention even though its score has improved over 2021.
- **3. Educational Attainment:** This sub-index includes metrics such as literacy rate and the enrolment rates in primary, secondary and tertiary education.
- Here India ranks 107th out of 146, and its score has marginally worsened since last year. In 2021, India was ranked 114 out of 156.
- **4. Health and Survival:** This includes two metrics: the sex ratio at birth (in %) and healthy life expectancy (in years). In this metric, India is ranked the last (146) among all the countries. Its score hasn't changed from 2021 when it was ranked 155th out of 156 countries.

THE WORLD POPULATION PROSPECTS 2022

In News: The Population Division of the UN has published the WPP- 2022.

World Population	Year
1 billion	1804
2 billion	1927
3 billion	1959
4 billion	1974
5 billion	1987
6 billion	1998
7 billion	2011
8 billion	2022

More on the Topic:

- Main takeaways from the report:
- The world's population continues to grow, but the pace of growth is slowing down: The global population is expected to grow to around 8.5 billion in 2030, 9.7 billion in 2050 and 10.4 billion in 2100. In 2020, the global growth rate fell under 1% per year for the first time since 1950.
- Rates of population growth vary significantly across countries and regions: More than half of the projected increase in global population up to 2050 will be concentrated in just eight countries: The Democratic Republic of the Congo, Egypt, Ethiopia, India, Nigeria, Pakistan, the Philippines and the United Republic of Tanzania.
- The 46 least developed countries (LDCs) are among the world's fastest-growing. Many are projected to double in population between 2022 and 2050, putting additional pressure on resources and posing challenges to the achievement of the UN's Sustainable Development Goals (SDGs).
- The population of older persons is increasing both in numbers and as a share of the total: The share of the global population aged 65 years or above is projected to rise from 10% in 2022 to 16% in 2050.
- A sustained drop in fertility has led to an increased concentration of the population at working ages (between 25 and 64 years), creating an opportunity for accelerated economic growth per capita:
- International migration is having important impacts on population trends for some countries: reasons for migration include temporary movement for job, insecurity and conflict.

India Relevant Projections:

- If not in 2023 then in another few years India would overtake China as the world's most populous country.
- Looking at the India data, it is clear that as things stand,

cohorts of 0-14 years and 15-24 years will continue to decline while those of 25-64 and 65+ will continue to rise for the coming decades.

- The concern now is not about the absolute numbers but about the quality of life of the people alive.
- For those already in the 25-64 age bracket there is a need for skilling.
- Skilling is the only way to ensure they are more productive and have better incomes.
- The 65+ category is going to grow quite fast and it faces several challenges. Provisioning of social security is an important need in this regard.

STATE RANKING INDEX TO ASSESS IMPLEMENTATION OF THE TARGETED PUBLIC DISTRIBUTION SYSTEM (TPDS)

In News: The Government of India has come up with a first-ever state ranking index to capture the implementation of the Targeted Public Distribution System (TPDS) under the National Food Security Act (NFSA).

IMPLEMENTING FOOD SECURITY

How the 20 'general category' states ranked in terms of NFSA implementation

TOP THREE

Rank	State	Index score
1	Odisha	0.836
2	Uttar Pradesh	0.797
3	Andhra Pradesh	0.794

BOTTOM THREE

18	Delhi	0.658
19	Chhattisgarh	0.654
20	Goa	0.631

More on the Topic:

- Overall, Odisha, Uttar Pradesh and Andhra Pradesh scored the highest and secured the top three positions in the Index.
- Tripura, Himachal Pradesh and Sikkim secured the top positions among special category states.

The states and UTs were ranked for 2022 on the basis of three parameters:

- NFSA coverage, rightful targeting and implementation of all provisions under the Act
- The delivery platform while considering the allocation of food grains, their movement and last-mile delivery to fair price shops
- Nutrition initiatives of the department

National Food Security Act (NFSA):

- NFSA is a crucial policy instrument to ensure food security. It covers nearly 800 million people.
- However, NFSA's implementation through TPDS has not been uniform in the country. While some states and Union territories lead, others are yet to pick up in

terms of coverage, beneficiary satisfaction, digitisation and overall system efficiency.

Important Provisions of the Act:

- The TDPS covers **50% of the urban population and 75% of the rural population**, with uniform entitlement of 5 kg per person per month.
- However, the poorest of the poor households will continue to receive 35 kg of food grains per household per month under Antyodaya Anna Yojana (AAY).
- The identification of eligible households is to be done by States/UTs under TDPS determined for each State.
- Children in the age group of **6 months to 14 years and pregnant women and lactating mothers will be entitled to meals as per prescribed nutritional norms** under Integrated Child Development Services (ICDS) and Mid-Day Meal (MDM) schemes.
- Pregnant women and lactating mothers will also be receiving maternity benefit of Rs. 6,000.
- For the purpose of issuing of ration cards, **eldest woman of the household of age 18 years or above is to be the head of the household.**
- In case of non-supply of entitled food grains or meals, **there is a provision for food security allowance to entitled beneficiaries.**
- In order to ensure transparency and accountability, provisions have been made for disclosure of records relating to PDS, social audits and setting up of Vigilance Committees.

Targeted Public Distribution System (TPDS):

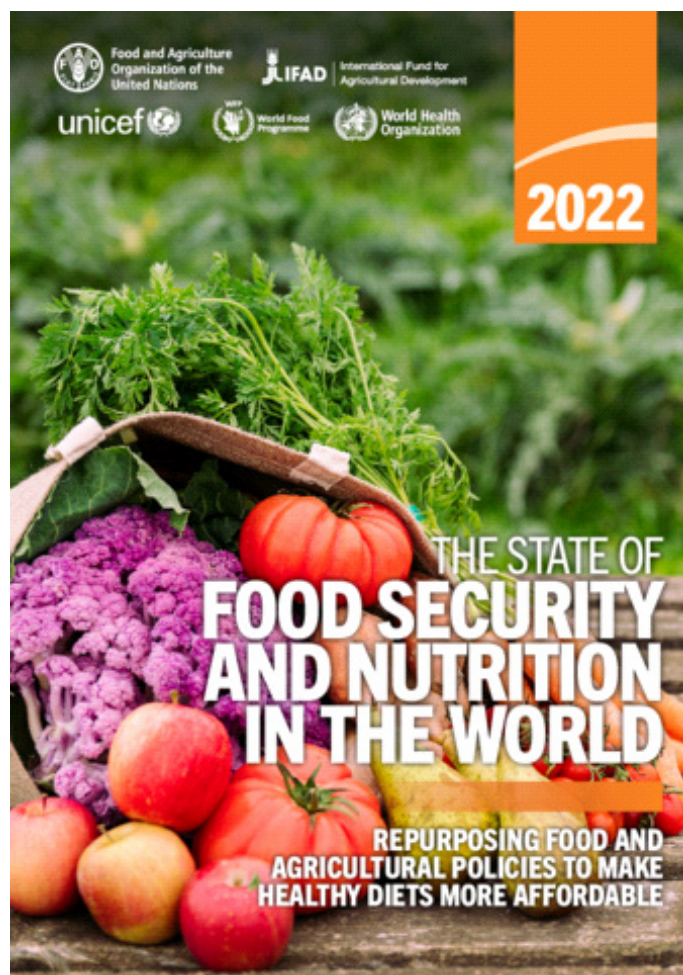
- The Targeted Public Distribution System (TPDS) came into operation in June 1997 under the Government of India with a focus on the poor. Under the operations of TPDS, the beneficiaries were divided into two categories: Households Below the poverty line (BPL) And Households Above the poverty line (APL)
- The objectives of the Targeted Public Distribution System (TPDS) aims at providing food security to poor and vulnerable people.
- It also provides subsidized fuel for household use in cooking and lighting.
- It is the largest food distribution programme in the world—which alone accounts for 34 per cent of all cardholders in our sample.

THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD 2022

In News: The State of Food Security and Nutrition in the World 2022 was published recently.

More on the Topic:

- The report was jointly published today by the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Children's Fund (UNICEF), the UN World Food Programme (WFP) and the World Health Organization (WHO).



Important Findings:

- As many as **828 million people** were affected by hunger in 2021 – 46 million people more from a year earlier and 150 million more from 2019.
- The **gender gap in food insecurity continued to rise** in 2021 - 31.9% of women in the world were moderately or severely food insecure, compared to 27.6% of men.
- Significant number of **children under the age of five were suffering from wasting**, the deadliest form of malnutrition, which increases children's risk of death by up to 12 times.
- **149 million children under the age of five had stunted growth and development** due to a chronic lack of essential nutrients in their diets, while 39 million were overweight.
- Progress is being made on exclusive breastfeeding, with nearly 44% of infants under 6 months of age being exclusively breastfed worldwide in 2020.
- World is moving in reverse, away from the Sustainable Development Goal of ending hunger, food insecurity, and malnutrition in all its forms, by 2030.

The present Crisis:

- The ongoing war in Ukraine, involving two of the biggest global producers of staple cereals, oilseeds and fertilizer, is disrupting international supply chains and pushing up the prices of grain, fertilizer, energy, etc.
- This comes as supply chains are already being adversely affected by increasingly frequent extreme climate events, especially in low-income countries, and has potentially sobering implications for

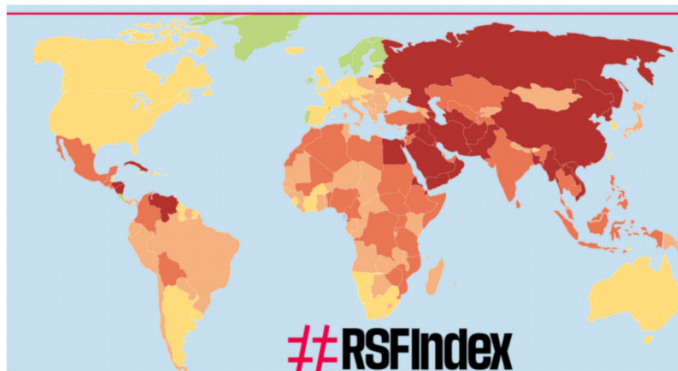
global food security and nutrition.

Way Ahead Suggested:

- If governments repurpose the resources being used to incentivize the production, supply and consumption of nutritious foods, they will contribute to making healthy diets less costly, more affordable and equitably for all.
- Governments should reduce trade barriers, which would help lower the price of nutritious foods, such as fruits, vegetables and pulses.

WORLD PRESS FREEDOM INDEX

In News: Press Freedom Index was released by the Paris-based non-profit organisation Reporters Without Borders (RSF) recently.



More on the Topic:

- The report placed India at 150 out of 180 countries.
- The first World Press Freedom Index published in 2002 positioned India at 80.
- India's ranking was on a continuous decline since 2010.
- RSF has pointed out three important factors such as politically controlled media, the safety of journalists, and the concentration of media ownership behind the downward spiral of press freedom in India.
- The government doesn't agree with the findings of the report: Reasons cited by the government are:- "very low sample size, little or no weightage to fundamentals of democracy, adoption of a methodology which is questionable and non-transparent".

INDIAN BIO ECONOMY REPORT

In News: The India BioEconomy Report 2022, based on the data on biotech sector's contribution to the economy, has been brought out by the Biotechnology Industry Research Assistance Council (BIRAC).

More on the Topic:

- India is among the top three in South Asia and top 12 destinations for biotechnology in the world, with approximately 3% share in the global biotechnology industry (technology provider for the bioeconomy).
- Biotechnology has been recognised as the sunshine sector for India that has a cascading multiplier effect on the Indian Economy.
- India's bio economy has reached over USD 80 billion in 2021 (2.8% of the GDP) which is expected to touch US\$ 300 billion by 2030.

- BioAgri (Bt Cotton, biopesticides etc.) to double its BioEconomy contribution from \$10.5 billion to \$20 billion in 2025.
- The Biotech industry crossed \$1 billion in R&D spending.
- India can leapfrog vaccines and therapeutic segment.

Bio Economy:

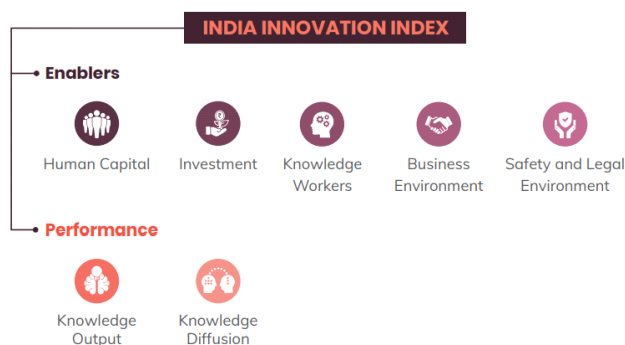
- Biobased economy or bioeconomy is economic activity involving the use of biotechnology and biomass in the production of goods, services, or energy.
- Vaccines, Therapeutics, Diagnostics, Bt Cotton, BioPesticides, Biofuels, Enzymes, etc. are some of the constituents of the bioeconomy.

Indian Initiatives related to Bioeconomy:

- National Biopharma Mission, 'Innovate India' 2017, a Department of Biotechnology (DBT) programme to improve biopharma sector.
- 35 Bio incubators have been set up across India with world-class facilities to promote bio start-ups.
- The first International Incubator- Clean Energy International Incubator has been set up under Mission Innovation by DBT & BIRAC.
- Biotech Ignition Grant Call for North East Region (BIG-NER)
- Mission COVID Suraksha—Indian COVID-19 Vaccine Development Mission
- Amid attempts to boost rural economy by using bio-resources, a 'National Mission on Bioeconomy' was launched by the Institute of Bio-resources and Sustainable Development under the Science and Technology Ministry, in 2016.

INDIA INNOVATION INDEX

In News: NITI Aayog's India Innovation Index 2021 was released recently.



More on the Topic:

- Karnataka has topped again in the 'Major States' category, followed by Telangana and Haryana. Manipur is leading the 'North East and Hill States' category and Chandigarh is the top performer in the 'Union Territories and City States' category.

What is the India Innovation Index?

- Prepared by NITI Aayog and the Institute for Competitiveness, the India Innovation Index is a comprehensive tool for the evaluation and development of the country's innovation ecosystem.
- It ranks the states and the union territories on their

innovation performance to build healthy competition amongst them.

- Current edition adopts the framework of Global Innovation Index (GII).
- The indicators are now distributed across 16 sub-pillars, which, in turn, form seven key pillars.

Enablers:

- Human Capital
- Investment
- Knowledge Workers
- Business Environment
- Safety and Legal Environment

Performance

- Knowledge Output
- Knowledge Diffusion
- Major Problems Associated with India Innovation Ecosystem:
- R&D investment in the country has declined from 0.8% of the GDP in 2008–09 to 0.7% in 2017–18.
- Low private participation in R&D.

INDIAN SOCIETY / SOCIAL ISSUES / SOCIAL JUSTICE

CHILDHOOD IMMUNIZATION DROPPED

In News: WHO and UNICEF predicted a drop in routine childhood immunization during the worst pandemic period when lockdowns were in effect.

More on the Topic:

- According to new data, the percentage of kids who have received three doses of a vaccine against diphtheria, tetanus, and pertussis (DPT) considered a key immunization tracking benchmark dropped 5 percentage points between 2019 and 2021 to 81%.
- The decline means that in 2021, 25 million kids missed one more dose of DPT vaccine, 2 million more than children who missed out in 2020 and 6 million more than in 2019.
- Ethiopia, India, Indonesia, Nigeria and the Philippines recorded the highest numbers of zero-dose children.
- **India Specific Data:** Estimated 30 lakh children did not receive the first dose of DTP-1 vaccine in 2020, compared to 14 lakh in 2019. India was however, quick to prevent further backslide with catchup programmes like Intensified Mission Indradhanush (IMI)-3.

Reasons for Decline:

- Multiple factors are behind the decline, including larger numbers of children living in conflict areas, increased misinformation about vaccines, and COVID-19 related problems such as reduced services and supply chain disruptions.

The Mission Indradhanush:

- The Mission Indradhanush (MI) was launched by the Ministry of Health and Family Welfare (MOHFW) on 25th December 2014 with the aim of expanding immunization coverage to all children across India.
- The Mission Indradhanush aims to cover all those children who are either unvaccinated, or are partially vaccinated against vaccine preventable diseases.
- India's Universal Immunisation Programme (UIP) provide free vaccines against 12 life threatening diseases, to 26 million children annually.
- The Universal Immunization Programme provides life-saving vaccines to all children across the country free of cost to protect them against Tuberculosis, Diphtheria, Pertussis, Tetanus, Polio, Hepatitis B, Pneumonia and Meningitis due to Haemophilus Influenzae type b (Hib), Measles, Rubella, Japanese Encephalitis (JE) and Rotavirus diarrhoea. (Rubella, JE and Rotavirus vaccine in select states and districts).

OBC SUB-CATEGORISATION

In News: OBC sub-categorisation commission's term has been extended by 6 months.

More on the Topic:

- The commission was set up to examine the possibility of creating categories within OBCs for the reservation to ensure "equitable distribution" of representation among

all OBC communities.

- The commission, which took charge on October 2017, is headed by retired Delhi high court chief justice G Rohini.
- Its objectives include working out a mechanism, criteria, norm and parameters through a scientific approach for sub-categorisation within the OBCs and identifying the respective castes or communities or sub-castes or synonyms in the Central List of OBCs and classifying them into their respective sub-categories.

Background:

- Currently, OBCs are granted 27% reservation in government jobs and educational institutes.
- The demand for sub-categorization comes from the notion that **only a few affluent communities among the castes included in the Centre list of OBCs enjoy a major part of this 27% reservation.**
- There are 2,633 Other Backward Castes in the Central List and earlier this year the commission proposed to divide them into four subcategories numbered 1, 2, 3 and 4 and split the 27% into 2, 6, 9 and 10%, respectively.
- If accepted, the recommendations are also likely to have a major impact on politics, especially in north India where the rise of powerful OBC groups such as Yadavs defined the 1990s.
- The commission, commonly known as Rohini Commission, had also recommended **complete digitisation of all OBC records and a standardised system of issuing OBC certificates.**

Reservation System of India:

- The underlying theory for the provision of reservation by the state is **the under-representation of the identifiable groups as a legacy of the Indian caste system.**
- After India gained independence, the Constitution of India listed some erstwhile groups as Scheduled Castes (SC) and Scheduled Tribes (ST).
- The framers of the Constitution believed that, due to the caste system, and other factors SCs and the STs were **historically oppressed and denied respect and equal opportunity in Indian society** and were thus under-represented in nation-building activities.
- In India, the Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs) and socially and economically backward communities who were earlier poorly represented in the Public sector and educational institutions are now covered under the reservation facility.
- In India, **about 60% of seats are reserved for various sections like ST, SC, OBC, and EWS in Government jobs and Higher Education Institutions.**
- **3% of seats are also reserved for differently-abled persons across all categories.**

ANCIENT AND MODERN INDIA, ART AND CULTURE

SANJHI ART

In News: PM Modi has Gifted Mathura's Famous Sanjhi Art to Joe Biden at Tokyo Meet.

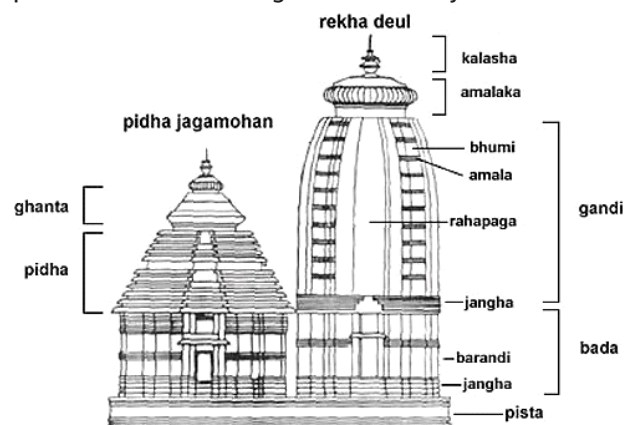


More on the Topic:

- Sanjhi Painting is a tradition of art that **originated out of the cult of Krishna and flourished in the north Indian state of Uttar Pradesh.**
- It is in Vraja, or Vrindavan, the homeland of Lord Sri Krishna, that this art of Sanjhi painting reached its pinnacle.
- **Sanjhi is the art of hand-cutting designs on paper.**
- Traditionally motifs from Lord Krishna's stories are created in stencils. These stencils are cut freehand using a scissor or a blade.
- The delicate Sanjhi is often held together by thin sheets of paper.
- This art painting is rooted in **the folk culture of the region.** It was taken to its glory by the Vaishnava temples in the 15th and 16th centuries.

PURI JAGANNATH TEMPLE

In News: The Supreme Court has dismissed a batch of petitions against excavation and construction work by the Odisha government along the Puri Jagannath temple as part of the Puri Heritage Corridor Project.



More on the Topic:

- The temple is believed to be constructed in the 12th century by King Anatavarman Chodaganga Deva of the Eastern Ganga Dynasty.
- The temple is dedicated to Jagannath, a form of Krishna, in Puri in the state of Odisha on the eastern coast of India.
- This temple was called the “White Pagoda” and is a part of Char Dham pilgrimages (Badrinath, Dwaraka, Puri, Rameswaram).
- Konark Sun Temple is called ‘Black Pagoda’ due to its dark color.

Architecture Style:

- With its Oriya style of temple architecture, it is one of the most magnificent monuments of India.
- Main temple is a curvilinear structure. Divided into 4 sections, namely –
- Deula, Vimana, or Garba griha (Sanctum sanctorum) in the style of Rekha Deula
- Mukhashala (Porch in front)
- Nata mandir/Natamandapa/ Jagamohan
- Bhoga Mandapa (Offerings Hall)

JAGANNATH RATH YATRA 2022

In News: Jagannath Rath Yatra has begun at Puri, Odisha.



More on the Topic:

- The famous Jagannath Puri Rath Yatra, also known as the Festival of Chariots, is believed to be the oldest and largest chariot procession in the world. It is observed every year as per the Hindu calendar.
- The Jagannath Yatra is the only festival whose rituals allow Hindu deities to travel from the Jagannath Temple to Gundicha Temple, where they stay for a couple of days
- The yatra celebrates the rebirth of Lord Jagannath.
- He is accompanied by Devi Subhadra and Lord Balabhadra during Rath yatra along with nine sages depicting nine planets (Navgrahas) of Hinduism.

KAPILAVASTU RELICS - BUDDHISM

In News: Four holy relics of Lord Buddha arrived in Mongolia for an 11-day exposition to coincide with Buddha Purnima celebrations in the country.



More on the Topic:

- The four relics come from among 22 Buddha relics, known as the Kapilavastu relics since they were recovered from a site in Bihar believed to be the ancient city of Kapilavastu. The site was discovered in 1898. The relics are currently housed at Delhi's National Museum.
- According to Buddhist belief, Buddha attained salvation in Kushinagar (Uttar Pradesh) at the age of 80.
- The Mallas of Kushinagar cremated him with ceremonies befitting a universal king.
- The relics from the funeral pyre were then collected and divided into eight shares to be distributed among the Licchavis of Vaishali, Sakyas of Kapilavastu, Ajathasatrus of Magadha, Mallas of Kushinagar, Mallas of Pava, Bullies of Allakappa, Koliyas of Ramagrama and a Brahmana of Vethadipa.
- The purpose was to erect stupas over the sacred relics.
- Two more stupas also came up — one over the embers and the other over the urn in which the relics were collected.

TARANGA HILL-AMBAJI-ABU ROAD RAIL LINE

In News: Cabinet has approved Taranga Hill-Ambaji-Abu Road rail line recently.



More on the Topic:

- Ambaji is an important pilgrimage destination and is one of the 51 Shakti peethas in India that attracts devotees from Gujarat as well as other parts of the country and abroad every year.
- Shakti Peethas were believed to have been formed when the body parts of the corpse of Sati Devi fell into different regions when Lord Shiva carried her corpse in sorrow after her death.
- The shrines are considered as highly revered by Shaivists (Shaivism) sect in Hinduism.

- Taranga Hill (Gujarat) houses the Ajitnath Jain temple (one of the 24 holy Jain Tirthankaras).

Taranga Temple:

- Taranga is a Jain pilgrimage center in Gujarat with two compounds of Jain temples that are important examples of the Māru-Gurjara style of architecture.
- The Ajitnatha temple, was constructed in 1161 by the Chaulukya king Kumarapala.
- Both the main sects of Jainism are represented, with adjoining walled compounds: the Svetambara compound consists of 14 temples in all, and there are also five Digambara-affiliated temples at Taranga hill

DHAMMACAKKA DAY 2022

In News: The President of India, Shri Ram Nath Kovind addressed the Dhammacakka Day 2022 celebrations at Sarnath, Uttar Pradesh.



More on the Topic:

- The Dhammacakka Sutta was the first teaching given by the Buddha in modern Sarnath after he attained enlightenment.
- This teaching of Dhamma Cakka- PavattanaSutta (Pali) or Dharma chakra Pravartana Sutra (Sanskrit) is also known as the **First Turning of Wheels of Dharma** and comprised of the **Four Noble Truths** and **Noble Eightfold Path**.
- **Buddhism has been one of the greatest spiritual traditions of India.** Many holy sites associated with the life and teachings of Lord Buddha are located in India.
- Among those many places, there are four main places
- first **Bodh Gaya**, where he attained enlightenment;
- second **Sarnath**, where he gave his first sermon;
- third **Shravasti** where he spent most Chaturmases and gave most of the sermons;
- and the fourth **Kushinagar**, where he attained the Mahaparinirvana.
- After the the Mahaparinirvana of Lord Buddha, many monasteries, places of pilgrimage, universities associated with his teachings were established which have been centers of knowledge.
- Today all these places are part of the Buddha-circuit which attract pilgrims and religious tourists from

across India and abroad.

Indian Democracy and Buddhism:

- our democracy has been deeply influenced by Buddhist ideals and symbols.
- The national emblem is taken from the **Ashoka Pillar at Sarnath**, which also has the Dharma Chakra engraved on it.
- Behind the chair of the Speaker of the Lok Sabha, the **sutra "Dharma Chakra Pravartanaya"** is inscribed.
- Buddhism has become an **important tool in contemporary geopolitics particularly in Asia**, and it has become increasingly evident that whoever controls the Buddhist discourse and activities will sway influence in Asia.

NATIONAL EMBLEM

In News: Prime Minister Narendra Modi has unveiled the national emblem cast atop the new Parliament building.

More on the Topic:

- The emblem is an adaptation of the **Lion Capital of Ashoka**, an ancient sculpture dating back to 280 BCE during the reign of the Maurya Empire.
- The statue is a three dimensional emblem showing four lions. It became the emblem of the Dominion of India in December 1947, and later the emblem of the Republic of India.
- In the original, there are four lions, mounted back to back, on a circular abacus, which itself rests on a bell-shaped lotus.
- The frieze of the abacus has sculptures in high relief of an **elephant**, a **galloping horse**, a **bull** and a **lion** separated by intervening Dharma Chakras.
- The bell-shaped lotus was omitted.
- The motto **Satyameva Jayate**, which means 'Truth Alone Triumphs', written in Devanagari script below the profile of the Lion Capital is part of the State Emblem of India.

MANGARH HILLOCK IN RAJASTHAN

In News: A team from National Monuments Authority submitted a report on declaring Mangarh hillock in Rajasthan as a monument of National Importance in the year of Azadi Ka Amrit Mahotsav.



More on the Topic:

- The report has been made to give tribute to the 1500 Bhil tribal freedom fighters who were brutally killed by the British army on 17th November 1913.
- It is situated at Gujarat-Rajasthan border. The place is also known as Mangarh Dham.

About Bhils:

- Bhil is an ancient tribal community settled in Rajasthan, Gujarat, Maharashtra and Madhya Pradesh. Some Bhils are also seen in the Sindh province of present Pakistan.
- During eighteenth, nineteenth and the first part of the twentieth century, many Bhils used to work as bonded labours under the local kings and landlords of Rajasthan and Gujarat. They were very poorly paid.
- Further, the famine of 1899-1900 in those areas caused the death of more than five lakh people. The Bhils were severely affected.

The Mangarh massacre (1913):

- A religious fair was organised by the Bhils to organize a large 'havan' (fire rituals) and to take the oath.
- More than one and a half lakh Bhils assembled at Mangarh to attend the religious ceremony.
- When the news of this huge assembly of Bhils reached the princely states, the rulers were very worried.
- The combined forces of British, Santrampur, Dungarpur, Banswara and a detachment of Mewar force moved towards Mangarh.
- The force surrounded Mangarh from all sides and the peaceful Bhils were asked to disperse. When the Bhils performing the 'havan' refused to do so, they were shot from all sides.
- On 17th November, 1913, more than one thousand five hundred peaceful people died in the barbaric attack.

Criteria for declaration as a monument of National Importance:

- Ancient monument or archaeological site is not less than 100 years old;
- It has special historical, archaeological or artistic interest;
- It qualifies under the provisions of definition as contained under ASAMR Act, 1958;
- Interested public do not have major objections to declare them as of national importance;

SANNATI BUDDHIST SITE

In News: The Archaeological Survey of India (ASI) has come up with a plan to conserve the excavated Stupa remains at Kanaganahalli near Sannati at Chittapur taluk in Kalaburagi district.



More on the Topic:

- The ancient Buddhist site on the bank of Bhima river.
- The stupa was built with locally available limestone. Most of the dome slabs, drum slabs, inscribed sculptures and other structural remains were in a broken state when they were retrieved.
- The Kanaganahalli excavation opened up many marvels. For example the magnificent Maha Stupa, which was referred to as Adholoka Maha Chaitya (the Great Stupa of the netherworlds) in the inscriptions and, more significantly, the stone-portrait of Emperor Ashoka, surrounded by his queens and female attendants.
- While the Stupa is believed to be one of the largest of its time, the stone-portrait is considered to be the only surviving image of the Mauryan Emperor which had the inscription 'Raya Asoko' in Brahmi on it.

SOMNATHPUR KESHAVA TEMPLE

In News: UNESCO team will inspect the Somnathpur Keshava Temple for giving the status of World heritage site.



More on the Topic:

- Soma, commander-in-chief of the Hoysala king Narasimha III (1254-1291 AD) built the shrine in 1268 AD.
- Built using a soft stone (greenish schist stone), every inch of the temple is adorned with various sculptures and the entire shrine is raised on a star-shaped moulded platform.
- It is a Vaishnava Hindu temple on the banks of River Kaveri at Somanathapura.
- It had been built in Hoysala Architectur style.

Hoysala architecture:

- Hoysala architecture is the building style developed under the rule of the Hoysala Empire between the 11th and 14th centuries, mostly concentrated in southern Karnataka.
- Hoysala temples are sometimes called **hybrid** or **vesara** as their unique style seems between Dravida and Nagara styles.
- The Hoysala temples contain **multiple shrines** grouped around a **central pillared hall** and laid out in the shape of an intricately-designed star.
- They are made out of soapstone which is a relatively soft stone.
- They are easily distinguishable from other medieval temples by their highly original star-like ground-plans and a profusion of decorative carvings.

MODHERA TEMPLE

In News: Kalupur railway station in Ahmedabad will be renovated and modelled on Modhera Sun temple in five years.



More on the Topic:

- The Sun Temple is a Hindu temple dedicated to the solar deity **Surya** located at **Modhera village** of **Mehsana district**, **Gujarat**, **India**.
- It is situated on the bank of the river **Pushpavati**. It was built after 1026-27 CE during the reign of **Bhima I** of the **Chaulukya** dynasty.
- It is a **UNESCO** world heritage site.
- it is designed in such a way that during every equinox, the first ray of the rising sun would fall on a diamond placed on the head of the Sun God.
- The temple complex has three components: **Gudhamandapa**, the shrine hall; **Sabhamandapa**, the assembly hall and **Kunda**, the reservoir.
- The halls have intricately carved exterior and pillars. The reservoir has steps to reach bottom and numerous small shrines.

SARNA RELIGION

In News: A large number of people from various tribal communities of five states, including **Jharkhand**, **Odisha** and **Assam** has demanding that the Centre recognise their religion as 'Sarna' and ensure their enumeration under this category during the upcoming census.



More on the Topic:

- It is believed that 50 lakhs tribal in the entire country put their religion as 'Sarna' in the 2011 census, although it was not a code.
- Sarna, a "religion" based on concept of nature worship, is followed by tribals in several Indian states.
- The holy grail of the faith is "**Jal, Jungle, Zameen**" and its followers pray to the trees and hills while believing in protecting the forest areas.

BONALU

In News: The 100-year-old Ujjaini Mahankali temple is celebrating Bonalu festival.



More on the Topic:

- Bonalu is a **Telangana** traditional Hindu festival centered on the **Goddess Mahakali**.
- This festival is celebrated annually in the twin cities of **Hyderabad** and **Secunderabad**, as well as in other parts of the state.
- It is celebrated in the month of **Ashada Masam**.
- It involves the religious ceremonies for goddess '**Yellamma**' (regional incarnations of goddess Mahakali).
- Rituals are performed to appease the goddess and to thank her for fulfilling their wishes

PLACES/PERSONALITIES IN NEWS

KAMARAJ

In News: The 120th birth anniversary of Indian independence activist and statesman K. Kamaraj was celebrated recently.



More on the Topic:

- K Kamaraj is widely known for his visionary thinking on the development of education, industries and irrigation in India.
- He joined Congress at the age of 16 when he was influenced by Mahatma Gandhi's ideas.
- He played a vital role in the Indian Independence movement, because of which he was sent to jail several times.
- Kamaraj also participated in the 1920's Satyagraha that was led by George Joseph against the exclusion of Harijans from temples.
- He has been the Chief Minister of Tamil Nadu thrice.
- Under his leadership, the Mid-Day Meal Scheme was started for the first time in the independent India. Additionally, a free uniform scheme was introduced in Madras schools.

GOPAL GANESH AGARKAR

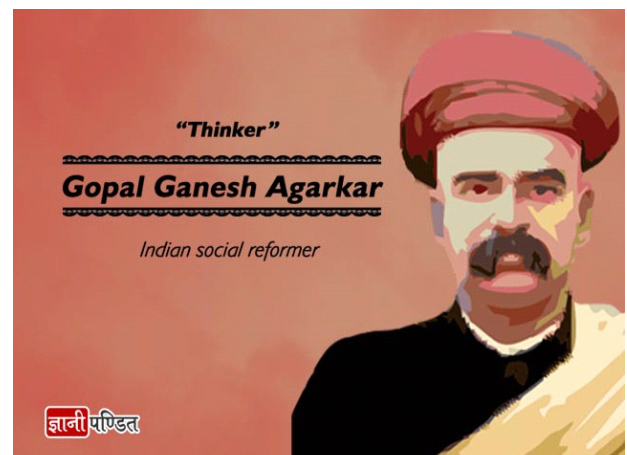
In News: Gopal Ganesh Agarkar – birth anniversary was celebrated recently.

More on the Topic:

- Gopal Ganesh Agarkar was an Indian social reformer, educationist, and thinker from Maharashtra, India.
- He was the first editor of Kesari, a prominent Marathi-language weekly newspaper founded by Lokmanya Tilak in 1880-81.
- Ideological differences with Tilak caused him later to leave. They disagreed on the primacy of political reform versus social reform, with Agarkar believing

that the need for social reform was more immediate.

- He started his own periodical, Sudharak, in which he campaigned against the injustices of untouchability and the caste system.



- Agarkar abhorred blind adherence to and glorification of tradition and the past. He supported widow remarriage. From 1892 to 1895 he was the Principal of Ferguson college.
- At one time a close associate of Bal Gangadhar Tilak, he was co-founder of multiple educational institutes such as the New English School, the Deccan Education Society and Fergusson College along with Tilak, Vishnushastri Chiplunkar, etc.

BANDA SINGH BAHADUR

In News: The National Monuments Authority has observed the great warrior Banda Singh Bahadur's martyrdom on 25 June, 2022.



More on the Topic:

- Baba Banda Singh Bahadur was a great Sikh warrior and a commander of the Khalsa army who defeated the Mughals and freed a large part of North India.
- It was Guru Gobind Singh who sent Banda Singh to Punjab in 1708 and advised him to put an end to the cruelty of Punjab rulers.
- After establishing the Khalsa rule in Punjab, he abolished the zamindari system and granted property rights to the tillers of the land.
- He introduced the Nanak Shahi coins.

DONETSK AND LUHANSK

In News: Recently, Russia recognised the Ukraine rebel regions in eastern Ukraine - Donetsk and Luhansk – as independent areas



More on the Topic:

- Donetsk and Luhansk are the two areas that together make up the Donbas region on the Ukraine-Russia border.
- Donbas is a key industrial hub and important from a resource perspective having the largest coal reserves in Ukraine.
- These two areas broke away from the Ukrainian government's control back in 2014 and proclaimed themselves independent "people's republics".
- Donbas region also offers strategic advantages for Russia. By controlling the region, Russia intends to create a 'land bridge' to Crimea.

MISCELLANEOUS

KARGIL VIJAY DIWAS

In News: 26 July is marked as the Kargil Vijay Diwas to show respect and gratitude to the armed forces personnel who sacrificed their lives during the war.



More on the Topic:

- The 1999 Kargil war was fought by the Indian Army to recapture the Indian territories from Pakistan intruders in the Kargil-Drass sector in 1999.
- In the war, India came out victorious on July 26, 1999.
- On 3rd May 1999, Pakistan started this war when it had infiltrated into the high altitudes in the rocky mountainous region of Kargil with around 5000 soldiers and captured it.
- When the Indian Government got the information about it, 'Operation Vijay' was launched by the Indian army to throw back the intruders who had treacherously occupied Indian Territory.
- The 60-day-long war resulted in the loss of several lives on both sides; India eventually won the war by regaining control of all the previously held territory.

Practice Questions



1) Which of the following statement/s is/are true?

1. Ozone (O₃) is a highly reactive gas composed of three oxygen atoms.

2. It is both a natural and a man-made product.

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

2) Which of the following statement/s is/are true?

1. The Speaker of the Legislative Assembly shall vacate his/her office if he/she ceases to be a member of the Assembly.

2. Whenever the Legislative Assembly is dissolved, the Speaker shall vacate his/her immediately.

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2



3) Which principle among the 'following was added to the Directive Principles of State Policy by the 42nd Amendment to the Constitution?

(a) Equal Pay for Equal work

(b) Participation of workers in the management of undertakings

(c) Right to work, education and public assistance

(d) Securing living wage and human conditions of work to workers

4) Which of the following statement/s is/are false?

1. External Commercial Borrowing is a loan availed by an Indian entity from a non-resident lender with a minimum average maturity.

2. ECBs are in the form of foreign currencies.

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2



5) Vostro Accounts are related with?

(a) An account that a correspondent bank holds on behalf of another bank

(b) An account which tracks quantity of bank's money being held by the other bank.

(c) Fixed deposit account opened for depositing income earned overseas

(d) An account maintained in foreign currency with an Authorised Dealer Category

6) Which of the following statement/s is/are true?

1. When the rupee depreciates, importing goods and services becomes cheaper.

2. But the export of goods and services to other countries, become costlier.

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2





7) Which of the following statement/s is/are true?

1. For the first time 11th Agricultural Census data will be collected through smart phones and tablets.
 2. The Agriculture Census is conducted every 5 years.
- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

8) Which of the following statement/s are true?

1. Green hydrogen is hydrogen gas is produced through electrolysis of water using renewable power to achieve this.
 2. Electrolysis of water is an energy intensive process for splitting water into hydrogen only.
- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2



9) Which of the following states do Rukmini-Krishna Yatra link?

- (a) Arunachal Pradesh and Kerala (b) Arunachal Pradesh and Gujarat
(c) Gujarat and Tamil Nadu (d) Gujarat and Uttarakhand

10) Which of the following statements are not an aim of FRBM Act (2003)?

- (a) Inter-generational equity in fiscal management
(b) Long-term macro-economic stability
(c) Financial Responsibility
(d) Reduce the capital investment expenditure in the economy



Practice Questions

- 1) Explain the significance of Digital Public Infrastructure and Digital Public Goods in expansion of Industry 4.0.
- 2) What is your opinion on Regtech? Explain with one example where Regtech has made the regulatory mechanism seamless.

1. c 2. a 3. b 4. d 5. a
6. d 7. c 8. a 9. b 10. d



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