APTI PLUS
Academy for Civil Services Pvt. Ltd.

PIB
YOJANA
KURUKSHETRA
COMPILATION

OCTOBER 2021

IAS GYAN
PREDICT THE UNPREDICTABLE

PIB

INDEX

General Studies –II

General Studies III

Foreign Affairs

Short Liners

GENERAL STUDIES PAPER-II

The State Nutrition Profiles

Why in News

- NITI Aayog, in a joint effort with International Food Policy Research Institute (IFPRI), Indian Institute of Population Sciences (IIPS), UNICEF and Institute of Economic Growth (IEG) launched '_The State Nutrition Profiles_" for 19 States and Union Territories.

About the State Nutrition Profile

- The _'State Nutrition Profiles' (SNPs)_ give insights on nutrition outcomes, immediate and underlying determinants and interventions based on NFHS-rounds 3, 4 and 5.
  - o The SNPs include a comprehensive compilation of crucial data that can positively affect policy decisions and facilitate research in the area.
  - o The trend analysis of key indicators such as wasting, stunting, anaemia, underweight and overweight and NCDs (Diabetes and High blood pressure) showcase the variability of performance across districts.
- The SNPs are based on the headcount-based analyses and use of data from NFHS-5 to provide evidence that helps identify priority districts and number of districts in the state with public health concern as per WHO guidelines.
  - o Each SNP has incorporated key takeaways for children, women and men and identifies areas where the state has the potential to improve further.
- The reports highlight the best and worst performing districts, highest burden districts and top coverage districts of the country.

Some other Reports by NITI Aayog

Commission on Air Quality Management

Why in News?

- The _Commission for Air Quality and Management (CAQM)_ will periodically review compliance of dust mitigation measures at Construction & Demolition sites in the National Capital Region.
  - o Directions have been issued by CAQM to the State Governments of Haryana, Uttar Pradesh, Rajasthan and GNCTD to develop an online mechanism through a web portal for monitoring compliance of dust mitigation measures by the project proponents.
- This initiative is taken to curb and abate the air pollution levels arising from the Construction and Demolition (C&D) activities in the National Capital Region (NCR).

Background

- The introduction of a robust online mechanism for monitoring dust mitigation measures is a compelling necessity to ensure strict implementation of the Construction and Demolition Waste Management Rules.

Provisions of CAQM

- As per the directions of CAQM, all the projects (on plot area equal to or greater than 500 square meters) of construction and demolition under the territorial jurisdiction of Urban Local Bodies in the NCR have to mandatorily register at the web portal.
- Along with this, provision for video fencing equipped with remote connectivity technology will be incorporated in the web portal for effective and round-the-clock monitoring of compliance of dust mitigation measures by the project proponents.
- Further, the project proponents are required to install reliable and low-cost PM2.5 and PM10 sensors at the C&D project sites.

Implementation

- An exhaustive checklist will form the basis for monitoring compliance of dust mitigation measures in the NCR through this online mechanism.
- The list of dust control/ mitigation measures, include the use of anti-smog guns, water pills, water cannons, hoses, fire hydrants, sprinklers, etc.
- It is mandatory for the proponents to install reliable and economical PM2.5 and PM10 sensors at the project sites and link them to a platform with Live Dashboard accessibility for CPCB, government agencies as well as the administrative departments concerned to monitor the activities.

Benefits

- This technological shift will not only help the project proponents to self-audit and certify compliance of stipulated dust control measures but will also strengthen monitoring of dust control measures at C&D sites.
- The project proponents are also expected to upload the self-declaration on a fortnightly basis. Further, directions have been issued to Delhi Pollution Control Committee (DPCC) and other State Pollution Control Boards (SPCB) of National Capital Region to strictly monitor compliance of dust mitigation measures by project proponents.

India-UAE High Level Joint Task Force

Why in News

- Member of the Executive Council of the Emirate of Abu Dhabi, and Minister of Commerce & Industry, Consumer Affairs, Food & Public Distribution, and Textiles, Government of India, co-chaired the *9th meeting of the UAE-India High Level Joint Task Force on Investments*.

About the Joint Task Force

- The Joint Task Force was established in 2013 as a key forum for promoting economic ties between the UAE and India.
- They were further strengthened by the signing of the Comprehensive Strategic Partnership Agreement between the two countries in January 2017 by Indian Prime Minister and Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces.

Important Highlights

- The two sides noted the impact of the COVID-19 pandemic on global trade and investment and reiterated the importance of continuing to strengthen the deep economic ties between the two countries.
  - o Both sides recognised the collaboration between India and UAE during this difficult period and appreciated the leadership provided by the two countries in their regions to confront the pandemic.
- The progress of ongoing discussions for the *India-UAE Comprehensive Economic Partnership Agreement*, which will be a significant and wide-reaching step in promoting trade and investment between the two countries, was reviewed during the meeting.
- Discussions were also held on *exploring mutually beneficial methods and incentives to facilitate further investment from UAE sovereign investment entities* in key priority sectors in India.
  - o The importance of active involvement from the *UAE Special Desk within Invest India*, the National Investment Promotion Agency of India, in expediting the resolution of both legacy issues and current difficulties experienced by UAE companies and banks in India was discussed.
  - o The Indian side also highlighted some long-standing issues faced by Indian investors in the UAE.

- Given the importance of air transport in facilitating bilateral ties and people-to-people connections, both sides agreed that their respective civil aviation authorities should continue to work together on a priority basis, for their mutual benefit, to ensure the speedy normalisation of air transport operations between the two countries.

Electricity (Transmission System Planning, Development and Recovery of Inter-State Transmission Charges) Rules 2021

Why in News?

- The Union Ministry of Power has promulgated the Electricity (Transmission System Planning, Development and Recovery of Inter-State Transmission Charges) Rules 2021.
  - o This paves the way for overhauling of transmission system planning, towards giving power sector utilities easier access to the electricity transmission network across the country.

Background

- At present, generating companies apply for **Long-Term Access (LTA)** based on their supply tie-ups, while medium-term and short-term transmission access is acquired within the available margins. Based on LTA application, incremental transmission capacity is added.
- A number of sector developments, such as the increasing focus on renewable energy, and the development of the market mechanism, necessitated a review of the existing transmission planning framework based on LTA.

Feature

- The rules underpin a system of transmission access which is termed as a **General Network Access** in the inter-state transmission system.
  - o This provides flexibility to the States as well as the generating stations to acquire, hold and transfer transmission capacity as per their requirements.
  - o Thus, the rules will bring in rationality, responsibility and fairness in the process of transmission planning as well as its costs**.**
  - o The rules specify how the existing LTA would be transitioned into General Network Access.
- **The rules will empower state power distribution and transmission companies to determine their transmission requirements and build them.**
  - o States will be able to purchase electricity from short term and medium term contracts and optimize their power purchase costs.
  - o The rules also specify clear roles of various agencies involved in the transmission planning process.
- **The Central Electricity Authority** shall prepare a short-term plan every year on rolling basis for next 5 years and perspective plan every alternative year on rolling basis for next 10 years.
  - o The Central Transmission Utility shall prepare an implementation plan for inter-State transmission system every year on rolling basis for up to next 5 years which will take into account aspects such as right –of-way and progress of the generation and demand in various parts of the country.
- **The rules outline the recovery of GNA charges from the users of transmission network and assign the responsibility of billing, collection and disbursement of inter-state transmission charges to the Central Transmission Utility.**
  - o The rules have enabled, for the first time, that the transmission capacity can be sold, shared or purchased by the States and generators.
  - o The rules prescribe that excess drawl or injection over the GNA capacity sanctioned shall be charged at rates which are at least 25% higher and this will ensure that the entities do not under-declare their GNA capacity.
- **The Central Electricity Regulatory Commission (CERC)** has been empowered to bring out detailed regulations on GNA in inter-state transmission system.
  - o The Ministry of Power also issued the **Right of Consumer rules**, which empower consumers and rules laying down the ceiling for late payment surcharge.

Conclusion

- The Rules brought out by the Central Government underpin that "*electricity transmission planning shall be made in such way that the lack of availability of the transmission system does not act as a brake on the growth of different regions and*

the transmission system shall, as far as possible, to be planned and developed matching with growth of generation and load and while doing the planning, care shall be taken that there is no wasteful investment".

Agenda Document for 2021- 22

Why in news

- The Ministry of Coal has finalized an Agenda Document for the year 2021-22. This is for the first time that an Agenda document for the ensuing year has been brought out in the form of a compilation and provided to all senior functionaries who have been apportioned the responsibility of steering these four broad focus areas through the year with regular monitoring and appraisals.

Background

- The Agenda Document for the year 2021-22 broadly focuses on the four areas of :
a. Coal Sector Reforms.
b. Coal Transition and Sustainability
c. Institution Building.
d. Futuristic Agenda.
- This Agenda has been designed along with a monitoring and reviewing framework which is to be reviewed frequently by the Secretary(Coal) for mid-course directions / alignments.
- The areas covered step up upon the major reforms done in the last few years and also give direction for covering and meeting the existing and the emerging challenges of the Coal Sector and align itself well with the emerging technologies and diversification thrust of the Coal Sector.
- The Agenda covers the entire gamut of areas for steering the Coal Sector into new technologies while focussing on the core competence of ensuring set production targets including the one billion tonne by 2024.

Coal Sector Reforms

- Coal Sector Reforms include Projects for the financial year 2021-22, Jharia Master Plan, Regulatory reforms (Exploration), Coal Beneficiation, Safety in coal mines, Coking coal Strategy, Marketing reforms, Coal Pricing Reforms, Reforms in land acquisition, Solar Power Projects, Coal Despatch & Stocking, Coal Export in Neighbouring Countries and Strategy to boost coal production of mines allocated through auction.
- *Coal Transition & Sustainability* covers the areas of social aspects of coal transition, monetization of de-coaled land, use of *Artificial Intelligence (AI)* in data mining/drones and Sustainability (Net Zero Emissions).
- Institution building segment of the above Agenda contains reforms in *Coal Controller Organisation (CCO)*, *Coal Mines Provident Fund Organisation (CMPFO)*, upgrading Coal testing lab andstaffing quality and training issues.

Way Forward

- The Futuristic Agenda include Coal to Chemical: Syn Gas, Hydrogen Gas, Liquid fuels, Chemicals and fertilizers, CIL - diversify its business and explore prospects in sunrise industries electric charging pods, EVs etc.
- Acquisition and mergers of similar or new business after due diligence, media campaign and close monitoring of CSR activities.

UPSC IAS/IPS CLASSROOM PROGRAMME 2022 ₹1,30,000

DRDO Dare to Dream 2.0 & Young Scientists awards

What in News?
- Raksha Mantri felicitated the winners of 'Dare to Dream 2.0' Contest of Defence Research & Development Organisation (DRDO).
- He gave away awards to 40 winners - 22 in Individual category and 18 in Start-up category.
- He also launched *'Dare to Dream 3.0'* to promote innovators & start-ups and provide a platform for the young ignited minds in the country.

About Dare to Dream
- *Dare to Dream*is DRDO's pan-India contest to promote Indian academicians, individuals and start-ups to develop emerging defence and aerospace technologies/systems.
- DRDO provides technical and financial support to the winners for realisation of their ideas under the *TechnologyDevelopment Fund (TDF) scheme.*

About The TDF Scheme
- It established *to promote self- reliance in Defence Technology* as a part of the Make in India initiative.It is a Programme of MoD (Ministry of Defence) executed by DRDO.
-
- It encourages participation of public/private industries especially MSMEs and Startups so as to create an ecosystem for enhancing cutting-edge technology capabilities for defence application.
- Funding to be covered through provision of grants-in-aid to the industry.
  o Project cost of upto INR 10 Cr will be considered for funding, subject to a maximum of 90% of the total project cost.
- Limited to the development of technologies or prototype of product having potential use for the Services with a typical development period of two years.

Aims and Objectives
- To provide a major fillip to the defence manufacturing sector by encouraging the industry to innovate on defence technologies, in order to place India on the self-reliance trajectory.
- To providing the grants-in-aid for the development of indigenous technology.
- To provides the industry with the various benefits.

National Mission on Edible Oils

Why in News?
- *National Mission on Edible Oil- Oil Palm Business Summit* for North Eastern States was recently held at Guwahati.
- The business summit has been aimed to explore the target of area expansion, seedling requirement fixed for different states through processors, details of viability gap payment, interventions and assistance under the mission.

About The National Mission on Edible Oils – Oil Palm (NMEO-OP)
- It is a Centrally Sponsored Scheme with a special focus on the North east region and the Andaman and Nicobar Islands.
- Due to the heavy dependence on imports for edible oils, it is important to make efforts for increasing the domestic production of edible oils in which increasing area and productivity of oil palm plays an important part.
- A financial outlay of Rs.11,040 crore has been made for the scheme, out of which Rs.8,844 crore is the Government of India share and Rs.2,196 crore is State share and this includes the viability gap funding also.
- Under this scheme, it is proposed to cover an additional area of 6.5 lakh hectare (ha.) for oil palm till the year 2025-26 and thereby reaching the target of 10 lakh hectares ultimately.
- The production of *Crude Palm Oil (CPO)* is expected to go upto 11.20 lakh tonnes by 2025-26 and upto 28 lakh tonnes by 2029-30.

Focus Area

There are two major focus areas of the Scheme.

1. **Pricing**

- *Viability Price (VP):* Presently the prices of these FFBs are linked to the international CPO prices fluctuations. For the first time, the Government of India will give a price assurance to the oil palm farmers for the FFBs. This will be known as the **Viability Price (VP).**
- This will protect the farmers from the fluctuations of the international CPO prices and protect him from the volatility.
- This will be fixed yearly for the oil palm year from 1st November to 31st October.
- This assurance will inculcate confidence in the Indian oil palm farmers to go for increased area and thereby more production of palm oil.
- *Formula price (FP)*: A Formula price (FP) will also be fixed which will be 14.3% of CPO and will be fixed on a monthly basis.
- The viability gap funding will be the VP-FP and if the need arises, it would be paid directly to the farmers accounts in the form of DBT.

2. **Assistance of Inputs**

- A substantial increase has been made for planting material for oil palm and this has increased from Rs 12,000 per ha to Rs.29000 per ha. Further substantial increase has been made for maintenance and inter-cropping interventions.
- A special assistance @ Rs 250 per plant is being given to replant old gardens for rejuvenation of old gardens.

Implementation

- The assurance to the farmers will be in the form of the viability gap funding and the industry will be mandated to pay 14.3% of the CPO price which will eventually go up to 15.3%.
- There is a sunset clause for the scheme which is 1st November 2037.
- To give impetus to the North-East and Andaman, the Government will additionally bear a cost of 2% of the CPO price to ensure that the farmers are paid at par with the rest of India.
- The states who adopt the mechanism proposed by the Government of India would benefit from the viability gap payment proposed in the scheme and for this they will enter into MoUs with the Central Government.

Other Interventions

- To address the issue of shortage of planting material in the country, seed gardens will be provided assistance up to Rs.80 lakhs for 15 ha. in Rest of India and Rs.100 lakhs for 15 ha in North-East and Andaman regions.
- Further, assistance for seed gardens @ Rs.40 lakhs and Rs.50 lakhs for Rest of India and North-East & Andaman regions respectively.
  o Further Special assistance will be provided for the North-East and the Andaman regions in which special provisions is being made for half-moon terrace cultivation, bio fencing and land clearance along with integrated farming.
- For capital assistance to the industry, for the North East states and Andamans, a provision of Rs 5 core of 5 mt/hr unit with pro rata increase for higher capacity. This will attract the industry to these regions.

Conclusion

- The scheme will immensely benefit the oil palm farmers, increase capital investment, create employment generation, shall reduce the import dependence and also increase the income of the farmers.

Comprehensive Handicrafts Cluster Development Scheme (CHCDS)

Why in News

- *Ministry of Textiles has approved continuation of Comprehensive Handicrafts Cluster Development Scheme (CHCDS) with a total outlay of Rs 160 crore.*

About The Scheme

- The scheme will continue up to March 2026.

- Infrastructural support, market access, design and technology up-gradation support etc will be provided to handicrafts artisans under this scheme.

Aims and Objectives of the Scheme

- It aims to create world-class infrastructure that caters to the business needs of the local artisans & SMEs to boost production and export.
- The main objective of setting up these clusters is to assist the artisans & entrepreneurs to set up world-class units with modern infrastructure, latest technology, and adequate training and human resource development inputs, coupled with market linkages and production diversification.

Brief Details

- Under CHCDS, soft interventions like Baseline Survey and Activity Mapping, Skill Training, Improved Tool Kits, Marketing events, Seminars, Publicity, Design workshops, Capacity Building, etc will be provided.
- Hard interventions like Common Facility Centers, Emporiums, Raw Material Banks, Trade Facilitation Centers, Common Production Centers, Design and Resource Centers will also be granted.
- The integrated projects will be taken up for development through Central/State Handicrafts Corporations/Autonomous, Body-Council-Institute/Registered Co- operatives/ Producer company of artisans/Registered SPV, having good experience in handicrafts sector as per requirement and as per the DPR prepared for the purpose.
- The focus will be on integration of scattered artisans, building their grass root level enterprises and linking them to SMEs in the handicrafts sector to ensure economies of scale.
- The mega handicraft clusters having more than 10,000 artisans will be selected for overall development under this scheme.

National Road Safety Board

Why in News

- Ministry of Road Transport & Highways has notified constitution of the National Road Safety Board.
- The Rules specify provisions regarding its composition , eligibility for Chairman and Members of the Board, selection process, term of office, procedure for resignation and removal, powers and functions of the Board, meetings of the Board etc.

Composition of the Board

- The Head Office of the Board shall be in the National Capital Region and the Board may establish offices at other places in India.
- It shall consist of the Chairman and not less than three, but not exceeding seven Members, to be appointed by the Central Government.

Functions of the Board

- The Board shall be responsible for promoting road safety, innovation and adoption of new technology and for regulating traffic and motor vehicles. For this purposes, inter alia, the Board shall
1. **Formulate**
   a. specific standards for road safety, traffic management and road construction for hilly regions;
   b. guidelines for capacity building and development of skills for traffic police, hospital authorities, highway authorities, educational and research organizations and other organizations;
   c. guidelines for establishing and operating trauma facilities and para-medical facilities, for consideration by the Central Government.
2. **Provide** technical advice and assistance to the Central Government, State Governments and local authorities on road safety and traffic management;
3. **Promote**
   a. Good Samaritans;
   b. good practices in road safety and traffic management;
   c. new vehicle technology in the field of vehicular engineering;
   d. co-ordination with international organizations;
   e. consistency between international technical standards and domestic technical standards,

4. **Conduct** research to improve road safety, traffic management, crash investigation.

Rewarding Scheme for Grant of Award to the Good Samaritan
- The Scheme aims to motivate the general public to help the road accident victims in emergency situation, inspire and motivate others to save innocent lives on road.
- Any individual who has saved life of a victim of a fatal accident involving a motor vehicle by administering immediate assistance and rushing to Hospital within the Golden Hour of the accident to provide medical treatment would be eligible for the award.
  - i. An individual Good Samaritan can be awarded maximum 5 times in a year.
  - ii. The amount of award for the Good Samaritan(s) would be Rs.5,000/- per incident.
- The Scheme would be effective from 15th of October, 2021.

Mine Closure Frame Work
Why in News
- *The Ministry of Coal* is in the process of finalising a robust *mine closure framework* with thrust on three major aspects of
  - **a.** institutional governance,
  - **b.** people &communities and environmental reclamation
  - **c.** land repurposing on the principles of just transition.
- The Ministry is in consultation with the *World Bank* for obtaining support and assistance in this program.

Assistance of World Bank
- Vast experience of the World Bank in handling mine closure cases in different countries will be highly beneficial and will facilitate adoption of the best practices and standards in handling of mine closure cases.
- A *Preliminary Project Report (PPR)* for the proposed engagement with the World Bank has been submitted to the Finance Ministry for necessary approvals.
- Indian coal sector is relatively new to the concept of systematic mine closure.

Background
- *Mine closure* guidelines were first introduced in 2009, re-issued in 2013 and are still evolving.
- As coal mining in India had started long back, our coalfields are replete with several legacy mines remaining unused for long.
- In addition, mines are closing and will close in future also due to reasons such as exhaustion of reserves, adverse geo-mining conditions, safety issues etc.
- These mine sites should not only be made safe and environmentally stable but the continuity of livelihood should be ensured for those who were directly or indirectly dependent on the mines.
- Reclaimed lands will also be repurposed for economic use of the community and State including tourism, sports, forestry, agriculture, horticulture, townships etc.

Framework
a. **Phase-1:**It involves comprehensive mapping of Indian coal ecosystem to establish a detailed baseline in respect of current and pending coal mine closures - readiness and capacities of institutions, existing closure processes, socio-economic status around coal mines and environmental baseline.
- The outcome of this exercise will suggest reforms in existing statutory and institutional framework and come out with a roadmap for mine closure covering the above mentioned three major aspects along with financial arrangements.
b. **Phase-2:** will be the actual implementation of mine closure program as per finalized roadmap and will include
  - i) Pre-closure Planning,
  - ii) Early Closure.
  - iii) Roadmap for Regional Transition with an aim to ensure no one is left behind.
- This Phase will start after completion of Phase-1 and will continue for long and may undergo subtle changes based on lessons learnt during execution.
- *A Special Purpose Entity (SPE)* under the administrative control of Coal Controller Office is to be constituted to oversee the implementation of both the phases of this program.

- Coal Companies are to form dedicated multi-disciplinary teams to coordinate with SPE for successful execution of the program.

Expected Outcome
- The most important outcome of the program will be sustainable remediation of all legacy mine sites, which are lying unattended since long.
- Not only the mine sites will be restored sustainably but livelihood of families,dependent on mines will also be taken care of.

G20 Extraordinary Summit on Afghanistan
Why in News
- Prime Minister Shri Narendra Modi has recently participated virtually in the G20 Extraordinary Summit on Afghanistan.
- The Meeting was convened by Italy, which currently holds the G20 Presidency, and chaired by Italian Prime Minister Mr. Mario Draghi.
- Issues under consideration at the meeting related to the :
    a. Humanitarian situation.
    b. Concerns relating to terrorism.
    c. Human rights in Afghanistan.

Brief Details
- The PM in his remarks talked about India's contribution to promoting socio-economic development and capacity building of youth and women in Afghanistan.
- He recalled that over 500 development projects have been implemented by India in Afghanistan
- He emphasized the need for the international community to ensure that Afghanistan has immediate and unhindered access to humanitarian assistance,
- The Prime Minister also underlined the need to ensure that Afghan territory does not become a source of radicalization and terrorism, regionally or globally.
- He stressed the need to fight jointly against the nexus of radicalization, terrorism and the smuggling of drugs and arms in the region.

PM GatiShakti
Why in News
- In a historic event for the infrastructure landscape of the country, Prime Minister will launch PM GatiShakti - National Master Plan for multi-modal connectivity, on 13th October, 2021.

Background
- Infrastructure creation in India had suffered for decades from multiple issues.
    o There was lack of coordination between different Departments, for example, once a road was constructed, other agencies dug up the constructed road again for activities like laying of underground cables, gas pipelines etc.
    o This had caused great inconvenience and a wasteful expenditure.
- To address this, efforts were put in place to increase coordination so that all cables, pipelines etc. could be laid simultaneously.
    o Steps have also been taken to address other issues like time-taking approval process, multiplicity of regulatory clearances etc.
- In the last seven years, the Government has ensured unprecedented focus on infrastructure through a holistic outlook.

Brief details
- PM GatiShakti is based on six pillars:
1. **Comprehensiveness**: It will include all the existing and planned initiatives of various Ministries and Departments with one centralized portal.

- o Each and every Department will now have visibility of each other's activities providing critical data while planning & execution of projects in a comprehensive manner.
2. **Prioritization**: Through this, different Departments will be able to prioritize their projects through cross–sectoral interactions.
3. **Optimization**: The National Master Plan will assist different ministries in planning for projects after identification of critical gaps. For the transportation of the goods from one place to another, the plan will help in selecting the most optimum route in terms of time and cost.

4. **Synchronization**: Individual Ministries and Departments often work in silos. There is lack of coordination in planning and implementation of the project resulting in delays.
   - o PM GatiShakti will help in synchronizing the activities of each department, as well as of different layers of governance, in a holistic manner by ensuring coordination of work between them.
5. **Analytical**: The plan will provide the entire data at one place with GIS based spatial planning and analytical tools having 200+ layers, enabling better visibility to the executing agency.
6. **Dynamic**: All Ministries and Departments will now be able to visualize, review and monitor the progress of cross-sectoral projects, through the GIS platform, as the satellite imagery will give on-ground progress periodically and progress of the projects will be updated on a regular basis on the portal.
   - o It will help in identifying the vital interventions for enhancing and updating the master plan.

Expected Outcome
a. PM GatiShakti will provide the public and business community information regarding the upcoming connectivity projects, other business hubs, industrial areas and surrounding environment.
   - o This will enable the investors to plan their businesses at suitable locations leading to enhanced synergies.
   - o It will create multiple employment opportunities and give a boost to the economy.
   - o It will improve the global competitiveness of local products by cutting down the logistics costs and improving the supply chains, and also ensure proper linkages for local industry & consumers.
b. PM GatiShakti will address the past issues through institutionalizing holistic planning for stakeholders for major infrastructure projects.
c. It will leverage technology extensively including spatial planning tools with ISRO imagery developed by BiSAG-N (Bhaskaracharya National Institute for Space Applications and Geoinformatics).
d. PM GatiShakti will provide the public and business community information regarding the upcoming connectivity projects, other business hubs, industrial areas and surrounding environment.

Conclusion
- PM GatiShakti will address the past issues through institutionalizing holistic planning for stakeholders for major infrastructure projects.
   - o Instead of planning & designing separately in silos, the projects will be designed and executed with a common vision.
- It will incorporate the infrastructure schemes of various Ministries and State Governments like Bharatmala, Sagarmala, inland waterways, dry/land ports, UDAN etc.
- Economic Zones like textile clusters, pharmaceutical clusters, defence corridors, electronic parks, industrial corridors, fishing clusters, agri zones will be covered to improve connectivity & make Indian businesses more competitive.
- It will also leverage technology extensively including spatial planning tools with ISRO imagery developed by BiSAG-N (Bhaskaracharya National Institute for Space Applications and Geoinformatics).

Amended Technology Up-gradation fund Scheme (ATUFS)
Why in News?
- Union Minister of Textiles and Minister for State for Textiles reviewed the *Amended Technology Up-gradation fund Scheme (ATUFS)* with the different Ministries, Departments ,Textiles Industry Associations and Banks etc at the *5th Inter Ministerial Steering Committee (IMSC) meeting* organized by the Ministry of Textiles.

Background

- Ministry of Textiles had introduced *Technology Upgradation Fund Scheme (TUFS)* in 1999 as a credit linked subsidy scheme intended for :
  a. Modernization and Technology up-gradation of the Indian textile industry.
  b. Promoting ease of doing business.
  c. Generating employment.
  d. Promoting exports.

- The ongoing *ATUFS* was approved for a period from 2015-16 to 2021-22 with an allocation of Rs. 17,822 crore. It is being implemented through web based *iTUFS platform*.
  o Capital Investment Subsidy is provided to benchmarked machinery installed by the industry after physical verification.
- In 2019 introduction of physical verification of machinery and computation of subsidy before releasing committed liability under previous versions of scheme (MTUFS, RTUFS & RRTUFS) was introduced.

Highlights

- Some of significant decisions taken to resolve pending issues and way forward during the meeting are:
  a) Reduction of Compliance burden by accepting only single certificate from the concerned bank instead of multiple documents regarding evidence of payment for claimed machineries
  b) Rationalisation of GR related to cases of consortium finance
  c) Consideration of Standalone embroidery machines wef inception of the ATUFS.
  d) Facilitating Industry by providing Condonation of filing for UIDs to 1795 pending cases besides the cases in which cut off dates falls during 23rd March 2021 and 22 October 2021(COVID Second wave period) with time line of its submission to Office of Textile Commissioner/iTUFS within 90 days (i.e., total period for unit & banks).
  e) Condonation for the submission of JIT request to 814 units besides the unit in which cut-off date for submission of JIT request in post COVID-19.

About ATUFS

- The Amended Technology Upgradation Fund Scheme (ATUFS), under the Ministry of Textiles, aims to facilitate employment, investment, quality, productivity, as well as import and export substitution in the textile industry while also indirectly promoting investments in the manufacturing of machinery for textiles.
- This is a credit-linked subsidy scheme for capital investment in the manufacturing and textiles sector under the *Make in India* as well as *Zero Defect and Zero Effect initiative* of the Government of India.
- The following entities are eligible for this scheme:
  a. Weaving, Weaving Preparatory and Knitting
  b. Processing of fibres, yarns, fabrics, garments and made up
  c. Handloom Sector
  d. Silk Sector
  e. Jute Sector.
  f. Garment/Made up manufacturing.
  g. Technical textiles

PM Ayushman Bharat Health Infrastructure Mission

Why in News?

- Prime Minister has recently inaugurated 09 medical colleges in Uttar Pradesh and launched *PM Ayushman Bharat Health Infrastructure Mission.* He has also inaugurated various development projects worth around Rs 5200 crore for Varanasi.

About PM Ayushman Bharat Health Infrastructure Mission

- With an outlay of 64,180 crore, PM Ayushman Bharat Health Infrastructure Mission, announced in the Budget 2021-22, is the largest pan-India Health Infrastructure Scheme that aims to provide a much-needed fillip to India's capacity to address emergent Public Health issues.

- This is expected to bring about a paradigm shift in India's healthcare infrastructure and make it more resilient.

Objectives

- The objective of PM Ayushman Bharat Health Infrastructure Mission is to fill critical gaps in public health infrastructure, especially in critical care facilities and primary care in both the urban and rural areas.

Details

- PM Ayushman Bharat Health Infrastructure Mission aims to produce robust outcomes in Public Health leapfrogging India to one of the most advanced countries in the world in terms of management of Public Health outbreaks.
  o The components, such as setting up of the National Platform for One Health, setting up a Division for Research on Disease Elimination Sciences & Health as a Satellite Centre of National Aids Research Institute, setting up of the Regional NIVs, strengthening of existing National Research Institutions, the NCDC and existing laboratory infrastructure, upgradation of labs and creation of additional BSL-3 facilities under the ICMR and the NCDC, will further strengthen the country capacity to detect & diagnose new infections.
- The planned interventions will also lead to availability of adequately trained manpower who can contribute to diagnosis and research on novel pathogens and biological threats, reducing dependence on foreign partners and laboratories.
- *Development of Critical Care Hospital Blocks* in 602 districts as proposed under the scheme, shall make such districts self-sufficient, to a large extent, in providing comprehensive treatment for infectious diseases without disruption to the other essential health services and also augment the critical care capacities in the public health facilities.
- Initiatives such as strengthening of Points of Entry will ring fence our borders against the import of new infectious diseases and pathogens. Health Emergency Operation Centres and the container based mobile hospitals shall further build capacities for effective emergency response during such times.
- Setting up of the national, regional, state, district and block level laboratories integrated into a network for surveillance functions, backed by a robust I.T. based reporting mechanism through the Integrated Health Information Platform (IHIP), shall lead to self-reliance for detection, prevention and containment of disease outbreaks.

PM AYUSHMAN BHARAT HEALTH INFRASTRUCTURE MISSION

Multi-dimensional and Multi-modal Interventions
- Focus on critical and primary care
- Network of 29,000 Health and Wellness Centers
- Specialized Critical Care Hospital Blocks in all districts with 37,000 beds with ICUs, ventilators and oxygen support
- Over 4,000 Block & District level Public Health Units & Labs
- Full range of diagnostic services in all districts
- IT-enabled disease surveillance system

Institutional Approach to Holistic Healthcare
- National Institution for One Health
- 4 New National Institutes for Virology
- Regional Research Platform for WHO South East Asia Region
- 15 Biosafety Level 3 Labs
- 5 New Regional National Centre for Disease Control
- Public health units at 50 international entry points preventing public health emergencies and disease outbreaks

A HEALTHY FUTURE BECKONS!

Aims
a) To increase the availability of health professionals,
b) Correct the existing geographical imbalance in the distribution of medical colleges
c) Effectively utilize the existing infrastructure of district hospitals.

Benefits
a) Critical care services will be available in all the districts of the country with more than 5 lakh population, through Exclusive Critical Care Hospital Blocks, while the remaining districts will be covered through referral services.
b) People will have access to a full range of diagnostic services in the Public Healthcare system through Network of laboratories across the country.

Shanti Swarup Bhatnagar Prize
- The **Council of Scientific and Industrial Research (CSIR)** announced Shanti Swarup Bhatnagar Award 2021 for Science & Technology. This award has been given to 11 scientists from across the country for their significant contributions to science and technology.
- The Shanti Swarup Bhatnagar Prize was named after the founder, Director of the Council of Scientific and Industrial Research (CSIR), and is the country's highest science award within the country.
- Every year, scientists under the age of forty-five are chosen for the Shanti Swarup Bhatnagar Award for their contribution across fields including Biological Sciences, Chemical Sciences, Engineering Sciences, Mathematical Sciences, Medical Sciences, Physical Sciences, Earth, Atmosphere, Ocean, and Planetary Sciences.

Field	Awardee	Details
Biological Sciences	Dr Amit Singh	Fundamental understanding of host-pathogen interaction in Mycobacterium tuberculosis and HIV.
	Dr Arun K Shukla	Understanding of activation, signalling, and regulation of G protein-coupled receptors (GPCRs).
Chemical Sciences	Prof Kanishka Biswas	Novel thermoelectric materials
	Prof T Govindaraju	Development of small molecule diagnostics and therapeutics.
Earth, Atmosphere, Ocean, and Planetary Sciences	Dr Binoy Kumar Saikia	Development of fluorescent "carbon quantum dots" (CQDs) from Indian coal. His indigenous patented CQD technology for diverse applications falls under "Atmanirbhar Bharat" leading to import substitution.
Engineering Sciences	Dr Debdeep Mukhopadhyay	Micro-architectural security and crypto-engineering that holistically bridges the spectrum from core mathematical foundations to practical attack scenarios.
Mathematical Sciences	Dr Anish Ghosh	Ergodic Theory
	Dr Saket Saurabh	Parameterized Complexity.
Physical Sciences	Dr Kanak Saha	Discovery of a faint galaxy at high redshift, detected by deep observations using India's first space observatory, Astro-Sat.
Medical Sciences	Dr Jeemon Panniyammakal	Contributions to the field of public health, including improving primary care and prevention and control of cardiovascular diseases and diabetes in India.
	Dr Rohit Srivastava	Developing affordable medical devices.

GENERAL STUDIES PAPER III

Wetlands of India
Why In News
- Ministry of Environment, Forest and Climate Change has recently launched a web portal – 'Wetlands of India Portal' (http://indianwetlands.in/).
- The portal is going to provide a single point access to all information relating to wetlands of the Country.

About The Portal
- The portal is a dynamic system for processing information and making it available to the stakeholders in an efficient and accessible manner.
  - The portal also hosts capacity building material, data repository, videos and information for students.
- A dashboard for each State and UT has been developed to access the portal and populate it with information of wetlands in their administration.
- The portal has been developed under a Technical Cooperation project *"Wetlands Management for Biodiversity and Climate Protection" (Wetlands Project) of Ministry of Environment, Forest and Climate Change (MoEFCC)* in partnership with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.
  - The project is commissioned by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) under the International Climate Initiative (IKI).

Features
- The portal would be populated by the different States and UTs and additional features may be added in the coming months.
- Login credentials have also been provided for Knowledge Partners.
- The portal also enables citizen engagement.
  - Currently citizens can register themselves and upload wetland related pictures across different themes. Importantly, registered citizens can opt to take the pledge to become wetland mitraand indicate their State/UT and areas of interest.
- This information would allow States and UTs to contact interested persons for various programs and initiatives.

Credit Guarantee Scheme for Subordinate Debt (CGSSD)
Why in News?
- In order to keep the avenues of assistance to stressed MSME Units open, the Government had earlier decided to extend this scheme for six months from 31.03.2021 to 30.09.2021 and now the Government has decided to further extend it by a period of another six months beyond 30.09.2021.

About The Scheme
- The scheme was launched on 24th June, 2020 to provide credit facility through lending institutions to the promoters of stressed MSMEs viz. SMA-2 and NPA accounts who are eligible for restructuring as per RBI guidelines on the books of the Lending institutions.
- The scheme is named as *'Distressed Assets Fund-Subordinate Debt for Stressed MSMEs'* and the credit product for which guarantee would be provided under the scheme shall be named as *'Credit Guarantee Scheme for Subordinate Debt'*.
- MSME units such as Individuals/ proprietorship, LLP, Partnership, Private Limited Company or registered company are eligible to be covered under the scheme.

Objectives of the scheme
- To provide personal loan through banks to the promoters of stressed MSMEs for infusion as equity/quasi equity in the business eligible for restructuring, as per RBI guidelines for restructuring of stresses MSME advances.
- To provide guarantee coverage for the CGSSD to provide sub-Debt support in respect of MSMEs.
- 90% guarantee coverage would come from scheme/Trust and remaining 10% from concern promoters.

Duration of the scheme

- The scheme would be applicable to all credit facilities sanctioned under CGSSD for a maximum period of 10 years from the guarantee available date or March 31, 2021 whichever is earlier, or till an amount of Rs.20,000crore of guarantee amount approved.

Quantum of Finance

- Promoters of the MSME unit will be given credit equal to 15% of His/her stake (equity plus debt) in the MSME entity or Rs.75lakh whichever is lower as per last audited Balance Sheet.
- There will be a *moratorium of 7 years on the payment of principle*. However, interest will be paid as and when applied.

Geographical Indication (GI) Tag

Why in News

- In an effort to promote indigenous & Geographical Identification (GI) tagged products, first consignment of GI tagged sweet dish *Mihidana sourced from Bardhaman*, West Bengal has been exported to the Kingdom of Bahrain.
- Also *In August, 2021, India Post released a special cover on West Bengal''s sweetmeats Mihidana and Sitabhog. West Bengal's Bardhaman got the GI tag for the century-old sweetmeats in 2017*.

About GI Tag

- A GI tag is a sign denoting a specific geographical origin and possess qualities or a reputation that are due to that origin.
  - o GI, a form of intellectual property right (IPR), is distinct from other forms of IPR, as it ascribes the exclusivity to the community in a defined geography, rather than to an individual, as is in the case of trademarks and patents.
- A GI tag can be issued for *agricultural, natural or manufactured goods* that have a unique quality, reputation or other characteristics attributable to its geographical origin. Darjeeling tea, Basmati rice, Kanchipuram Silk, Mysore Silk, Hyderabadi haleem, Nagaland chilli products, etc, sold with the GI tag have premium pricing.
- The GI tag ensures that none other than those registered as authorised users (or at least those residing inside the geographic territory) are allowed to use the popular product name.

Background

- India, as a member of the World Trade Organization (WTO), enacted the *Geographical Indications of Goods (Registration and Protection) Act, 1999* has come into force with effect from 15 September 2003.
- GIs have been defined under Article 22 (1) of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement as: "*Indications which identify a good as originating in the territory of a member, or a region or a locality in that territory, where a given quality, reputation or characteristic of the good is essentially attributable to its geographic origin.*"
- *Darjeeling tea became the first GI tagged product in India, in 2004–2005.*

Key Highlights

1. At present, there are 346 GI Tagged Products in India. These products belong to 05 Categories, namely,
   a. Agricultural (115 Products).
   b. Food Stuffs (16 Products).
   c. Handicraft(201 Products).
   d. Manufactured(13 Products).
   e. Natural Products(1 Product).
2. Makrana Marble from Rajasthan is the only GI Tagged Product from Natural Products Category.
3. Presently, Karnata boasts of the Highest number of GI Tagged products with 44 Products.
- APEDA undertakes market promotion activities for export of food products, market intelligence for making informed decisions, international exposure, skill development, capacity building and high-quality packaging.

Guduchi (Tinospora cordifolia)

Why in News

- Ministry of Ayush has recently noticed safety concerns on use of Guduchi (Tinospora cordifolia) that were published in social media and in some scientific journals. This advisory is being issued to confirm that Guduchi (Tinospora cordifolia) is safe to use but some similar looking plants like Tinospora crispa may be harmful.

About Guduchi

- Guduchi is a popularly known herb, familiar as Giloy and is being used in therapeutics since long in AYUSH systems.
- Its hepato-protective properties are also well established.
- Guduchi is known for its immense therapeutic applications and the practices are regulated in accordance with various applicable provisions.
- It is observed that different species of Tinospora are available and only Tinospora cordifolia should be used in therapeutics, whereas similar looking species like Tinospora crispa may manifest adverse effects.

Features of Different Parts of These Plant Species

Plant part	Tinospora cordifolia	Tinospora crispa
Stem	• Green in colour • Not having small rounded projections • No milky secretion	• Greenish grey in colour • Having small rounded projections • milky secretion
Leaves	Heart shaped with groovy notch at the base	Heart shaped with no groovy notch at the base
Petals	Six in number	Three in number
Drupes (Bunch of fruit)	• Spherical or ball shaped. • red in colour	• Ellipsoid or rugby ball like shaped. • Orange in colour
Photograph of the plant		

Pharmacovigilance

- Ministry of Ayush has a well-established system of Pharmacovigilance (for reporting of suspected adverse drug reactions from Ayush medication), with its network spreading across all over India.
- If any suspected adverse event occurs after intake of Ayush medicine it may be reported to the nearby Pharmacovigilance centre through an Ayush physician.
- Further it is advised to take Ayush medicine and treatment under supervision and consultation of a registered Ayush physician only.

Dust Control & Management Cells

Why in News?

- *Commission for Air Quality Management* in National Capital Region and Adjoining Areas (CAQM) is taking steps to effectively tackle dust pollution emanating from roads, right of way and open areas spread across the National Capital Region (NCR).
- The approach is to strategically strengthen the dust mitigation measures with innovative solutions to curb the dust pollution sources.

- CAQM has issued directions to all road owning/ maintaining/ road construction agencies of the State Governments of Uttar Pradesh (U.P.), Rajasthan, Haryana and GNCTD to set up *Dust Control & Management Cells* in their respective states.

Functions of the Cells

- The Cell will regularly monitor the compliance of road dust control measures by the authorities concerned and will also keep track of the progress of measures undertaken.
- Apart from this, exhaustive reports prepared on a monthly basis by the cell will help in the fight against dust pollution more systematically.

Dust monitoring parameters

- CAQM has formulated a 10-point dust monitoring parameter in this regard.
- These parameters involve a variety of measures that needs to be strictly adopted by the Dust Control & Management Cells. These measures include:
  a. *Dust Disposal*: Optimum utilization of road sweeping machines needs to be ensured. Scientific disposal of dust collected in designated sites/ landfills may also be implemented by Local Authorities.
  b. *Water Sparkling* : Water sprinkling may be used to suppress dust especially after mechanized sweeping. In this regard , Augmentation of mechanized sweeping and sprinkling capacity may be done.
  c. **Proper management of roads**
     1. Laying or repairing roads in a manner which extensively supports mechanized sweeping.
     2. Conversion of non-paved roadsides into paved one or into a green area.
     3. Greening of central verges.
     4. Laying cemented roads over bituminous roads especially in industrial areas.
  d. *Identification of hotspots of road dust* and target-specific implementation of road dust control measures.

High Ambition Coalition (HAC) for Nature and People

Why in News?

- India has officially joined the High Ambition Coalition for Nature and People.Shri Rameshwar Prasad Gupta, Secretary, Ministry of Environment, Forest and Climate Change, Government of India handed over the signed HAC agreement to H.E. Mr. Emmanuel Lenain, Ambassador of France to India

Background

- India is the first of the *BRICS*bloc of major emerging economies (*Brazil, Russia, India, China and South Africa*) to join the HAC.
- India's announcement comes in the lead up to a high-level biodiversity meeting, hosted by China.
- The virtual meeting to take place October 11-15 will tackle key aspects of the biodiversity treaty to be finalized in 2022.
- *The global 30x30 goal* is currently a centrepiece of the treaty.

About The HAC for Nature and People

- It is an inter-Governmental group of more than 70 countries encouraging the adoption of the global goal to protect 30x30.
- It is co-chaired by Costa Rica and France and by the UK as Ocean co-chair, championing a global deal for nature and people with the central goal of protecting at least 30% of world's land and ocean by 2030.
- *The 30x30 target* is a global target which aims to halt the accelerating loss of species, and protect vital ecosystems that are the source of our economic security.
- HAC members currently include a mix of countries in the global north and south; European, Latin American, Africa and Asia countries are among the members.

Conclusion

- High Ambition Coalition for Nature and People, which was initiated at the "One Planet Summit" in Paris in January 2021.

- This coalition aims to promote an international agreement to protect at least 30 % the of world's land and ocean by 2030.

River Ranching Programme

Why in News?

- The Union Minister for Fisheries, Animal Husbandry & Dairying, launched the River Ranching Programme at Brijghat, Garh Mukteshwar, Uttar Pradesh.
- Total 5 states namely, Uttar Pradesh, Uttarakhand, Orissa, Tripura and Chhattisgarh have participated the National Level River Ranching program launching and a total of 8.85 lakh fingerlings were ranched.

About The Programme

- It is introduced as special activity under *Pradhan Mantri Matsya Sampada Yojana(PMMSY) scheme*, for augmenting and enhancing the fish production and productivity through expansion, intensification, diversification and productive utilization of land and water.
- *Department of Fisheries(DOF), Ministry of Fisheries* has designated *National Fisheries Development Board, Hyderabad(NFDB)* as the Nodal Agency under Central Sector component of PMMSY for implementing River Ranching across the Country.

Objectives

- To address increased fish catch, improved livelihood of fishers and to maintain the cleanliness of the river as they feed on organic remnants.
- To uplift the depleted fish stock and to enhance production of the ranched fish species.

Benefits

- It can achieve sustainable fisheries, reducing habitat degradation, conserving biodiversity, maximizing social-economic benefits and assessing ecosystem services.
- It ensures the upgrade of traditional fishery, ecosystem sustainability and trade & social protection of Inland communities.

Implementation

- As a Phase –I programme NFDB during 2020-21 has targeted three major river systems namely Ganges and its tributaries, Brahmaputra & Barak river tributaries and Mahanadi & other rivers.
- Accordingly, six major Inland state focusing on length of river belt namely Uttar Pradesh, Tripura, Chhattisgarh, Odisha, Uttarakhand and Bihar were selected along with targeted sites for releasing of fish fingerlings.
- NFDB sanctioned a total budget of Rs.2.81 crores to ranch 97.16 lakh fingerlings to States as a part of Action plan 2020-21 of PMMSY.

Aerosol pollution in the Central Himalayan region

Why in News

- Mineral dust, biomass burning, secondary sulphate, secondary nitrate from northwest India and Pakistan, polluted cities like Delhi, the Thar Desert, and the Arabian Sea area, and long-range transported marine mixed aerosols are the main sources of aerosols in the central Himalayan region, shows a study.
- This dust transport and forest fires are the main sources of *total suspended particles (TSP)*, particularly in pre-monsoon period (March-May) when TSP concentration peaks in the region.

Background

- The study led by Mr. Rahul Sheoran (Ph. D. Student ARIES, Nainital, India), Dr. Umesh Chandra Dumka (Scientist, ARIES, Nainital, India), along with the contributions by collaborators revealed that the main aerosol sources (factors) in Nainital were mineral dust (34%), biomass burning (27%), secondary sulphate (20%), secondary nitrate (9%), and long-range transported marine mixed aerosols (10%), exhibiting distinct seasonal patterns.
  - o There was predominance of mineral dust in spring and summer and biomass burning and secondary sulphate in winter.

o The transported marine mixed aerosol source was mainly associated with SW monsoon air masses during the summer season.

- The results of the study published in the journal of 'Atmosphere show that Carbonaceous aerosols (Organic Carbon (OC) and Elemental Carbon (EC) were the maximum in winter due to the intensification of biomass burning over the Indo Gangetic Plains and the Himalayas because of domestic heating and shallower mixing layer.
  o The researchers also suggested a significant effect of biomass-burning aerosols, while the relatively high water-soluble organic carbon and significant contributions of biomass burning, secondary, or aged organic aerosols over Nainital.

Himalayan Region and Indian Climate

- With a unique role in the Asian climate, the Himalayan region is considered a vulnerable environment. Several chemical speciation studies have been performed for carbonaceous aerosols and inorganic species over the western and central Himalayan regions during the last decade, reporting the dominance of transported aerosol plumes from the Indo-Gangetic Plains.
  o However, there is a knowledge gap regarding the primary and secondary organic carbon (POC, SOC) fractions, along with a lack of statistical methods for identifying and quantifying the sources of air pollutants at a receptor location (receptor model) in the central Indian Himalaya.
- In order to address this, researchers at the Aryabhatta Research Institute of Observational Sciences (ARIES), Nainital, an autonomous research institute under the Department of Science and Technology (DST), Govt. of India, along with Indian and foreign collaborators, studied the chemical composition and source apportionment of total suspended particulate (TSP, which includes all the aerosols and air pollution) in the central Himalayan region.
  o The main source regions for aerosols at this remote background location (Nainital) were the plains in northwest India and Pakistan, polluted cities like Delhi, the Thar Desert, and the Arabian Sea area.

Aerosol

- An aerosol is a suspension of fine solid particles or liquid droplets in air or another gas. Aerosols can be natural or anthropogenic.
  o Examples of natural aerosols are fog or mist, dust, forest exudates, and geyser steam.
  o Examples of anthropogenic aerosols are particulate air pollutants and smoke.

Global FinTech Hackathon Series

Why in News?

- *International Financial Services Centres Authority (IFSCA) and GIFT City launched I-Sprint'21, the global FinTech Hackathon Series of IFSCA.*
- The first Sprint of the series "Sprint01: BankTech" is focussed on FinTechs for the Banking sector.

Background

- Following the announcement by Finance Minister in Union Budget 2020-21 on supporting a *"World Class FinTech Hub"* at GIFT IFSC, IFSCA had introduced a framework for "Regulatory Sandbox" in October 2020 which allows the FinTech entities to have facilities and flexibilities to experiment with innovative FinTech solutions in a live environment with a limited set of real customers for a limited time frame.
- The finalists of this Hackathon shall be allowed direct entry into IFSCA Regulatory/Innovation Sandbox.

About The IFSCA

- The IFSCA is a unified authority for the development and regulation of financial products, financial services and financial institutions in the *International Financial Services Centres (IFSCs)* in India.
  o IFSCA endeavours to encourage the promotion of financial technologies ('FinTech') initiatives across the spectrum of banking, insurance, securities and fund management in IFSC.
- In this context, a series of Hackathons cutting across these sectors have been planned under the banner of *I-Sprint'21*.

o This hackathon is first under the I-Sprint series focussing on the Banking Sector and is one of its kind being backed by a Regulator.
o It shall be conducted virtually and is open to eligible Fin-Techs from across the Globe.

Aim
- To connect IFSCA and GIFT IFSC with FinTech Ecosystem
- To solve Business Problems for the Banking Units at GIFT IFSC and
- To promote retail business for the Banking Units at GIFT IFSC.

About The Hackathon Series
- *Sprint01: BankTech* is hosted jointly by IFSCA and GIFT city in collaboration with NITI Aayog.
- The Partners to the Hackathon are ICICI Bank, HSBC Bank, i-Create, Zone Start-ups and Invest-India.
- Major rewards and recognition proposed under *Sprint01: Bank-Tech*are:
  a. FinTech finalists to be allowed direct entry into IFSCA Regulatory/Innovation Sandbox.
  b. Fin-Techs will work directly with the Partner Banks on the problem statement who will provide the APIs, mentoring, guidance, etc.
  c. Opportunity for the Fin-Techs to show-case during the Flagship FinTech Forum of IFSCA scheduled during Dec'2021
  d. i-Create sponsored Price money of Rs 24 lakh
  e. Business Support Solution Partner benefits of upto $25,000 per start-up from Zone Start-ups India's network.

Indian Space Association
Why in News
- Indian Prime Minister has recently launched Indian Space Association (ISpA) today via video conferencing. He also interacted with representatives of the Space Industry on the occasion.

About Indian Space Association
- It is an industry body representing the various stakeholders in the Indian space domain with members comprising the Indian Space Research Organisation (ISRO), Bharti Airtel, One-Web, Tata Group's NELCO, L&T, MapMyIndia among others.
- ISRO, Larson & Toubro, Bharti Airtel, Nelco (Tata Group), OneWeb, Walchandnagar Industries, Ananth Technology Limited and Mapmyindia are its founding Members.

Background
- This comes in the backdrop of the government opening up the space sector for private sector participation, and cleared the creation of a new entity, *Indian National Space Promotion and Authorization Centre (IN-SPACe)*, to encourage private companies to use India's space infrastructure.

India's Approach
- India's approach to space reforms is based on four pillars:
  a. Freedom to private sector in innovation

b. Role of government as an enabler
c. Making the youth future-ready
d. Seeing the space sector as a resource for the progress of common man.

Implementation

- The Indian Space Association will be headed by retired Lieutenant General AK Bhatt, who will be its Director General.
- The ISpA will undertake policy advocacy and engage with all stakeholders in the Indian space domain.
  - o It will also engage with the government and all its agencies.
- It is expected to make India technologically advanced, self-reliant and a leading player in the space sector.
- ISpA represents companies with advanced capabilities in space and satellite technologies that are charting the future of last-mile connectivity.
- It is represented by leading homegrown and global corporations with advanced space and satellite technology capabilities.
- *Its tagline is "Bhumandal Se Brahmaand Tak", meaning from "Earth to the Universe".*

FOREIGN AFFAIRS

Topic	Details
India and the United States	- The *Industrial Security Agreement (ISA)* summit between India and the United States was held between September 27to October 01, 2021 at New Delhi. - The summit was organised to develop protocol for the exchange of classified information between the defence industries of both the nations. - The ISA was signed in December 2019 to facilitate the exchange of classified information between the defence industries of both the countries. It was held to create a roadmap for the implementation of the ISA. - This group will meet periodically to align the policies and procedures expeditiously that will allow the defence industries to collaborate on cutting edge defence technologies.
	- The 17th Edition of Indo – US joint training exercise "*EX YUDH ABHYAS 21*" commenced at Joint Base Elmendorf Richardson, Alaska (USA) on 15 October 2021
	- Ministry of Defence signs contract worth ☐ 423 Cr with the US for procurement of arms for Indian Navy.
India and Nepal	**EXERCISE SURYA KIRAN XV:** The 15th Edition of Indo-Nepal Joint Training Exercise, EXERCISE SURYA KIRAN XV culminated recently at Pithoragarh, Uttarakhand.
India and Sri Lanka	- **Mitra Shakti 21 :** The 8th Edition of India Sri Lanka bilateral joint Exercise Mitra Shakti will be conducted at Combat Training School, Ampara in Sri Lanka from 4 to 15 October 2021. - The 7th Edition of Exercise Mitra Shakti was conducted at Foreign Training Node (FTN), Pune, Maharashtra (India) in 2019.
India and Japan	- *JIMEX*: The fifth edition of India – Japan Maritime Bilateral Exercise, JIMEX, between the Indian Navy (IN) and the Japan Maritime Self-Defence Force (JMSDF), will be held in Arabian Sea from 06 to 08 October 2021. - JIMEX series of exercises commenced in January 2012 with special focus on maritime security cooperation. The last edition of JIMEX was conducted in September 2020.
	EXERCISE AJEYA WARRIOR: The 6th Edition of India - UK Joint Company Level Military Training EXERCISE AJEYA WARRIOR has commenced at Chaubatia, Uttarakhand.

India and U.K	• *The 3rd India – UK Energy for Growth Partnership* **–** Ministerial Energy Dialogue was held virtually. • The parties deliberated and agreed on a forward action plan on power and clean transport, renewables, green finance and clean energy research as part of Roadmap 2030
India and Croatia	• India, Croatia have signed an MoU to collaborate for academic research and competency building in traditional medicine systems. • The Memorandum of Understanding was signed between All India Institute of Ayurveda (AIIA) and Croatia's Kvarner Health Tourism Cluster. AIIA is an autonomous body under the Ministry of Ayush.
Ex Malabar 2021	• The Indian Navy (IN) would be participating in the Second Phase of Multilateral Maritime Exercise Malabar along with the Japan Maritime Self Defence Force (JMSDF), Royal Australian Navy (RAN) and the United States Navy (USN). • This is being conducted in the Bay of Bengal.
CAMBRIAN PATROL	• A team from 4/5 Gorkha Rifles (Frontier Force) which represented the Indian Army at the prestigious Cambrian Patrol Exercise at Brecon, Wales, UK from 13th to 15th October 2021 has been awarded Gold medal.

SHORT LINERS

1. Union Minister for Youth Affairs and Sports Shri Anurag Thakur has recently participated in cleanliness drive on the launch of nationwide Clean India programme from Prayagraj in UP.

2. *National Pension System (NPS) Diwas*: The Pension Fund Regulatory and Development Authority (PFRDA), along with all its registered intermediaries across the country, observed NPS Diwas on 1st October.
* This campaign was dedicated towards 'Azadi Ka Amrit Mahotsav' celebrations and to encourage citizens to join NPS for achieving financial freedom upon retirement through pension as a regular income.

3. *5th East Asia Summit Education Ministers' Meeting :* The Minister shared the objectives of India's National Education Policy, including universalisation of education, ensuring equity, quality, affordability & flexibility, technology-based learning and several others which uphold the principles of the Manila Action Plan on Education.

4. **Military Nursing Service:** *The MNS in India has a long and rich legacy, as an all women officer corps dating back to the year 1888 with the arrival of first batch of 10 qualified British nurses in Bombay, to organise nursing in military hospitals in India.*
* On October 01, 1926, a permanent nursing service was raised as a part of the Indian Army. The service was designated as the Indian Military Nursing Service (IMNS).
* The IMNS made a humble beginning and increased in strength from 53 to 690 (42 regulars and 648 temporary) and their work was universally acclaimed.
* Promulgation of the Military Ordinance on September 15, 1943 permanently established the MNS as a part of the Armed Forces and today it ranks high among the Army Nursing Services of the world with nearly a lakh aspirants for a mere 200 odd seats.
* *Military Nursing Service celebrated its 96th Raising Day on 01 Oct 2021.*

5. Vice Admiral Adhir Arora, NM has taken charge as the Chief Hydrographer to the Govt of India from Vice Admiral Vinay Badhwar, AVSM, NM who superannuated on 30 Sep 21.

6. Air Marshal Amit Dev AVSM VSM ADC assumed the appointment of Air Officer Commanding in Chief (AOC-in-C) of Western Air Command on 01 Oct 21.

7. Major General Smita Devrani assumed charge as Additional Director General of Military Nursing Service (MNS) on October 01, 2021.

8. **Headquarters Integrated Defence Staff (HQ IDS) celebrated its 21st Raising Day on October 01, 2021. Chief of Integrated Defence Staff to the Chairman, Chiefs of Staff Committee (Air Marshal BR Krishna) extended felicitations to all members of the Tri-Service fraternity and their families**.

9. Air Marshal Sandeep Singh AVSM VM took over as Vice Chief of the Air Staff (VCAS) on 01 Oct 21.

10. Air Marshal BR Krishna assumed charge of Chief of Integrated Defence Staff to the Chairman, Chiefs of Staff Committee (CISC) on October 01,2021.

11. To conduct collaborative research in mutually identified areas and promote research activities, *Regional Ayurveda Research Institute (RARI) has signed a Memorandum of Understanding with Sikkim Manipal University (SMU)*.
- The RARI and SMU also agreed on promotion and development of academic co-operation by jointly engaging in research and training programmes and jointly organize seminars, conferences and workshops on topics of mutual interest.
- Both the institutions also decided to explore opportunities to exchange information on research, training, learning material and other literature relevant to their educational and research activities.

12. *Women Entrepreneurship Platform (WEP)*To celebrate the 75th year of independence, NITI Aayog's flagship initiative, The Women Entrepreneurship Platform (WEP), will felicitate 75 women achievers as part of the Amrit Mahotsav celebration.
- The WTI Awards is NITI Aayog's endeavour to recognise and celebrate stories of exceptional women change-makers from across India.
- Since 2018, the WTI Awards have been hosted under the aegis of the Women Entrepreneurship Platform with a focus on 'Women and Entrepreneurship'.

13. *Kamdhenu Deepawali 2021* : Kamdhenu Deepawali 2021 campaign was launched to manufacture and market more than 100 Crore Cow dung based Deepak lamps and Laxmi-Ganesh Idols.
- Kamdhenu Deepawali is to make Cows to be economically useful by proper economic use of Cow Dung and Cow Urine too along with its Milks, Curd, Ghee. More than 300 items are getting made now byPanchgavya from Cow.
- This includes Deepawali items too like – Deepak, Lamps, Candles, Sambrani cup, Havansamagri, Dhoopbatti, incense sticks, Hard board, Wall piece, Laxmi-Ganesh idols etc made up of Cow dung.

14. *H.E. Kishida Fumio has become the new Prime Minister of Japan*.

15. *Shri P.L. Haranadh took over the post of Chairman of Paradip Port Trust (PPT).*

16. **Tax Inspectors Without Borders (TIWB)**: It is a joint initiative of the United Nations Development Programme (UNDP) and the Organisation for Economic Cooperation and Development (OECD), Launched its programme in Seychelles. India was chosen as the Partner Administration and has provided Tax Expert for this programme.
- **Aims and Objectives**
   a. It aims to aid Seychelles in strengthening its tax administration by transferring technical know-how and skills to its tax auditors through sharing of best audit practices.
   b. The focus of the programme will be on Transfer Pricing cases of tourism and financial services sectors.
   c. This programme is expected to be of 12 months duration during which India, in collaboration with the TIWB Secretariat and support of the UNDP Country Office in Mauritius and Seychelles.
   d. This programme is the sixth TIWB programme which India has supported by providing Tax Expert.

17. **World Animal Day** : The Animal Welfare Board of India (AWBI) celebrated World Animal Day 2021 on 4th October at Kamdhenu Dham Gaushala, Gurugram, Haryana.

- The Day is celebrated every year on 4 October internationally, on the feast day of Francis of Assisi, the patron saint of animals, to educate humans about how their actions impact animals and create awareness about the protection of animals all over the world.
- *The first celebration of World Animal Day was observed in March, 1925*.

18. **The first consignment of Kashmiri walnuts was recently flagged off from Budgam, under the One District, One Product (ODOP) Initiative of the Ministry of Commerce & Industry**.
- Kashmir accounts for 90% of India's walnut production.

19. <u>**Mihidana from West Bengal**</u>: In an effort to promote indigenous & Geographical Identification (GI) tagged products, first consignment of GI tagged sweet dish Mihidana sourced from Bardhaman, West Bengal has been exported to the Kingdom of Bahrain.
- Recently, to commemorate the historical legacy of a century old sweet delicacy & GI certified - *Jaynagarer Moa*, prepared from popped-rice ball & fresh date-palm jaggery, in Jaynagar, West Bengal, India Post in collaboration with APEDA released a specially designed envelope.
- *In August, 2021, India Post released a special cover on West Bengal''s sweetmeats Mihidana and Sitabhog. West Bengal's Bardhaman got the GI tag for the century-old sweetmeats in 2017*.

20. <u>**Industrial Park Ratings System Report(IPRS 2.0)**</u> **:** Recently41 Industrial Parks have been assessed as "Leaders" in the Industrial Park Ratings System Report released by The Department for Promotion of Industry and Internal Trade (DPIIT).
- The IPRS pilot exercise was launched in 2018.
- It's objective of enhancing industrial infrastructure competitiveness and supporting policy development for enabling industrialization across the country as the Government pushes ahead a high-growth trajectory with an aim to scale the $5 trillion mark for the Indian economy by 2025.
- The 2nd edition of the Industrial Park Rating System (IPRS) Report (IPRS 2.0) was launched by the Minister of State for Commerce & Industry.

21. The Online Meeting of Range countries has recently concluded with a resolve to strengthen the conservation actions for migratory birds and their habitats in the Central Asian Flyway.
- *Central Asian Flyway (CAF)* covers a large area of Eurasia between the Arctic and Indian Oceans.
- This flyway comprises several important migration routes of birds. Including India, there are 30 countries under the Central Asian Flyway.

22. **With a view to realise the vision of building an Aatmanirbhar Bharat and to position India strongly on the Global textiles map, the Government has approved the setting up of 7 PM MITRA parks as announced in Union Budget for 2021-22.**
- PM MITRA is inspired by the 5F vision , which encompasses –

a. Farm to fibre.
b. Fibre to factory.
c. Factory to fashion.
d. Fashion to foreign.

- **The PM MITRA parks will have:**
   a. *Core Infrastructure*: Incubation Centre & Plug & Play facility, Developed Factory Sites, Roads, Power, Water and Waste Water system, Common Processing House & CETP and other related facilities e.g. Design Centre, Testing Centres etc.
   b. *Support Infrastructure*: Workers' hostels & housing, logistics park, warehousing, medical, training & skill development facilities.

23. Shri Rajeev Chandrasekhar, Minister of State for Electronics and IT, Skill Development and Entrepreneurship, virtually attended the 13th edition of **'Design and Engineering Summit'** organized by NASSCOM with the theme **'Engineering the next'**.

24. <u>**New coating technology (LCCT)**</u>: Indian Scientists have developed a unique laser-based clad coating technology (LCCT) that provides improved protection to the boiler parts in thermal power plants.
- It can enhance life of boiler parts by 2- 3 times compared to currently use surfacing technologies.

- It has been found that this technology is suitable, not only for boiler parts of thermal power plants but also for any engineering application involving high temperature erosive and corrosive environment.
- *Laser cladding* is a technique for fusing a coating material on a substrate. It allows materials to be deposited accurately, selectively, and with minimal heat input into the underlying substrate.
  - o This process allows for property improvements of the surface of a part, including better wear resistance, thus allowing for the repair of damaged or worn surfaces.

25. **The Indian Air Force Day is celebrated on October 8th every year, to mark the date of its establishment.**

26. **Indian Army celebrated the 72nd Territorial Army Day on October 9.**

27. **World Post Day is celebrated each year on 9th of October to mark the anniversary of establishment of the Universal Postal Union in 1874.**
- The Day was first declared by the UPU Congress held in Tokyo, Japan, in 1969.
- *The theme for this year's World Postal Day is 'Innovate to recover'.*
- India celebrates 'National Postal Week' from 9 to 15 October.

28. *International Day of the Girl Child* is observed annually on October 11.
- It wasDeclared by the United Nations and was first observed in 2012.
- The day is dedicated to raising awareness on gender equality while assuring rights and improving opportunities for girls.
- *The theme this year is "Digital generation. Our generation."*

29. **World Standards Day on 14th October**: On the occasion of World Standards Day on 14th October, Bureau of Indian Standards (BIS) organized a day-long event on the theme of 'Shared Vision for a Better World' Standards for Sustainable Development Goals at its headquarters in New Delhi

30. *NMCG & WASH Institute Signs MoU For Capacity Building In Faecal Sludge & Septage Management. In India, untreated faecal sludge and urban sewage are the primary source of water pollution, particularly in the cities around Ganges.*
- This MoU is also to efficiently address FSSM issues in towns and cities of the Ganga Basin. The project will be funded by USAID and supported by The Bill and Melinda Gates Foundation.
- It aims to improve preparedness towards FSSM (faecal sludge and septage management) and Wastewater Management in Indian towns and cities.

31. **My Port-App**: Union Minister for Ports, Shipping and Waterways Shri Sarbanand Sonowal has recently launched a port mobile application called MyPort-App in Kolkata today.
- The App includes all port details digitally and monitor operations virtually.
- Targeted towards Port Users for availing various Port services, the App is aimed to promote transparency and easy access of port related information.
- The app also has various information like Vessel Berthing, Rake & Indent, Rake Receipt, Container Status, Tariff, Bills, Port Holidays, etc. and can be accessed anywhere 24x7 and reach out directly to port.

32. **World Mental Health Day**
- October 10 is observed as World Mental Health Day across the globe every year
- This day is meant to raise awareness on mental health issues and garner support on initiatives related to mental health and well-being.
- The theme for the World Mental Health Day 2021 is 'mental health in an unequal world.'

33. *National Mineral Development Corporation Ltd.(NMDC)*,Country's largest iron ore producer, a CPSE under Ministry of Steel has bagged Gold Award in Environmental Sustainability category and Kumaraswamy Iron Ore Mine bagged Platinum Award in Environment Management category.

34. For boosting exports of citrus and its value added products, the Agricultural and Processed Food Products Export Development Authority (APEDA) has signed a Memorandum of Understanding (MoU) with ICAR-Central Citrus Research Institute (ICAR-CCRI), Nagpur.

35. V.O. Chidambaranar Port, the economic engine of South Tamilnadu, has proposed for setting up of Multimodal Logistics Park due to its advantages such as excellent Rail-road connectivity, proximity to Main Sea Route, all weather operational conditions, and geographic position to link Eastern coast with the Western coast.
- The current landscapes of manufacturing hubs are located mainly in the secondary hinterland i.e., Coimbatore, Tiruppur, Salem, Erode, Pollachi, Karur, Rajapalayam, Madurai etc.

36. Union Minister for Environment, Forest and Climate Change released the Vision Plan (2021-2031) for Indian Zoos. The vision plan is aimed at upgrading Indian zoos and strengthening the *Central Zoo Authority (CZA)*.

37. **Climate Resilience Information System and Planning (CRISP-M) tool :** CRISP-M is a web and mobile phone-based geographic information system-aided tool that has been designed to help communities make climate-smart decisions.
- It helps enable MGNREGS labourers to absorb the effects of climate risks, adapt to climate impacts and transform their capacities to deal with growing climate impacts.

38. **MyParkings app :MyParkings is a IOT technology-enabled end-to-end digital solution.**
- Smart parking solution through app or through card is an effortless solution towards hassle-free parking and booking of online parking slots will enable people to park their vehicles without inconvenience.
- Ease of parking through the app will also help reduce pollution from vehicles by minimising the time spent searching for parking spots.

39. *Bharat Petroleum Corporation Limited (BPCL) - a PSU under the Ministry of Petroleum and Natural Gas has announced the launch of "UFill"* - a digital customer experience which delivers on BPCL's promise of ensuring that their customers have complete control over Time, Technology and Transparency as part of their fuelling experience.
- With UFill, the invitation to customers is to "Fast forward your fill", leveraging the latest in digital technology which obviates the need for looking at zero or final reading and such offline manual interventions.

40. As per the report based on the protocol framed by ISRO for the Commission for Air Quality Management (CAQM), paddy residue burning events have been reduced by 69.49% in Punjab, by 18.28% in Haryana and by 47.61% in the 8 NCR Districts of Uttar Pradesh during the one-month period compared to the same period last year.

41. **8th ministerial meeting of India-U.S.A. Economic & Financial Partnership Dialogue held in Washington D.C.**
- During the meeting, discussions were held on various subjects such as the macroeconomic outlook and recovery from the COVID-19 pandemic, financial regulatory and technical collaboration, multilateral engagement, climate finance and anti-money laundering and combating the financing of terrorism (AML/CFT).

42. *Finance Minister attended the Plenary Meeting of the International Monetary and Financial Committee (IMFC) of the IMF in Washington D.C.*
- The discussions at the meeting centred on "vaccinate, calibrate and accelerate" which is the theme of the Managing Director's Global Policy Agenda.
- The IMFC meets twice a year, once during the Fund-Bank Spring Meetings in April, and again during the Annual Meetings in October.
- The Committee discusses matters of common concern affecting the global economy and advises the IMF on the direction of its work.

43. **World Food Day**: **To commemorate World Food Day, the Ministry of Food Processing Industries, under the Pradhan Mantri Formalisation of Micro food processing Enterprises (PMFME) Scheme, organised the Food Tech Summit on 16th October 2021**.
- The Food Tech Summit 2021 aimed at setting the stage for all food-tech stakeholders to impart, discuss and acquaint micro enterprises on the new emerging trends in food processing and technological innovation.

44. **Jammu and Kashmir administration today signed a Memorandum of Understanding (MoU) with the Government of Dubai for real estate development, industrial parks, IT towers, multipurpose towers, logistics, medical college, super specialty hospital and more**.

45. *Geospatial Energy Map of India :* Geospatial Energy Map of India was launched by Dr Rajiv Kumar (Vice Chairman, NITI Aayog), Dr V K Saraswat (Member, NITI Aayog), and Shri Amitabh Kant (CEO, NITI Aayog) on 18 October 2021.

- *NITI Aayog in collaboration with Indian Space Research Organisation (ISRO) has developed a comprehensive Geographic Information System (GIS) Energy Map of India with the support of Energy Ministries of Government of India.*
- The GIS map provides a holistic picture of all energy resources of the country which enables visualisation of energy installations such as conventional power plants, oil and gas wells, petroleum refineries, coal fields and coal blocks, district-wise data on renewable energy power plants and renewable energy resource potential, etc through 27 thematic layers.
- The map attempts to identify and locate all primary and secondary sources of energy and their transportation/transmission networks to provide a comprehensive view of energy production and distribution in a country.

46. The Kushinagar International Airport was inaugurated at Kushinagar, UP. The airport is expected to provide seamless connectivity to tourists from Sri Lanka, Japan, Taiwan, South Korea, China, Thailand, Vietnam, Singapore and so on.

47. **Mastitis**: Mastitis is a common infectious disease, which affects farm productivity due to fall in milk quality, thus impacting income-generating activities.

- The medicine called Mastirak Gel, developed by National Innovation Foundation (NIF) has been commercialized through the industry partner Rakesh Pharmaceuticals.

48. **Solar Hydrogen programme:** It is aimed at enabling the use of solar electricity to produce hydrogen at a more affordable rate than what is available currently (USD 5 per KG), by bringing it down to USD 2 per KG.

49. **India saw the birth of its first IVF calf of a Buffalo breed namely Banni, found primarily in Gujarat's Kutch region.**

- The birth of the Banni Buffalo calf would open up doors for the mass production of the rare Banni Buffalo, which can withstand extreme weather conditions, survive in the water-scarce atmosphere and produce 16 litres of good quality milk in a day.

50. **Azad Hind Government :** Anniversary of the formation of Azad Hind Government by Netaji Subhas Chandra Bose celebrated on 21st October.

- Important Places :

Sl	Place	Details
01	Manipur	Moirang in Manipur was the place where the Indian National Army hoisted the Tricolour for the first time on Indian soil on 14 April 1944.
02	Nagaland	Netaji Subhas Chandra Bose had stayed in this village in the 1940s.
03	Odisha	Cuttack was the birth place of Netaji.
04	West Bengal	The ancestral house of Netaji was Subhas Gram, Kodalia.
05	Singapore	On October 21, 1943 Netaji had announced the formation of the Azad Hind Government which started functioning from Singapore with 11 ministers and eight representatives from the Indian National Army.

YOJANA

INDEX

Combating Covid-19

Introduction

- On 11 March 2020 WHO declared Covid-19 a pandemic. The Covid-19 pandemic caused by SARS-CoV-2was unprecedented on many counts, testing and stretching the health care preparedness globally.
  - o Every country struggled to put into place, a rapid response action plan to fight the crisis, and developed models suited to their specific economic, health care, and scientific preparedness.
- For India, the challenges were manifold, given our population, the population-dense areas, diversity, and the state of our health care systems.
  - o The scientific community in India responded to the crisis with a sense of urgency and responsibility.
- Soon after the WHO declared Covid-19 a pandemic, the first inter-ministerial committee chaired by Dr V K Paul, Member of NITI Aayog, and Prof K VijayRaghavan, Principal Scientific Adviser to the Government of India met on 21 and 24 March 2020, to review India's preparedness to the crisis.

Initiatives Taken

- *Major decisions* regarding creating a web portal, contact tracing app, handbook, and laboratory manual for training of RT-PCR testing were taken and these were quickly put into place.
- a. *Vaccine Task Force (VTF)* was constituted for focused research and development of Corona vaccine and other science and technology.
- *Vaccine Development:* Presentations by Bharat Biotech, Serum Institute of India Pvt Ltd, Zydus Cadila, Biological E, and Mynvax were arranged and the industry was assured that all support- regulatory, technical, and financial would be fast-tracked and provided.
  - o The first week of January 2021 saw the Emergency Use Authorization (EUA)accorded to two Indian vaccines:
- a. *Spike glycoprotein*, ChAdOxl (Covishield) from the Serum Institute of India Private Limited.
- b. *The* whole virion inactivated vaccine *BBVI52 (Covaxin)* from Bharat Biotech International Limited.
  - o Covaxin was developed in collaboration with the *Indian Council of Medical Research (ICMR).*

- *Personnel Protection Equipment (PPE) and Ventilators:* India has become an exporter of quality PPEs, much due to the efforts of the Defence Research and Development Organisation (DRDO), and the South India Textile Research Association (SITRA), Ministry of Textiles.
  - o "*The Ventilator Project*", a well-documented story of how a world-class ventilator was designed and built by a start-up incubated at IIT Kanpur-is a validation of the coming of age of India's start-up ecosystem.
- Testing, Tracking, and Diagnostics :
  - o CSIR-IGIB (Council of Scientific and Industrial Research- Institute of Genomics and Integrative Biology), Delhi developed FELU-DA, FnCas9 Editor Linked Uniform Detection Assay and partnered with TATA Health to create the TATA MD CHECK, CRISPR Feluda Cas9 based integrated system for collection, testing, reporting, and tracing.
  - o The data is being managed in a centralised cloud from where it can directly be sent to ICMR database.
  - o The single gene PCR diagnostic test developed by IIT Delhi has been approved and validated by ICMR.
    - ▪ It is low cost, scalable, works with very basic models of the PCR machines, and is now available in the market as "Corosure".
- *Regulators and regulatory departments* were asked to fast-track approvals, set up harmonised protocols for clinical trials, standardise specifications at warp speed for *Personnel Protection Equipment (PPE)*, and put into place an IT support for Covid-19 management as an immediate priority.
  - o *Preventive measures* such as the mask advisory 'Face Covers for Curbing the Spread of SARS-CoV-2 Coronavirus: Manual on Homemade Protective Cover for Face and Mouth were issued.
- *Therapeutics and Drugs :* Four categories of drug development, namely, repurposing, new chemicals, phyto-pharmaceuticals, and drugs from traditional medicinal knowledge, those pioneered by the Ministry of Ayush, were prioritised.
  - o The Central Drugs Standard ControlOrganisation (CDSCO) approvedfive drugs to help treat patients with severe COVID-19:
    - ▪ Antivirals Remdesivir and Favipiravir
    - ▪ Steroid dexamethasone.
    - ▪ Immunosuppressantmonoclonal antibodies-Tocilizumab and Itolizumab.
    - ▪ Ayurvedic products were also made readily available.

Conclusion

- The success of Indian vaccine development during the Covid-19 pandemic will go down as a self-reliant India that came together with an unprecedented political will, governance, and partnership of academia and industry, to develop and deploy the vaccine, making it available to the Indian population in record time, with equity and equal access.
- The Indian science community has a lot to be proud of, viz vaccines, PPEs, ventilators, diagnostic kits, etc., however, much more needs to be accomplished.
- Our country has the attention of the governance and political leadership of the country, therefore, now is the time to show the world that Indian science has the potential to be a major participant in global science leadership.

India's Response to Covid-19

About DBT

- The Department of Biotechnology (DBT), under the Ministry of Science & Technology, promotes and accelerates the development of biotechnology in India, including growth and application of biotechnology in the areas of agriculture, healthcare, animal sciences, environment and industry.

About BIRAC

- Biotechnology Industry Research Assistance Council (BIRAC) is a not-for-profit Section 8, Schedule B, Public Sector Enterprise, set up by Department of Biotechnology (DBT), Government of India as an Interface Agency to strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs

Initiatives Taken for Strengthening Vaccine Development Ecosystem

SL	Particulars	Details
01	Department of Biotechnology Initiatives	• The Department of Biotechnology initiated an integrated response to mitigate (unprecedented Covid-19 pandemic. • It includes following initiatives : a. Development of Indigenous Vaccines b. No point-of-care diagnostics. c. Therapeutic formulations based on traditional knowledge. d. Establishment of Research Resources and offering services. • Establishment of *Mission COVID Suraksha Program* is an endeavour for COVID-19 vaccine development to reinforce and streamline available resources for accelerated vaccine development. • The Department of Biotechnology (DBT) and its PSU, *Biotechnology Industry Research Assistance Council (BIRAC)* have supported Biological E.'s COVID-19 Vaccine candidate from Preclinical Stage to Phase III clinical studies.
SL	Particulars	Details
02	Efforts to strengthen the vaccine development ecosystem	• 54 clinical trial sites, consisting of a network of public and private hospitals, clinics, and reputed academic institutions are facilitating vaccine clinical trials. ○ These sites are equipped with harmonised systems for GCP compliance' electronic data capture on a central platform, robust disease registry for capturing patient data on clinical presentation.

03	Facilities for animal challenge studies and immunoassay laboratories	• Facilities for animal challenge studies and immunoassay laboratories are being supported to accelerate pre-clinical and clinical development of the vaccine candidates. • Institute of Life Sciences (ILS), Bhubaneswar;in Stem, Bengaluru; and Indian Institute of Science (IISc), Bengaluru, are being supported under the Mission for generating animal models for SARS-CoV-2. • Additionally, the animal challenge facility at DBT-THSTI is offering Hamster Challenge services to vaccine manufacturers.
04	Up-gradation of DBT's Laboratories	• Considering the need for enhanced batch testing of vaccines, two DBT Autonomous Institutes have been identified for up gradation as Central Drug Laboratories (CDLs), for vaccine testing – a. National Institute of Animal Biotechnology (NIAB), Hyderabad. b. National Centre for Cell Science (NCCS), Pune.
05	Partnerships for Advancing Clinical Trials (PACT)	• The programme, a science diplomacy initiative of the Department of Biotechnology, in close partnership with the Ministry of External Affairs is aimed at advancing vaccine development activities in neighbouring countries and conducting training programmes to strengthen clinical trial capacity in those countries.
06	COVID Diagnostics and Testing	• DBT has identified 21 city/regional clusters to scale up COVID testing as a part of the Hub and Spoke model. • Nine DBT AIs are approved as hubs for Covid-19 testing. • DBT supported **'AMTZ COMManD (COVID-19 MedTech Manufacturing Development) Consortium'**, an indigenous manufacturing facility set up at the Andhra MedTech Zone (AMTZ) has achieved a production capacity of around 10 lakh RT-PCR Covid-19 diagnostic tests/day and about 1 lakh VTMs/day.
07	COVID Genomics Pan-India	• 1000 SARS-CoV-2 RNA genome sequencing consortium has successfully completed the initial goal of sequencing of 1000 SARS-CoV-2 genomes in a record time of few months. • Subsequently, to monitor the emergence and community circulation of viral variants and variants of concern (VOC), the **Indian SARS-CoV-2 Genomics Consortium (INSACOG)** consisting of 28 Regional Genome Sequencing Laboratories (RGSLs) was established with an of aim to sequence SARS-CoV-2 from Covid-19 infections occurring in India.
08	Therapeutics and Bio-repositories	• DBT-BIRAC supported anti-viral drug **Virafin**, developed by Zydus Cadila, has recently been accorded restricted emergency use approval, for treatment of moderate Covid-19. • Phase II clinical trials of *AQCH, the first phyto-pharmaceutical drug approved for clinical trial by DCGI* for Covid-19, developed by DBT-ICGEB and Sun Pharma are underway.

Regulatory Facilitation

- The Department has proactively taken several steps to support researchers and industries involved in research on Covid-19 and issued Biosafety Regulations for Covid-19, in close coordination with CDSCO, for facilitating expedited /clearances.
- The following Biosafety Regulations for Covid-19 have been issued by the Review Committee on Genetic Manipulation (RCGM) and Drugs Controller General of India (DCGI):
  a. *Rapid Response Regulatory Framework* to provide expedited regulatory approvals for all diagnostics drugs and vaccines.
  b. *Regulations and Guidelines* for recombinant DNA Research & Bio-containment-Interim Guidelines of laboratory biosafety to handle Covid- 19 specimens for R&D purpose.
  c. *A Rapid Response Regulatory Framework for Covid-19 vaccine development*.

- The Department of Biotechnology has also worked with the NITI Aayog to provide guidelines for sharing of Bio-specimen and data for research on Covid-19.

Way Forward

- The DBT Public Sector BIRAC, over the last 9 years, has built a very strong and vibrant Biotech Innovation and Start-up ecosystem consisting of over 4500 start-ups, 60 Bio incubators, and very well-established Academia Industry partnerships.
- Further, five indigenously developed solutions for Covid-19 by DBT-BIRAC supported start-ups, have been launched.
- A number of other solutions are being deployed ranging from a Remote Patient Monitoring ICU Bed device Vaccine Carrier device for delivery of Vaccines to remote areas as a part of the cold chain logistics.

The Vaccine Quest

Introduction

- Coronaviruses belong to four families or genera namely, alpha, beta, gamma, and delta. SARS-Co V-2 is a Beta-coronavirus, and in fact, all seven coronaviruses that infect humans belong to either the alpha or the beta genera.
    o The genetic diversity among coronaviruses is large, so a vaccine that protects against all viruses in all families is considered extremely difficult.
- Vaccines are our way out of the pandemic, but their success is still under threat because of the potential for the emergence of variants that could escape the immune response generated by the vaccines that are based on viruses, or viral protein derived from older or ancestral versions of SARS-CoV-2.
- There have been advances in science and technology that enable this stepwise approach. With the convergence of biomedical, engineering, and computing sciences, we have the opportunity to discover and design new antigens for vaccines.

Background

- Broad immune response against a wide array of viruses can happen in two ways.
    a. The first is the antibody response, where the antibodies that can recognise many kinds of proteins are produced and can block the entry of viruses into human host cells.
    b. The second is the cellular response where T-cells may limit infection by destroying infected cells.
- Antibodies are generally quite specific so inducing a wider antibody response requires having many antigens in the vaccine. T-cells recognise parts of the virus that are broken down within the cell.

Approach

- ***T-cell-based approaches*** are likely to be essentially made for the wide specificity of vaccines. Researchers are using mRNA approaches to present different parts of the spike protein since there is already evidence that the spike-based mRNA vaccines induce a T-cell response.
    o Another approach is looking at combining the spike protein with other viral proteins, such as the nucleo-capsid, which is less variable than the spike protein in order to induce broad T-cell responses.
    o In other efforts, nanoparticles studded with either the receptor-binding domain or the spike proteins from different coronaviruses have been produced to induce a wide range of specific antibody responses.
    o These mosaic vaccines will need to be evaluated in animal models before they can be moved to human testing.
    o The testing will be complicated because the animals will need to be challenged with a range of viruses to assess protection, and these studies are difficult when protection with even one virus is being evaluated.
- However, chances of success are likely to be higher with SARS-CoV-2 because of the lower variability of the infection.
    o While both influenza and coronaviruses mutate, the mutation rate in SARS-CoV-2 is slower because coronaviruses have a proof-reading enzyme that cleans up any errors when the virus replicates.
    o In addition to looking at whether the vaccines will protect against disease, there continues to be a need to understand and test whether the new vaccines are safe.
- A phenomenon known as ***antibody-dependent enhancement of disease*** has been recorded for other viral infections, where a poor response to vaccination actually put vaccinated people at risk of severe disease.

- o While this has not yet shown up as a concern with existing SARS-CoV-2 vaccines, it is possible that this may still occur later after vaccination-induced antibodies wane or be a new issue for universal coronavirus vaccines.

Issues
- India has outstanding science institutions with capable scientists, but particularly in biology, most research focuses on the understanding of processes and mechanisms rather than on the development of technology for interventions.
- There is also limited linkage to academic medical centres which are essential for the evaluation of vaccines.
- The strategy and networking that is necessary for future vaccine science need to be formally established.

Way Forward
- Vaccines are a priority for global health and we have seen their value in the current pandemic.
  - o In India, we need to be able to move faster for the next time so that we have vaccines quickly and can scale them up rapidly.
  - o This will not happen without investment, so we should begin planning and implementation.
- Much effort is happening globally for surveillance and for vaccine development and much research is happening in India, but we have not begun any ambitious programmes for vaccine research that link together multiple researchers with different areas of expertise and industry and government in order to enable the vaccine science.
- Preparedness for the future requires investment in infrastructure, people, and resources and cannot be built overnight.

The Fit India Mobile App
About the App
- Through this App, citizens can assess their fitness parameters through a series of simple tests and further get ways for the improvement of fitness on regular basis.
  - o Additionally, Fit India Mobile App is having features like setting daily activity and fitness goals, activity tracker, water intake, calorie intake and sleep tracker, etc.

Features
- The unique features of the Fit India App are to empower each individual to check his/her fitness score based on a set of age specific fitness tests, and get specific recommendations on how to improve their fitness level through physical activities including yoga protocols.
  - o Animated videos have been provided to make individuals understand about the procedure for conducting the fitness tests themselves.
  - o These features are based on the age-appropriate fitness protocols.
- The *"Fitness Protocol"* feature allows the user from different age groups to do various exercises which help them in being able to keep up with basic fitness levels. The protocol covers exercises that are universally followed and duly ratified by health experts.
- The *"My Plan"* feature of Fit India Mobile App lets users define their current lifestyle-time spent on physical activity, water intake, sleep hours, current weight and targeted weight- to get a customised food plan, lifestyle changes for them to achieve his/ her goals.
- The *"Activity Tracker"* feature of the application helps users keep track of their daily-activity levels. The real-time Step Tracker helps individuals track their daily steps and encourages them to set higher goals for themselves.

About FIT India Campaign
- **Fit India Movement was launched in 2019** with the vision of making India a fit and healthy nation. The key message is that fitness is easy, fun and free, and can be practised anywhere.

Redefining Science Communication
Introduction
- India's science popularisation agenda is achieved through several two-way stakeholder specific approaches. It serves as a robust knowledge-led tool to fulfil three mutually reinforcing public policy objectives.

a. The first is to create and foster a well-informed citizenry.
  ▪ This is with special emphasis on developments in science and technology and the continual evolution of science and related knowledge systems.
b. The second is about building capacities to communicate. This is through formal and non-formal teach and learn systems.
- The third objective is engagement that follows knowledge enrichment. This is a non-linear attribute of science communication; determined by the interplay of regulations, ease of access to alternatives, capacities to use them, and the milieu of equity and justice to exert rights.

Scientific Social Responsibility (SSR)
- COVID-19 has brought back the necessity to keep ourselves duly abreast with the latest of how, why, what, and when of science &technology.
- For the scientists too, on the other hand, it has become equally important to keep the society timely aware of the developments they make in their fields of research.
  o This is termed as Scientific Social Responsibility (SSR).Thus, this is critical for any society and country to move further.
  o Its citizens need to be duly aware of the scientific & technological developments and possess the much-needed scientific temperament.

SCoPE (Science Communication, Popularisation, and Extension)
- Adhering to the constitutional mandate of nurturing and inculcating a scientific temperament and promoting rational outlook, Vigyan Prasar (VP), with SCoPE (Science Communication, Popularisation, and Extension) as its mandate, has been active on every possible communications' platform from print to electronic to digital to social media.
- This creative, cross-disciplinary, and effective platform enables dialogue and knowledge transfer, It has thus, helped put Indian science on the global science map.
  o *Vigyan Prasar started its operations in 1989*.It has been since then serving the nation to meet its SCoPEneeds.
- The SCoPE has also found a reflection in the *Science & Technology Innovation Policy 2020 draft*, alandmark policy initiative by the Government of India.
  o The draft emphasises science communication in Indian languages with local and hyper-local contexts for last-mile connectivity.

Approaches of Vigyan Prasar
a. **Foray into Electronic Media**
- Vigyan Prasar, since its inception, has been utilising visual rhetoric, the most effective mode, to make scientific awareness and rational knowledge accessible to all.
- VP launched two critical initiatives on 15 January 2020:
  i. DD-Science-a one-hour daily dedicated slot (5 pm to 6 pm) from Monday to Saturday on Doordarshan National channel
  ii. India Science - an Internet-based 24x7 science TV channel.
b. **Popularising Science in Indian Languages:** Vigyan Bhasha is VP's systematic approach to expanding science communication through Indian languages.
- The programme includes monthly newsletters, popular science books, translations, social media initiatives, films, state-level meets of science communicators, and training workshops and exhibitions.
c. **Science in Print and Publishing:** VP brings out publications in English and Hindi, as well as in other Indian languages.
d. **Facilitating the News World:** The news services, Indian Science News and Feature Service, and India Science Wire (ISW), highlight the success and progress in science and technology in India through its daily news distribution to about 500 media outlets.
e. **Science Film Festivals**: Films have been one of the most important tools of science communication, which is being explored and promoted by Vigyan Prasar for the past two decades. Various events, outreach activities, workshops, and film festivals are organised to highlight the importance of film-making for science communication and to enhance the capacities of both professionals and amateurs.

- VP's flagship events –International Science Film Festival of India (ISFFI) and National Science Film Festival of India (NSFFI) - attract talented young filmmakers and science enthusiasts.
f. **SCoPE through Radio:** Since 2008, promoting science and technology through the radio has been one of the flagship programmes of Vigyan Prasar.
g. **SCoPE through Network Clubs:** One of VP's niche activities is inculcating science communication /popularisation through a network of science clubs (VIPNET) in schools. The club provides skill up-gradation training, awareness camps, and hands-on science workshops throughout the country.
h. **Research:** The project Augmenting Writing Skills for Articulating Research (AWSAR) encourages PhD and post-doctoral scholars in science and technology streams to write popular science articles during their scholarship/fellowship programme, which are later published as a book.

Conclusion

- Vigyan Prasar is engaged in the popularisation of astronomy at the national level through various means. It has been organising various programmes through EDUSAT for maths popularisation, workshops, Ramanujan Yatra 2020, and Pi Day every year.
- Since 2013, VP has been focused on communicating science in the tribal areas of the country. Trainings, workshops, activity camps, and awareness programmes are being organised using film and radio as the medium of communication and other outreach activities.

Energy Security: Nuclear Power
Introduction

- Energy is the engine for economic growth and when the country moves ahead on the path of development, it is necessary to utilise every energy resource available in the country.
- It is vital for human development and its demand is rising parallel the human population, urbanisation, and modernisation. Currently, the world is still dependent on fossil fuels to supply a huge amount of consumed energy across the world.
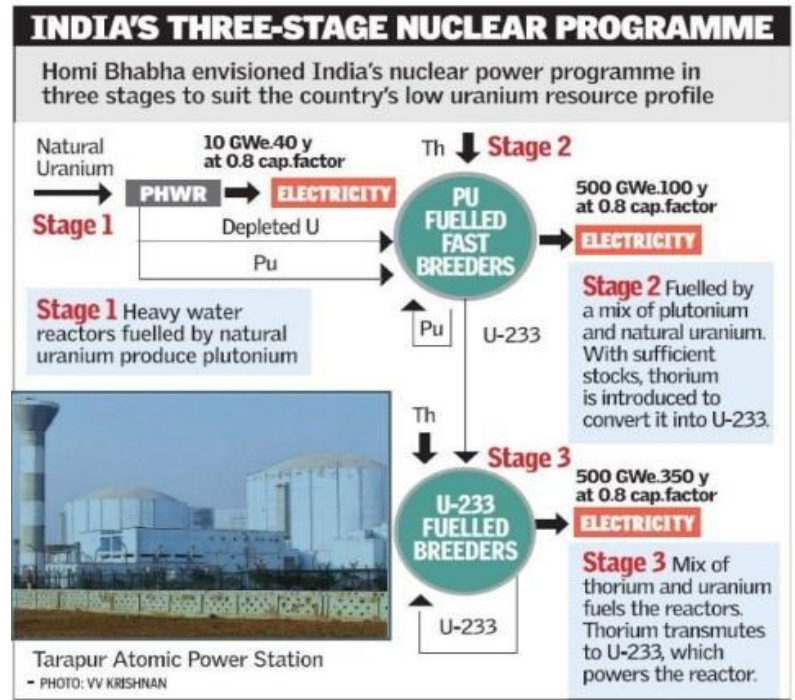
Energy Security and India

- Energy security means consistent availability of sufficient energy in various forms at affordable prices. These conditions must prevail over a longer period of time if energy is to contribute to sustainable development.
- India is one of the world's largest energy consumers and currently relies on importing fuels to a significant extent.
  o The major fuel in India's energy mix is coal 55%, a major portion of which is produced domestically.
  o Nuclear energy makes up about 3%, and renewable energy sources about 20%.
- There is a huge gap between energy demand and energy supply in India, due to its rapidly growing economy. Nevertheless, India plans to maintain economic growth of 8% annually, which implies that electricity demand will grow proportionately.
  o Therefore, more and more reliable power supplies are required, since nearly one-third of India's population is still not connected to any of the country's five electricity grids.

Nuclear Power in India

- *India embarked on its commercial nuclear power production in 1969* with the commissioning of two boiling water reactors (BWR) or 210 MWe capacities each. Its nuclear power programme was conceived to be a closed fuel cycle, to be achieved in three sequential stages.
  o These stages feed into each other in such a way that the spent fuel generated from one stage of the cycle is reprocessed and used in the next stage of the cycle to produce power.
  o This kind of closed fuel cycle was designed to breed fuel and to minimise the generation of nuclear waste.
- *Thorium Reserve in India*: India has the world's third-largest reserves of thorium. Thorium, however, cannot be used as a fuel in its natural state.
  o It needs to be converted into its usable "fissile" form after a series of reactions.
  o To aid this and to eventually produce nuclear power from its thorium reserves, Dr Homi. J Bhabha, who is regarded as the father of the Indian nuclear power programme, envisioned the roadmap of the three-stage nuclear programme.

- **Three Stage Nuclear Programme**
a. In the first stage, *Pressurised Heavy Water Reactors (PHWRs)* will be used to produce energy from natural uranium.
b. The second stage involves using the indigenous Fast Breeder Reactor technology fuelled by Pu-239 to produce energy and more ofPu-239.
c. The final stage of the cycle would involve the use of Pu-239 recovered from the second stage, in combination with thorium-232, to produce energy and U-233 – another fissile material- using Thermal Breeders.
   - This production of U-233 from thorium-232 would complete the cycle. U-233 would then be used as fuel for the remaining part of the fuel cycle.

INDIA'S THREE-STAGE NUCLEAR PROGRAMME. Tarapur Atomic Power Station — PHOTO: VV KRISHNAN

Nuclear Reactors in India

- Nuclear Power Corporation of India Limited (NPCIL) is the public sector enterprise, under the Department of Atomic Energy (DAE), entrusted with the task of nuclear power generation in the country.
   - Currently, there are 22 operational nuclear reactors in India with a total installed capacity of 6780 MWe.
- While the country's *first two reactors at Tarapur, Maharashtra* belong to the imported BWR technology, India embarked on building PHWR plants with the setting up of the first two 220 MWe capacity reactors at *Rajasthan Atomic Power Station (RAPS) at Rawatbhata in collaboration with Canada*.
- The next two PHWRs of 220 MWe capacity, each at Madras Atomic Power Station (MAPS) at Kalpakkam, Tamil Nadu marked the first completely indigenous nuclear power plant by the Department of Atomic Energy, and these reactors were commissioned during 1983-85.
- India pursued collaboration with Russia and built two 1000 MWe capacity Pressurised Water Reactors of Russian design at Kudankulam in Tamil Nadu which became operational in 2014.
- *Kakrapar Unit-S*, the first reactor in the 700 MWe PHWR series, has been commissioned in July 2020 and is currently undergoing tests before it enters commercial operation. In addition, 10 nuclear power reactors with a total of 8000 MW capacity are under construction.

Relevance of Nuclear Power

- Currently, India draws nearly 63 per cent of its total energy generation from thermal sources. Of this, nearly55 per cent is met from coal and the rest from gas, with a minuscule amount from oil-fired plants. Most of this is import based.
- Another important factor is electricity generation's low carbon footprint. The large-scale use of coal has severe consequences for global warming and climate change, which are critical issues besides air pollution that the planet faces today. India's per capita carbon emissions stand at 1-1.2 tons, compared to 20 tons per capita of the US.
- Renewable energy is environmental-friendly and a natural choice for India. However, its limitations should also be understood.
   - Firstly, solar and wind energy generation is land-intensive. Secondly, while nuclear plants have become completely indigenous, solar plants carry a dependence on imported technology and materials such as photovoltaic cells, battery, and storage equipment.
   - Another solar and wind power generation related handicap is in energy storage, which makes them unsuitable as a base-load source of electricity.

Energy Shortage

- Energy shortages in India will continue during the upcoming years. Even then, India as an emerging country will have to find a middle ground between economic development and environmental sustainability, which requires it to change its energy mix.
- Instead of the currently dominating coal, cleaner and sustainable sources of energy should play a major role.
- Nuclear energy is considered by many as being the only source of energy suitable to support continuous industrialisation and urbanisation.
  - o It currently provides only 3% of India's total electricity but is likely to gain importance and can reduce India's dependence on fossil fuels.

Conclusion

- That India's power generation capacity has increased a hundred-fold since independence, and it is today the third-largest producer of electricity in the world.
- Yet, at 1181 kWh in 2018-19, the per capita electricity consumption is low.
  - o This compares poorly with Canada's 17179 kWh, 13338 kWh in the US, and about 3000 kWh even in China.
- India needs to scale up electricity production to assure a reasonable quality of life for citizens. Such requirements make the choice for India, not between nuclear and renewable, but to include all available sources.
- Given the country's demographic growth, the aspirations of a young population, lack of indigenous fuel resources, and mounting climate change, we need a long-term vision and commitment to safeguard electricity for the upcoming generation that must be provided with all the resources.

The Himalayan Floods

Introduction

- Rivers originating in the Himalayas are the lifeline of one-fifth of the global population. Large floods that are becoming more frequent in this region, due to rising population and urbanisation, are increasingly disastrous.
- Over the last few decades, urbanisation has led to a dramatic increase in the population living in this mountain belt.
- The reports of *inter-governmental panel on climate change (IPCC-2019)* indicate an overall increase in the frequency of high-intensity rainfall events in the Himalayas and this requires a careful understanding of extreme hydrological events as they interact through the variable orography and geology of the Himalayas.

Background

- A significant surface warming trend of Himalaya is predicted where it is suggested that regions above 2000 m asl (above sea level) will witness a higher rate of surface warming.'
  - o This temperature rise will increase theavailable atmospheric energy and total precipitation, which incombination with mountain fragility and the growing urbancenters may lead to disasters.
  - o The 2010 floods Of Leh, 2013 Kedarnath floods, and 2021 Rishiganga floods are a few examples of volatility that extreme rainfall, the geology of the Himalayas, and urbanisation jointly lead to.

About the Himalayas

Sl	Zone	Characteristics
		- The Himalayan mountain belt, tectonically, is divisible into from north and south, the *Indus Suture Zone (ISZ)* of Ladakh, the Tethyan Himalaya, the Higher Himalayan Crystalline zone, the Lesser Himalaya, and the Siwalik of outer Himalaya. - The ISZ lies in the rain shadow zone of the *Indian Summer Monsoon (ISM)*, above an elevation of almost 3000 m asl where the scanty rainfall (-100 mm/year) occurs mostly under the influence of westerlies.

01	**Indus Suture Zone (ISZ)**	**The rivers Indus and Zanskar which flow through the region, therefore get most of their discharge from westerlies, partly from ISM, and snow and glacial melt.** - However, the floods in these rivers are normally induced by the interplay of ISM and upper atmospheric interactions. - The area is devoid of vegetation and due to extreme temperatures, physical weathering of rocks occurs that forms a thick debris mantle on hill slopes. - This debris mantle during excessive snow melting and rainstorm events, fail and block small and large streams that breach subsequently to create floods.
	Tethyan belt	The Tethyan belt also behaves in a similar manner even though it lies at the northern fringe of ISM and receives a slightly higher amount of rainfall as compared to ISZ.
	Higher Himalayan Crystalline zone	The *Higher Himalayan Crystalline* zone lies above an elevation of ~1800 m asl and receives full spectrum of ISM rainfall. This zone is characterised by steep hill slopes and deep gorges with high gradient drainage systems.
	Lesser Himalaya and outer Siwalik Himalaya	The Lesser Himalaya and outer Siwalik Himalaya are gentler and also receive a high amount of ISM rainfall.

Orographic Nature

- The orography and pattern of rainfall distribution decide the damage pattern and hotspots of erosion in the event of large floods.
- The orography and geology of the Himalayas is such that, from south to north, the first physiographic transition occurs above the Siwalik Himalayas and the second occurs at the base of the Higher Himalayan Crystalline zone, where there exists a regional fault called the *Main Central Thrust (MeT)*.
- The two physiographic transitions form barriers to upcoming ISM rainfall front and receive focused precipitation. Therefore, the southern front largely has two belts of high rainfall (1500-2500 mm/year) that coincide with the two physiographic transitions.
- The MCT fault zone which is characterised by highly deformed and pulverised rocks where the hill slopes are of steeper (>40 degrees) gradient, in combination with focused rainfall, is most vulnerable to mass wasting and landslides.

Discharge of Different Magnitude

- The headwaters of the rivers like Indus, the Ganga, and the rivers draining the central Himalayan ranges lie in rain deficient arid zones where extreme rainfall events can potentially create glacial/moraine dammed lake outbursts, and massive snowmelt, leading to a flood.
  - However, the headwater of the Brahmaputra, due to different orography and elevation receives ~ 1000 mm/a of ISM rainfall with downstream catchment >3000 mm/a.
- These contrasting characteristics between the two systems create floods that have discharges of different magnitude.

Causes of Floods in the Himalayas

- In general, the large floods in the Himalayas are caused by:
a. Intense Rainfall Events.
b. Landslide dammed lake outbursts (LLOFs).
c. Glacial dammed Lake outbursts(GLOFs).
d. Cloud bursts.
- Often, during warmer and strengthened monsoon years, the southern front of the Himalayas receives longer spells of precipitation that cause large floods that may last for almost full peak in the monsoon season.
  - Such floods may have broader hydrographs ranging from weeks to months.
  - Such rainfall phases that occur due to stationary monsoon troughs may also cause series of landslides in steeper gradient reaches of the mountain, where the area around the MCT zone is most vulnerable.

o During such years, the ISM front also penetrates deeper into what generally remains under the rain shadow zone i.e. ISZ in Ladakh, and produces flooding there as well.

o During these rainfall events, breaches of glacial and landslide dammed lakes also occur that compound the flood magnitude and induce multi-peaked flood hydrographs.

- *Glacial Lake Outburst Floods (GLOFs)* are generated by the breach of water bodies that are formed due to damming of streams by surging or advancing glaciers, or by impounding hill-slope runoff and snowmelt between the two moraine ridges (called moraine-dammed lake).

  o Shyok river in the Himalayan-Karakoram region frequently witnesses such glacial damming and the two events of GLOFs in this river which occurred in the years1779 and 1932, are well documented.[1]

- *Landslide lake outburst floods (LLOFs)*are analogous, with the dams being formed by landslides. Landslide activity that generally occurs during monsoonor an earthquake may potentially dam small channels for a longer duration, ego landslide dammed lake (Gohana Tal)of Birahi Ganga, survived for 76 years(1893-1970).

  o These dams may breach and cause floods in the downstream regions as breach of Gohna Tal of Birahi Ganga in 1970 devastated the town of Srinagar (Garhwal), and significantly damaged the Ganga canal downstream in Haridwar.

Flood Mapping

a. Mapping of floods has four elements:
b. Vertical rise in river level.
c. Rate of rising of flood.
d. Flow velocity.
e. Lateral inundation of flood plains.

- The first point requires precise measurements of flood levels in rivers and streams which is normally done at river gauging stations.

  o These gauging stations can now be equipped with state-of-the-art Internet of Things (IoT) and radars to quickly transmit the data to remote locations and flood management centres.

  o Radars can help in tracking the locations of intense rainfalls and the temporal evolution of the storm.

- The lateral extent of flood inundation can be mapped using satellite images and *LiDAR (Light Detection and Ranging) data*.

  o The precision and resolution of this data at finer scales can help prepare maps of meaningful use.

- The flood velocities are generally measured using current meters, acoustic Doppler current profilers, tracers, and floaters.

  o The most precise would be Doppler current profiler as it can measure flow velocity at different depths and can average out the turbulence.

- Besides above, one parameter largely ignored is flood sediment load.

  o It is important as it imparts buoyancy to floodwaters which in the event of a large flood, is detrimental to the stability of infrastructures such as dams, bridges, and culverts.

  o Sediment load of flood waterscan be measured by sediment monitoring gauges or sensors equipped with Laser In-Situ Scattering or by physically sampling during the time of the flood.

  o Satellite data can also help in getting generalised ideas on sediment load.

Reducing Flood Vulnerability in the Himalayas

- The floods are natural processes and are inevitable, though the damage done by these events can be minimised if attempted using scientifically sound databases and model.
- Proper understanding of the orography of the Himalayas and how past flood events have interacted with it and what were the damage patterns can help in preparing the damage predictive models of the Himalayas.
  - o This model can help in deciding the focus, magnitude, and type of infrastructural development to be done in the Himalayas.
- Landslide and glacial lake monitoring systems should be in place and be linked to flood management centres via IoT. The combination of data on flood levels, flood hydro graphs, and lateral inundation can be used to manage the floods and minimise the destruction.
- The inundation maps prepared using satellite images LiDAR combined with maps of social infrastructure, if analysed on GIS platforms and Artificial Intelligence (AI) using long time series of datasets, can provide predictive models of flood events and damage patterns.

Geomagnetism: Applications

Introduction

- Geomagnetism has many societal applications and this science impacts all of humanity in one form or another. The survival of all the life forms on earth is interminably related to the existence of this geomagnetic field.
- Efforts are being made to use it for an early-warning system of natural disasters including earthquakes and tsunami.

Background

- Since the magnetic field originates inside the earth and travels through its different constituents and materials, it is very essential to examine the inside of the Earth.
- Indian Institute of Geomagnetism (IIG) is a global leader in magnetic and electromagnetic data collection.
  - o The research areas that are covered by IIG encompass a wide spectrum- on one hand, it explores the interior of the earth, and on the other, its' vast boundaries reach the sun to understand its dynamics.

Embedded Magnetic Minerals

- The magnetic minerals embedded in crustal rocks are harnessed to map Curie temperature symptomatic of the crust-mantle magnetic transition zone.
  - o They are also used to understand the regional deformities and structural framework of the continental and oceanic realm.
  - o The mineralised zones and geo-tectonic fault categorisation become easier with remotely sensed magnetic data.
- **Magnetic minerals play** a very important role in understanding climate changes and environmental fluctuations.
  - o These minerals are quite stable in the unchanging physico-chemical domain but are quite sensitive to the changes in those circumstances.

Solar Magnetism

- The solar magnetism impacts celestial entities which include earth as well. The energetic particles emanating from the sun influence earth's magnetosphere, ionosphere, mesosphere, and thermosphere.
  - o Solar flares, coronal mass ejections, high-speed solar wind, and solar energetic particles are the manifestation of dynamic flux.
- The earth is also magnetic and the genesis of this field is theorised, modelled, and simulated to be at the core-mantle boundary.
  - o The field lines traverse through different earth layers to protectively blanket our planet. This is the shield that stops and deflects harmful radiation.
  - o Life and electrical communication, are thus maintained and sustained.
  - o The interaction of these charged particles with the atmospheric constituents creates auroras at the polar regions

Solar wind

- It emanates and flows continuously throughout the space in all directions. The earth experiences it, however, the recordings of its interaction and creation of electromagnetic currents in the atmosphere are carried out at the Mas.
- The complex interplay of heat and energy at the surface of the sun and its atmosphere creates a temperature dichotomy.

Tidal Force

- The atmospheric tides are global scale variations in wind, temperature, and pressure, tied to solar input.
- They occur throughout the atmosphere on a regular basis and are seen once or twice daily (diurnally and semi-diurnally), with smaller tides at more frequent intervals.
    - The tides move westward with the sun, driven by solar radiation, its absorption, and re-emission at various heights.

Ionosphere and Magnetosphere

- The ionosphere and magnetosphere are a closely-coupled system that channels energy and momentum from the solar wind to the upper atmosphere. These are responsible for most of the temporal changes in the geomagnetic field that occur on timescales of seconds to days, including magnetic pulsations.
- Studies of the ionosphere and magnetosphere seek to obtain a quantitative understanding of the flow of energy and momentum through the Solar wind, magnetosphere, and ionosphere systems.

Plasma

- Plasma encountered in the Earth's as well as other planetary magnetospheres, are generally not in thermodynamic equilibrium states, and hence contain some amount or free energy.
- These free energy sources can generate several kinds of plasma modes in the Magnetospheric boundary layers, such as magnetopause boundary layer, plasma-sheet boundary layer, polar cap boundary layer, etc.

Conclusion

- Geomagnetism or earth magnetism is an ever-changing entity, because of which it has to be monitored and recorded continuously. It is vital research in the field of scientific technology, allowing us to get more familiar with our planet and the solar system.

Nanotechnology in Textiles

Introduction

- Nanotechnology is the understanding and control of matter at the nanoscale, at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications.
- It is being applied in various fields due to its ability to change physical, chemical, electronic, optical, thermal, magnetic, and biological properties of the matter because of its ultra-small size of less than 100 nm (1 nm = 1 part of 10 lakh equal parts of 1 mm).
- In the 3-D structure of the matter, when the dimensions are reduced to nano-size one by one, the formed nanostructures are called thin-film, nanowire, and quantum dot respectively.
    - Thus, by engineering size and shape in nano-dimensions, the properties of the matter can be manipulated to achieve the required functionality which is otherwise not possible with bulk materials.

Nano-Technology in Textile Industry

- Advanced textile is desired to be smart and interactive. Smart Interactive Textiles (SITs) can sense electrical, thermal, chemical, magnetic, or other stimuli from the environment, and adapt or respond to them.
    - Covid-19 pandemic has led us to new requirements in the apparel industry, for instance, added comfort, thermoregulation, hygiene, protection from UV light, fire, pathogens, electromagnetic field, etc.
- The freshness in the apparel we wear can be retained for longer hours if the bacterial growth is restricted. Nanotechnology has played a very important role in achieving this target.

Recent Implementations of Nanotechnology

a. **International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)** has developed a nano silver-based suspension that can be applied on the fabric surface to get antibacterial activity.
   o Nano silver uses the same scientific principle as the one that lies in our tradition to drink water stored in copper and silver vessels, where the ions of these metals, released in water, kill micro-organisms and make it safe for drinking.
b. The antimicrobial textiles are most essential in the medical sector, especially in the present deadly pandemic conditions, for example, in curtains, bed covers, face masks, aprons used in the hospitals and diagnostic centres.
   o It can also serve for the best hygiene in sportswear, baby products, sanitary napkins, wound healing dressings etc.
c. Recently, ARCI has demonstrated coating of copper-oxide nanoparticles doped with a trace amount of silver in the active layerin the face mask to give protection against the SARS-Co V-2 virus.
   o This indigenous technology is the need ofthe hour and is being accelerated for its commercialisation.
d. **Titanium dioxide (Ti02)** is another strong antimicrobial material that conducts the phenomenon known as "Photo-catalysis".
   o The active Titanium dioxide, a semiconductor material.
   o The highest efficiency of photo-catalysis is achieved by engineering the band-gap and by surface functionalization of metal nanoparticles.
   o Thus, any surface coated with Ti02, gets self-cleaned, when exposed to the sunlight.
e. A thin coating of nano-fibers on the fabric used in air filters for air conditioners and automobiles' exhaust, stop sultra-fine particles thereby increasing the efficiency of the filters. Electro-spinning technique has been used to produce these air filters.
f. There are several other needs for everyday clothing such as thermoregulation, where fabric responds to changes in the body temperature and maintain comfort by either heating or cooling.
   o The **Phase Change Material (PCM)** is incorporated into the fabric to fulfil this function.
   o The PCM stores and releases heat by self-undergoing a change in its phase.
g. The synthetic fibers develop a static charge. The anti-static property can be imparted on them by coating hydrophilic nano-sized oxide particles like titanium dioxide, zinc oxide, Antimony Tin Oxide (ATO), silica, or bonding electrically conducting nanoparticles which can effectively dissipate the static charge which is accumulated on the fabric.
h. **Technical Textiles**: These are used in special applications like fireproof and flame retardant fabric is required in the suit used by fire-fighters.
   o The high-temperature stable materials are combined with thermally insulating and fireproof materials such as nano-porous Silica aerogel for this application.
   o The silica aerogels are ultra-low density nano-porous materials, best known for their thermal insulation performance temperature ranging from cryo to 8000 C.
   o The fabric can be used as a sensor or charger by functionalising with *Piezoelectric nanocrystals* which can convert mechanical load into electrical energy.
   o This electrical signal can be used to sense a heartbeat or to charge a small battery.

Conclusion

• The nano-materials can be applied to the fabric at various levels, at the fiber or yarn stage, during the spinning or weaving process, or directly on the fabric.
   o Heat and pressure are applied tothe fabric to fix the nano-material on its surface. Both synthetic and natural fibers can be functionalised with nano materials.
• Nanotechnology has great potential in the textile industry. Functional and smart textiles can play an important role in the economy of the nation. However, there are limitations in applications due to the scientific complexity and the cost adhered to it.
   o A proper study is necessary to find any toxic effects of handling or wearing the nanomaterials to eliminate any health risks due to short or long-time exposure.
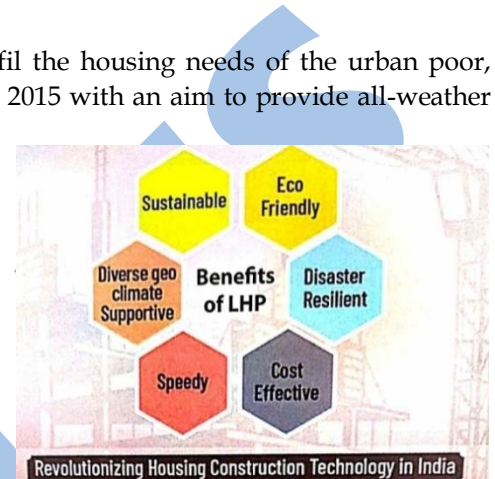
Light House Projects

Why in news

- On 1 January 2021, the Prime Minister laid the foundation of 06*Light House Projects (LHPs)*. India charted into a decisive shift in the manner of construction that is perceived and implemented in the country.
  - *These are called Light Houses as these projects have a demonstrative effect wherein people from all sectors such as faculty and students of engineering/planning/architecture institutes, builders/developers, innovators, policymakers will be able to see and get exposed to site and learn the use of innovative technologies on the ground.*
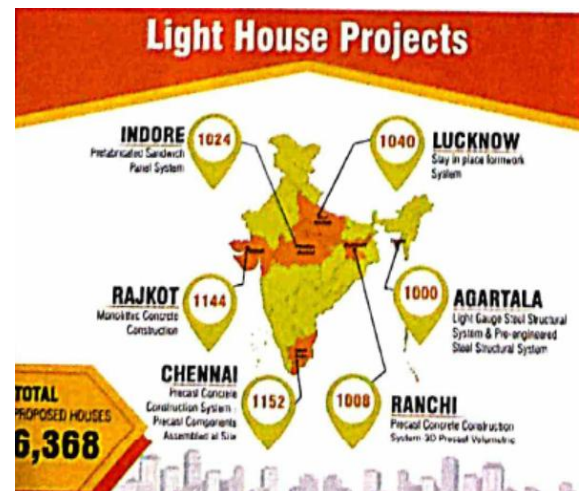
Background

- As a part of the continuous efforts of the Government of India to fulfil the housing needs of the urban poor, *Pradhan Mantri Awas Yojana-Urban (PMAY-U)* was launched in June 2015 with an aim to provide all-weather pucca affordable houses to all eligible urban households by the year 2022.
  - This Scheme has propelled massive investment opportunities and provided the much-needed impetus to industrial production and employment.
  - Construction of houses at this scale offers an opportunity for inviting innovative and alternative technologies from across the globe which may trigger a major transition through the introduction of cutting-edge building materials, technologies, and processes.
- After much deliberation with the multi-stakeholders, *Global Housing Technology Challenge-India (GHTC India)* was initiated in January 2019 with three components.

Initiatives Taken

- Six sites i.e, Indore (Madhya Pradesh); Rajkot (Gujarat); Chennai (Tamil Nadu); Ranchi (Jharkhand); Agartala (Tripura), and Lucknow (Uttar Pradesh) were selected for construction of model housing projects through a national challenge process wherein all States/UTs participated and were selected through an evaluation process that showcased a sense of cooperative federalism. These LHPs comprise about 1,000houses at each location along with allied infrastructure facilities which are required to be completed within 12months.
- These six LHPs were introduced for familiarisation, adaption, and adaptation of the innovative construction technologies, materials, and processes suited to Indian geo-climatic, and other conditions so that they may be replicated for construction in other development projects of public and private sectors.
  - Special attention has been paidto the fact that these technologies arc resource-efficient,sustainable, climate-resilient, cost-effective, and result in afaster pace of construction.
- MoHUA has proposed a comprehensive strategy to collaborate with young mind, creators, students, entrepreneurs, and other stakeholders, for wide dissemination of knowledge and technical learning on the use of innovative technologies on the ground.
- The technological adaption will get framed under the *NAVARITIH, a short-term online certificate course* intended to enhance the capability of the building professionals about the new and emerging building materials and technologies for housing and building construction.

Significance

a. The technologies being used in LHPs are new to the country with limited use in the construction sector. Therefore, learning, evaluation, documentation, adaptation, and mainstreaming of these technologies in different geo-climatic conditions and percolating the right technical know-how in the minds of stakeholders are of utmost importance.

b. These projects will serve as live laboratories for on-site and off-site learning, facilitating the transfer of technology to the field, and its further replication.

c. On the line of Satyagrahis and Swachhagrahis, a program of 'TECHNOGRAHIS' was launched in February 2021 for free enrolment of all stakeholders interested in learning different phases of use of innovative technologies in LHPs.

Conclusion

- India is witnessing a rapid change in the construction industry wherein new materials, technologies, and processes are being introduced on a regular basis.
- It is expected that the footprint of innovative technologies will increase in projects developed by private Sectors, CPWD, NBCC ,Defence, Railways, etc.
- It will also serve as a financial investment as these will not be a business as usual (originally these projects take about 24 to 36 months) but will get reduced to 12 months or so. These Light Houses will stand out for India's pursuit of innovation, excellence, adaptation, and self-reliance (Aatma Nirbhar) in construction methods and provide better homes with people being at the core of each action.
- Adoption of these innovative technologies would contribute towards achieving the Sustainable Development Goals as laid out by the United Nations, the New Urban Agenda, and the Paris Climate Accord.

Drone Policy

Introduction

- Drones, officially known as **Unmanned Aircraft Systems (UAS)**, have been in widespread use in the Indian military since the I990s.
  - While the first drones were imported into India from Israel for use in active combat, India's Defence Research and Development Organisation (DRDO) has since then developed numerous indigenous drones that have been successfully deployed by the three wings of the Indian Armed Forces.
  - The evolving nature of warfare has prioritised training in and preparation for stealth missions.

Initiative

iDEX

- To encourage domestic innovation and indigenous development of drone systems, in June 2021, the Ministry of Defence announced a budgetary allocation of INR 498.8 crore (USD 67 million) over five years, for a scheme under Innovations for Defence Excellence (iDEX).
  - **iDEX** is the executive arm of the Defence Innovation Organisation (DIO) and is responsible for creating an ecosystem that fosters indigenous innovation and technological development in India's defence and aerospace sectors.
- It engages with MSMEs, start-ups, innovators, academics, and R&D institutions to evaluate technologies for scalability and aids the armed forces in technological adoption.
- This scheme will provide financial support to 300 MSMEs, start-ups and innovators, and 20 partner incubators. It also promises to sustain the emergent robust synergy between India's innovators, the defence manufacturing industry, and the country's defence systems.

Drones Rules, 2021

- In July 2021, the Government of India released a draft policy for drones that is "built on a premise of trust, self-certification and non-intrusive monitoring" and is "designed to usher in an era of super-normal growth while balancing safety and security considerations."

a. The new policy' qualifies drones into five classifications based on their maximum all-up weight, including the payload.
  - Mini drones can be as light as less than 250 grams while large drones can weigh over 150 kilograms.
  - To ease the civilian purchase and use of drones, the price for obtaining a remote pilot licence has been reduced significantly to INR 100 and de-linked from the size of the drone.
  - Remote pilot licences will now also be valid for up to 10 years.
  - Furthermore, the government no longer mandates any licences for the operation of neither a mini (less than 250 grams) nor a pilot licence to operate nano (greater than 250 grams and less than or equal to 2 kilograms) drones.

- Requirements for security clearance before issuance of any registration or licence have also been removed. However, all drones must be qualified with a **'certificate of airworthiness'** before they can be operated.

b. The Ministry of Civil Aviation will also soon release its **Digital Sky programme**, intended as a single window for required clearances, which have been reduced from 25 to five.

c. The Ministry will also release an interactive airspace map on its website that will show three zones - **yellow (controlled airspace), green (no permission required), and red (flying not permitted)** so that the drone users can know where they may operate their UASs.

- In a significant change, a previous no-fly radius of 45 kilometres around airports has now been reduced to 12 kilometres.

Indian Drone Market

- A January 2020 report by PwC also suggested that the market size of drones in India would be USD 885 million. It is expected to reach USD 1,810 million by FY 2026, growing at a compound annual growth rate (CAGR) of 12.6 per cent between 2020 and 2026.

- India is currently the third-largest importer of military-grade drones with 6.8 per cent of total **Unmanned Aerial Vehicle (UAV)** imports according to the **Stockholm International Peace Research Institute (SIPRIs)**.

- To reduce dependence on imports, DRDO has launched several programmes to develop and deploy UAVs in India.

Conclusion

- India's entire economic and social system is undergoing tremendous changes. As our economy expands to include geographic and cultural peripheries, new voices are emerging into the mainstream, and they are bringing ever new ideas to the forefront of national and international discussions.

- The deep penetration of the internet has, at the same time, allowed Indians to become well acquainted with emerging global ideas and adapt them to our local conditions and needs.

  o They are now producing an amalgam of international id as with Indian technology. The innovation potential in India is, therefore, inherent to its social fabric.

- The Government's recognition of this characteristic-as is evident in this policy change and numerous others-is an important boost to the Indian economic standing and business potential.

Science Education

- The New Education Policy (NEP) 2020 is a big step in the education system of India. NEP aims to implement new dimensions in school education like experiential and hands-on learning, arts-integrated and sports-integrated education, story-telling, and life-skills based pedagogy.

Sl	Scheme and Initiative	Details
01	Innovation in Science Pursuit for Inspired Research (INSPIRE) programme	• It is one of the flagship programmes of DST and implemented by National Innovation Foundation (NIF) to encourage students to pursue science as a career. ■ The Scheme has been aligned with Action Plan-18 of the Start-up India programme that stipulates the 'launching of innovation-focussed programmes for students.' • INSPIRE aims to communicate to the youth population of the country the excitements of creative pursuit of science, attract talent to the study of science at an early stage, and build the required critical human resource pool for strengthening and expanding the Science& Technology system and R&D base. • INSPIRE Scheme has included three programmes – a. Scheme for Early Attraction of Talents for Science (SEATS). b. Scholar hip for Higher Education (SHE). c. Assured Opportunityfor Research Career (AOR).
		• It is being executed by DST with NIF – India. • It aims to motivate students in the age group of 10-15 years and

02	MANAK (Million Minds Augmenting National Aspirations and Knowledge)	studying in classes 6 to 10. ➢ The objective of the Scheme is to target one million original ideas/innovations rooted in science and societal applications to foster a culture of creativity and innovative thinking among schoolchildren. • NIF provides mentoring support to students for the development of prototypes, in coordination with reputedacademic and technology institutions of the country.
03	'Vigyan Jyoti' and 'Engage with Science'	• The DST is scaling up its two initiatives-*Vigyan Jyoti* and Engage with Science. Both the programmes are mandated to create a level-playing field for the meritorious girls in high school to pursue Science, Technology, Engineering, and Mathematics (STEM) In in their highereducation. • *Engage With Science* is an interactive programme available on top of the India Science Over- The-Top platform. ▪ It has beenplanned to make learning relevantand foster scientific spirit amongst thecountry's youth.
04	Vidyarthi Vigyan Manthan (VVM)	• *Vidyarthi Vigyan Manthan(VVM)* is a national programme for popularising science among school students of standard VI to XI, conceptualised to identify the bright minds with a scientific aptitude among the studentcommunity. • VVM is being organised by Vijnana Bharati in collaboration with Vigyan Prasar and the National Councilof Educational Research and Training (NCERT).
05	Kishore Vaigyanik Protsahan Yojana (KVPY)	• *Kishore Vaigyanik Protsahan Yojana (KVPY)* is a flagship programme of the DST, implemented by the Indian Institute of Science (IISc), Bangalore to encourage students who are studying Basic Sciences to take up a research career in science. ▪ Fellowship and contingency grants arc provided to the selected KYPY Fellows up to the pre-PhD level or five years, whichever is earlier.
06	National Children's Science Congress (NCSC)	• *National Children's Science Congress (NCSC)*, also referred to as Children's Science Congress (CSC) at the district and state levels, is a nationwide Science Communication programme of the National Council for Science and Technology Communication (NCSTC), DST,Government of India.
07	Science Clubs	• *VIPNET, an acronym for Vigyan Prasar NETwork of Science Clubs,weaves* all science clubs, societies, organisations which are already established, or are going to be established, and are willing to work for science communication, to strengthen the popular science movement in the country with far-reachingimplications for the development of society.
08	JIGYASA Programme	The *Council of Scientific and Industrial Research (CSIR)* has launched a student-scientist connect programme JIGYASA, in collaboration with *Kendriya Vidyalaya Sangathan (KVS)*, with the primary objectives of extending the classroom education and focusing on well-planned research laboratory-basedlearning.

Nutrition and Vaccination

- Nutrition is a critical part of health and development. Better nutrition is related to the improved infant, child and maternal health, stronger immune systems, safer pregnancy and childbirth, lower risk of diseases and longevity.
- Malnutrition, in every form, presents significant threats to human health.

Initiatives on Nutrition

- The Government implements Anganwadi Services Scheme, POSHAN Abhiyaan, Pradhan Mantri Matru Vandana Yojana, and Scheme for Adolescent Girls, under the Umbrella Integrated Child Development Services Scheme (ICDS), as targeted interventions for children up to the age of 6 years; pregnant women, lactating mothers, and adolescent girls throughout the country.
- For meeting the nutritional needs of school-going children, the *National Programme of Mid-Day Meal* in schools is implemented.

Anganwadi Service Scheme

- Anganwadi Service Scheme is one of the major flagship programmes launched in 1975 by the Government of India.
- It represents one of the world's largest and unique programmes for Early Childhood Development.
- It provides a package of six services, namely, supplementary nutrition, pre-school non-formal education, nutrition & health education, immunisation, health check-up, and referral services.
- The beneficiaries of the Scheme are children in the age group of (0-6 years, pregnant women, and lactating mothers.
- ICDS is the largest outreach programme operational through Anganwadi Centres (AWC).

POSHAN Abhiyaan

- Launched in 2018, POSHAN Abhiyaan is the flagship programme which aimed at drawing the nation's attention to the complex issue of malnutrition and strived to address it in a mission-mode.
- The Abhiyaan attempts to deliver a high impact package of interventions for first 1,000 days of Life, along with strengthening the training and capacity building, multi-sectoral convergence, and bringing out behavioural change through Jan Andolan.

Pradhan Mantri Matru Vandana Yojana (PMMVY)

- Launched on 31st December 2016, PMMVY is a maternity benefit programme which provides partial compensation for wage loss in terms of cash incentives of Rs 5000 for adequate rest, and improved health of the pregnant and lactating mothers.
- This Maternity Benefit Scheme was implemented in January 2017 as a Direct Benefit Transfer (DBT) with a cash incentive of Rs 5000.
- PMMVY is implemented using the platform of Anganwadi Services Scheme or the Social Welfare Department and Health system.

Scheme or Adolescent Girls

- Fulfilling the multi-dimensional needs out- of school adolescent girls (11-14 years) with an aim tomotivate them to join school system, the Government of India approved implementation of restructuredScheme for Adolescent Girls (SAG) to focus on out-of-school adolescent girls in the age group of 11-14years in the year 2017-18.

Anemia Mukt Bharat

- Under Anemia Mukt Bharat strategy, support isprovided to the States and UTs for prevention and treatment of anemia in children (5-9 years) and adolescent girlsand boys (10-19 years).

Initiatives on Vaccination

a. The Ministry of Health and Family Welfare, Government of India provides several vaccines to infants, children, and pregnant women through *Universal Immunisation Programme (VIP)*.
b. The Ministry of Health and Family Welfare, Government of India launched Mission Indradhanush in December 2014 that seeks immunisation coverage for children and pregnant women in India from 65% in 2014 to at least 90% in the next five years through special catch-up drives.
c. **Intensified Mission Indradhanush**: The Government launched Intensified Mission Indradhanush on 8 October 2017 to reach each and every child under two years of age and all those pregnant women who have been left uncovered under the routine immunisation programme.
   o The target under IMI was to increase the full immunisation coverage to 90% by December 2018. However, only 16 districts in the country have achieved 90% coverage so far.

d.   **Birth Dose Vaccination Protocol** : Birth dose vaccination is an integral part of ULP. It is provided against the three VPDs of Hepatitis-B, Poliomyelitis and Childhood TB.
e.   **Covid-19 Vaccination** : Covid-19 pandemic broke out in December 2019 and spread across the world. The Government of India took proactive steps to respond to the pandemic and initiated the preparedness of the health systems to respond to all aspects of Covid-19 management.

Conclusion

- In the challenging times of pandemic, the Government of India is working for plugging gaps in service delivery, and convergence between ICDS and health services to deliver the package of essential interventions.
- The focus is towards propagating Jan Andolan by conducting home visits, community-based events, mass media, and more on participation of families and communities.

KURUKSHETRA

INDEX

Major Drivers of Rural Transformation

Introduction

- Rural transformation encompasses a whole gamut of social and economic reforms along with inclusive and sustainable development, energy security and affordable access to basic minimum needs for all. It is very crucial due to several reasons:
a. Its strong relevance in national economy
b. Active role in pursuance of Sustainable Development Goals.
c. Critical importance in improving quality of life of rural communities.
- Hence, Government of India launched a comprehensive programme of rural transformation with a vision to transform lives and livelihoods through proactive socio-economic inclusion, integration and empowerment of rural people.
- In a proactive move, Government has revitalized and repositioned rural transformation onto a centre-stage with multi-pronged and inclusive approach, building synergies with stakeholders and provision of adequate finances.
  o Indicators on education, health, nutrition and provision of basic services (electricity, water, sanitation, roads, etc.) have all registered significant improvements though they still lag behind urban areas.

Livelihood Security: Pathways and Progress

- Since independence, poverty alleviation has always been the primary endeavour of the Government with emphasis on its role as harbinger of socio-economic transformation in rural population.
  o Conventionally, poverty or state of deprivation was defined in terms of income poverty, that is, number or proportion of people living below the poverty line.
  o But, as per current international norms, human poverty is more than income poverty.
  o It is now regarded as deprivation of non-income dimensions of public necessities like health and education opportunities that enhance human capabilities to lead a tolerable life.
- India made significant progress in reducing multidimensional poverty. Oxford Poverty and Human Development Initiative in its report stated, 'India has made momentous progress in reducing multidimensional poverty.
  o The incidence of multidimensional poverty was almost halved between 2005-06 and 2015-16, climbing down to 27.5 percent.'

Latest Activities

a. Addressing basic needs and enhancing access to services.
b. Increasing employment opportunities through Labor-intensive approaches including green jobs and development of rural infrastructure.
c. Supporting development and use of safe and environment friendly technologies and practices for housing and infrastructure development in rural areas.
d. Women empowerment through access to credit and new technologies along with gender specific capacity building and skill development.
e. Strengthening road connectivity.
f. Promoting convergence and developing synergies between various stakeholder departments, agencies, co-operatives and institutions for better impacts and economic returns.
g. Supporting training and capacity building of rural communities to effectively implement development programmes.
h. Promoting green energy programs to provide energy security for livelihood and household needs.

Government Schemes

MGNREGA: MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) is a flagship programme driving rural transformation at ground-level.

a. It assures at least 100 days of guaranteed wage employment in a financial year to every rural household.
b. The Act mandates 60 percent of the allocation for agriculture and allied activities through development of land, water and tree resources.
c. The Government of India has allocated Rs. 73,000 crore (2021-22) for the scheme, which is an increase of Rs. 11,500 crore as compared to Budget Estimate for the previous financial year (2020-21).

d. It has significantly improved lives of millions of rural people especially in poorer states like Bihar, Jharkhand, Madhya Pradesh, Chattisgarh, Odisha and Uttar Pradesh.

DAY-NRLM: **Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM)** was launched primarily to organise rural women in self-managed institutions and build their skills and capacities to enable them to access finance and livelihood services. The members of institutions (Self-Help Groups of Women and their federations) are provided with training and hand-holding to set-up strong and sustainable institutions.

- It promotes both farm livelihood and non-farm livelihoods mainly in newly emerged promising areas, such as organic farming, value chains, processing, custom hiring centres etc. in agriculture domain and transport services, apparel manufacturing, catering units etc. in non-farm sector.
- In a sub-scheme, Start-up Village Entrepreneurship Programme (SVEP), 108 Detailed Project Reports have been approved for supporting 1.76 lakh small businesses.

Rural Entrepreneurship

a. **Rural Self Employment Training Institutes (RSETIs):** It's a tripartite programme engaging sponsor Banks, Ministry of Rural Development and State Government with mandated financial and infrastructure support for opening the RSETIs.

b. **ASPIREScheme:**'A Scheme for Promotion of Innovation, Rural Industries and Entrepreneurship', launched in 2015 with a central corpus of Rs. 200 crore, is driving rural transformation by supporting small enterprises in the agriculture industry.
   o The scheme aims to set up a network of technology and incubation centres to expedite the wave of entrepreneurship in rural India.

c. **Scheme of Fund for Regeneration of Traditional Industries (SFURTI):** GoI launched this scheme to support and organise rural artisans into clusters to make them competitive and increase their income.

d. **Deendayal Upadhyaya-Grameen Kaushlya Yojana (DDU-GKY) :** It is developing 'job-ready' rural youth to provide services in upcoming rural enterprises. Currently, the programme is under implementation in 27 states and three Union Territories.

Basic Services

a. **Shyama Prasad Mukherji Rurban Mission (SPMRM):** The mission is being implemented with the vision **'Aatma Gaon ki, Suvidha Shaher Ki' (soul of the village, facilities of the city)**, and to realise it identified clusters of villages are being developed in holistic, integrated and time-bound manner.
   o Under the mission, clusters are being provided with urban facilities such as road, piped water supply, waste management, smart classrooms, agro-processing value addition etc.

b. **Pradhan Mantri Gram Sadak Yojana (PMGSY):** According to a World Bank Report (2019), PMGSY has triggered a robust increase in employment rate in rural areas connected by roads. Similarly, a positive impact was seen on schooling, better remuneration for agricultural produce, growth of non-farm sector, easy access to medical facilities and saving of time for other productive works.

c. **Pradhan Mantri Awas Yojana-Gramin (PMAY-G)**: It assures **'Housing for All' by 2022**. Under the scheme, eligible beneficiaries are being provided financial assistance (Rs. 1.20 lakh in plains and Rs. 1.30 lakh in hilly states) with a target of construction of 2.95 crore pucca houses in rural areas.

d. **National Rural Health Mission:** It is a submission of National Health Mission. Mobile Medical Units and Telemedicine facilities are also being used to improve healthcare access in rural areas. Such programmes in addition to health services, also have employment generation potential specific to rural areas.

e. **Samagra Shiksha:** Under the scheme, support is provided for a wide range of activities and interventions such as school infrastructure, school grant to develop conductive learning environment, creation of sports facilities, ICT, digital initiatives, leadership development programme etc.

f. **National Education Policy(2020):** Recently launched National Education Policy (2020) has vision and provisions for increasing accessibility of quality education in rural areas. Emphasis on teaching and learning in regional languages and placing sports in main curriculum will go a long way in transforming education in rural and remote areas.

g. **Jal Jeevan Mission:** Its goal of providing clean tap water to every household in the country by2024.

Conclusion

- To achieve sustained and sustainable rural transformation, Government is endeavouring to make socio-economic development in rural areas inclusive and holistic.
- Various schemes and programmes are designed to break the vicious cycle of poverty in rural India.
- Use of IT and digital technologies have made the transformation process fast, transparent and a two-way module to address grievances.
- In addition, the rural citizens are now empowered through public information systems about their various rights and entitlements. Rural transformation is ensuring rural India a life with dignity, respect and 'ease of living.'

Women-preneurs Driving Transformation
Introduction
- Women labour force participation is a driver of development, and their participation rates point to the potential for a country to grow more rapidly. It is closely linked with financial independence, confidence and ability to drive others, as well as to make an individual mark in the social environment.
- Entrepreneurship remains critical to harness the economic potential of women. Stimulating women entrepreneurship can also go a long way in bridging gender gaps and empowering women.
- A society in which women are unable to realise their full potential loses out on the significant potential for innovation, economic growth, and job creation.

Background
- *Currently, India stands near the bottom of the ladder in encompassing the women participation in the labourforce asper 2019 estimates considering the huge population. As against 43 crores of working age population, approx. 33.24crore women are untapped from engagement in workforce.*
- The global commitment for realising the sustainable development goals (SDGs) by 2030 focuses on poverty, tackling inequality and injustice, and has set distinct targets for ensuring economic empowerment and the well-being of women.
- In the coming decade, India will have the largest working-age population in the world with over 1 billion people.
- ➤ However, the private and government sector alone will not be sufficient in generating the required jobs.
- Hence, entrepreneurship opportunities for women have a vital role in boosting the economy through job creation but also deliver transformational social and personal outcomes for women.
- ➤ **McKinsey's Gender Parity Report 2018** noted that if India is able to address gender inequality - we could add about $770 Billion to the GDP which will be equivalent to 18 percent more than the usual.

Participation of Women in Indian Economy
- *India ranks 120 among 131 countries in female labour force participation rates* and rates of gender-based violence remain unsatisfactorily high. The societal obligations for the women are a major reason for the setback in the participation rate in the labour force.
- The participation has been incessantly falling from 31.79 percent in 2005 to 20.79 percent in 2019 whereas the world average for women participation rate in the labour market stood at a whopping 48.5 percent in 2018.
- Rural jobs have been decreasing and rural women have not been able to make the transition to working in urban areas.
- Entrepreneurship, self-employment and small and micro business significantly contribute to such job creations for aspiring women in the job market.

Challenges Faced by Aspiring Women Entrepreneurs
a.**Lack of access to Credit:** Requirement of adequate collateral and the Gendered differences in asset ownership along with the lack of sufficient savings, often disqualify women from receiving formal credit.

b.**Constraints due to Domestic Responsibilities:** With the management of the domestic realm falling on women, the time and energy required to run a functioning enterprise is not always feasible, making women sceptical and hesitant to enter the space.

c.**Gender Bias** : Effect of Gender Bias is starkest in the investment space for women owned enterprises. Women entrepreneurs are often hesitant to approach investors.

d.**Information Asymmetry:** It amplifies the lack of access to different resources and support available to women entrepreneurs.

e. Lack of Role Models: Visibility of successful role models in the public domain helps combat stereotypes and trigger change, and this lacuna can be felt in the Indian ecosystem with the inhibited development of an "entrepreneurial" spirit among young women.

Initiatives Taken

a. **Atal Innovation Mission (AIM):** It is a program initiated by NITI Aayog in the direction of supporting budding and existing entrepreneurs in their innovation expeditions.

- o It is creating vibrant incubators through programs like **Atal Incubation Centres (AICs)** in Tier 1 cities and **Atal Community Innovation Centres (ACIC)** in Tier 2/3 cities along with aspirational districts across all States and UTs in India.
- o AIM also runs a challenge-based program called *Atal New India Challenge (ANIC)*. ANIC is an initiative aimed at supporting innovators to create products/solutions based on advanced technologies in areas of national importance and social relevance through a grant-based mechanism.
- o The predetermined vision of ANIC is to help deep technology driven products find markets and buyers from the context of commercialisation.

Conclusion and Way forward

- The principal factor in developing entrepreneurship among women is not in terms of infrastructure or financial assistance or identifying an enterprise but it is a question of clearing the ground for their movement into entrepreneurship.
- Though there are several factors contributing to the emergence of women as entrepreneurs, the sustained and coordinated effort from all dimensions would pave the way for the women moving into entrepreneurial activity thus contributing to the social and economic development of the members of the family and thereby gaining equality and equal importance for themselves.

Role of Micro Finance and Micro Credit in transforming rural India

Introduction

- *Microfinance* refers to the provision of financial services like loans, insurance, savings etc. to low-income groups like women, farmers, pensioners, etc. who are often left uncovered by the formal financial sector.
- *Microcredit*, a subset of microfinance, refers to small credit facilities extended for short term and preferably at easier interest rates to the needy people whose earning capacity is limited by the fact that they are unable to offer collateral, are often unemployed or have unsound credit history.
  - o These loans enable people, especially rural women to earn a livelihood, start their business and ultimately achieve financial independence thus reducing their dependence on loan sharks.
- Thus, microfinance plays a significant role in a country's economy by providing poor people the ability to fulfil their basic needs, manage their finances effectively and take advantage of economic opportunities while managing potential risks.

Background of Microfinance in India

- The term 'Microfinancing' in the modern times has its roots in the 1970s when the Nobel Laureate Muhammad Yunus founded the *Grameen Bank of Bangladesh*.
- In India there are 2 distinct approaches taken for extending microfinance
- *a.* *The bank led approach called Self Help Group - Bank Linkage Programme (SHG-BLP)*
- b. *Micro Finance Institution led approach*.

Self Help Groups (SHGs)

- The programme of linking Self Help Groups (SHGs) to banks was started on a pilot basis by NABARD in 1991-92 and since then it is being propagated, promoted and financed by the latter.
  - o The Self Help Group movement is a revolutionary initiative which connects group members, many of whom never had a bank account earlier, to formal financial services in a sustainable and scalable manner.
  - o Members are generally from economically homogeneous groups and come together through the process of self-selection.
  - o SHGs have well-defined rules and bye-laws, hold regular meetings, maintain records and keep savings and credit discipline.

- o They are self-managed institutions characterised by participatory and collective decision making.
- The programme has reduced dependence of the rural poor on informal service providers such as moneylenders, pawnbrokers and so on, who charge usurious interest rates including some physical collateral and often resort to naming and shaming on delay of payments.

Steps Taken by Government

- Since 1999, Government of India (GoI) has been supporting promotion of the SHGs by way of special budgetary provision through *'Swarnajayanti Gram Swarozgar Yojana' (SGSY)* which was implemented with group mode of financing for covering all BPL families.
- Subsequently, in 2011, it was restructured as **National Rural Livelihood Mission (NRLM)** to work towards achieving universal financial inclusion of all the poor households which are organised into SHGs.
- **NRLM** was renamed as **DAY-NRLM (Deendayal Antyodaya Yojana - National Rural Livelihood Mission)** w.e.f. 29 March 2016.
- Notable among the State Government initiatives were
  - o Andhra Pradesh's Podupu Lakshmi and Indira Kranthi Patham programme.
  - o Jeevika Project of Bihar.
  - o Mahalir Thittam in Tamil Nadu.
  - o Kudumbashree in Kerala.
  - o TRIPTI/ Mission Shakti projects in Odisha.

Micro Finance Institutions

- They emerged in India in the late 1980s, in response to the gap in availability of banking service for the unserved and underserved rural population.
- In the initial years of setting up of MFIs in their NGO-MFI form, NABARD assisted them with grant support and *Revolving Fund Assistance (RFA)*.
- Later, NABARD helped a number of MFIs with quasi-equity and subordinated debt instruments from Micro Finance Development and Equity Fund (MFDEF).
- The microfinance customers, however, are facing challenges in terms of adverse impact on their businesses, loss of jobs, reverse migration to villages and lack of new opportunities due to COVIDovid-19 which in turn has impacted the microcredit lending business and recoveries as well.

Initiatives of NABARD for the Microfinance Sector

a. **Scheme for promotion of Women SHGs:** It is a targeted scheme implemented by NABARD in association with the Govt. of India, for promotion and financing of Women Self Help Groups in 150 identified backward and Left Wing Extremism (LWE) affected districts of the country.

b. **Joint Liability Group (JLG):** Under its JLG promotion support initiative, NABARD extends grant support for formation and nurturing of JLGs to Banks and other JLG promoting institutions. For strengthening JLG financing, NABARD also extends :

1. Financial support for awareness creation and capacity building to all stakeholders of the programme.
2. Refinance support to those banks which finance JLGs.

c. **NABFINS :** NABARD, while promoting NABFINS, its subsidiary exclusively for microcredit, had envisaged that the latter shall evolve into a Model Microfinance Institution to set standards of governance among the MFIs, operate with exemplary levels of transparency and operate at reasonable/moderate rates of interest.

d. **Micro Entrepreneurship Development Programme (MEDP):** In order to stimulate micro entrepreneurship movement in rural India, **MEDP** was launched in 2006. It aimed to provide grant assistance for skill upgradation through training in both farm and non-farm activities.

e. **Livelihood and Entrepreneurship Development Programme (LEDP):** It was launched In 2015 which envisaged conduct of livelihood promotion in both Farm and Off-Farm activities under project mode in clusters around contiguous villages, with a provision for intensive training for skill building, refresher training, backward-forward linkages, handholding and escort support for credit linkage.

- o The focus was also on value chain support and promotion and working closely to offer end-to-end solutions to the SHG members.

f. **E-Shakti:** It is a pilot project for digitisation of SHGs was launched by NABARD in the year 2015 in two districts Ramgarh (Jharkhand) and Dhule (Maharashtra). It aims at digitisation of data of all SHGs for enhancing the ease of doing business.

g. **Centre for Research on Financial Inclusion and microfinance (CRFIM):** It was set up in BIRD in 2008 and takes up research activities in the field of Microfinance and financial inclusion with an aim to facilitate policy initiatives and continuous improvement in design and delivery system in the said space.

h. **Initiatives of NABARD during Covid-19:** During the COVID-19 pandemic, NABARD has taken up some special initiatives to support SHG members both in terms of health advisory and promotion of livelihood support activities.

Challenges

- Low Credit Absorption Capacity of SHGs.
- Due to the lockdown and restrictions on public gatherings, the capacity building programmes for SHGs were adversely impacted.
- **Regional Imbalances**: While Southern States having 36 percent share in total bank linkages while Northern and NE regions lagging behind with only 5.4 percent and 5.6 percent bank linkages respectively.

Conclusion

- There Is a need for increasing the average loan per group In SHG-BLP so as to enable them to graduate and become micro entrepreneurs deploying more capital, using better technology. Special emphasis through focussed capacity building should be given to underserved states/districts in Central, Eastern and North-Eastern Regions, as underlined in the latest priority sector guidelines by RBI.
- Looking at the big picture, Financial Literacy through the use of JAM trinity (i.e. Jan Dhan, Aadhar and Mobile) can be a game changer in microfinance penetration. In this light, adoption of E-Shakti portal by banks by way of linkage with their CBS and partnering with Fintech agencies, has the potential of manifold increasing of credit outreach and easy availability of digital banking to SHGs.
- Various institutions like NABARD, SIDBI, MUDRA etc. work closely and align initiatives to the DAY-NRLM. Only with collaborative efforts by all the players, the unserved and under served in rural and remote regions can be efficiently and effectively served.

Ayushman Bharat-Transforming Health

Introduction

- Development of the health sector from primary up to the tertiary sector in an economy triggers a series of socio-economic developmental milestones –
  o Reduction of disease burden.
  o Improvement in health outcomes.
  o Decrease in Out-of-Pocket health Expenditure.
  o Declining Poverty Rates.
- Good health and adequate nutrition are the best indicators of the overall well-being of population and human resources development, which also form an important component of human capability.

Background

- Despite the passage of 74 years of independence, Rural India lags behind urban India in several indicators:
  a. Infant Mortality Rate.

b. Percentage of Anaemic Population.
c. Various Health Indicators
d. Access to Basic Services.

- The 71st round of National Sample Survey Organisation reveals that staggering 85.9 percent of the rural Indian households do not have access to any health care insurance or assurance. Studies reveal that between 2004 and 2014, the average medical expenditure per hospitalisation forurban and rural patients has risen steeply by 176percent and 160 percent respectively.
- Thus, the lack of financial health protection, especially for the poor and vulnerable sections of rural India, creates a burden of health expenditure for them.

Steps Taken by

- **Ayushman Bharat- PM-Jan Aarogya Yojana**: The Central government with primary objective of, "Sabka Saath Sabka Vikas", launched **Ayushman Bharat** in 2018 as recommended by the **National Health Policy 2017,** to achieve the vision of universal health coverage.
- This initiative has been designed to meet **Sustainable Development Goals (SDGs)** and its underlining commitment, is to "leave no one behind."
- Ayushman Bharat adopts a continuum of care approach, comprising of **Health and Wellness Centres**. These centres will provide Comprehensive Primary Health Care (CPHC), covering both maternal and child health services and non-communicable diseases, including free essential drugs and diagnostic services.
- **PM-Jan Aarogya Yojana**: PM-JAY is the largest health assurance scheme in the world which aims at providing a health cover of Rs.5 lakh per family per year for secondary and tertiary care hospitalisation to over 10.74 crore poor and vulnerable families (approximately so crore beneficiaries) that form the bottom 40% of Indian population.
- This scheme aims to undertake path breaking interventions to holistically address the healthcare system (covering prevention, promotion and ambulatory care) at the primary, secondary and tertiary level.

Key Benefits

a. It provides 5 lakh coverage on a family floater basis at no cost to the insured citizen.
b. There is no discrimination on the basis of gender, caste, creed or physical ability of the person which aims to make this scheme totally inclusive.
c. Pre-existing diseases are covered from the day of enrolment.
d. As a secondary and tertiary care cover, this programme covers all aspects in patient treatment including pre/post hospitalisation, medical consultation, diagnostics, medicine and supplies, accommodation etc.
e. Coverage for COVID-19 treatments is also now part of the Ayushman Bharat scheme.
f. There is also a possibility of choice between the old and the cutting edge method.
g. It allows the beneficiaries to avail free services from either public or an empanelled private hospital.

Challenges

1. Governance and Stewardship of the Program is an issue.
2. Portability of Benefits Across States : Due to the uneven distribution of health facilities across states, this feature of the scheme can significantly complicate the future development of health-care infrastructure and health systems.
3. Engaging with the private sector In near-complete absence of regulation and "laissez-faire" health-care market.
4. Lower Amount allocation.

Conclusion

- To implement Ayushman Bharat, the responsibilities of the government further expand to include putting in place complex regulatory framework for the private sector, establishing ombudsman to protect the rights of the people vis-a-vis the health insurance providers and the preparedness of the system to deal with challenges as they arise.
- Thus, whilst these weaknesses pose a threat to the ability of proposed reforms to meet their ambitious objectives, by providing the impetus for systemic reform, AB-PMJAY presents the nation with a chance to tackle long-term and embedded shortcomings in governance, quality control, and stewardship.
- To deduce, AB-PMJAY has a very critical role to play in the social transformation of the rural masses especially, during COVID-19 times.

- All efforts must be stepped up to ensure that all essential and non-essential hospitalisation care is provided both through public and private empanelled hospitals under AB-PMJAY in convergence with primary care provision through the public health infrastructure.

Smart Villages: Towards Information Superhighway

Introduction

- Connectivity is a pre-requisite for growth in the digital age. Availability of broadband connectivity is expected to bring new opportunities to India's villages as they will be better connected with the country's digital infrastructure.
  - o The government believes the proliferation of broadband in rural areas will bridge the rural-urban divide of digital access and accelerate the achievement of Digital India.
  - o The penetration and proliferation of broadband is expected to increase direct and indirect employment and income generation.
- A host of 'smart villages' emerging in the country showing the way for a technologically empowered and sustainable future.

Background

- Recently, Gujarat became the first state in India having truly smart villages using LiFi based optical wireless communication system.
  - o *LiFi* is a mobile wireless technology that uses light rather than radio frequencies to transmit data. The technology is considered as the next generation of wireless Internet which has great potential for seamless integration into the SG core.
- *Mori village in East Godavari district of Andhra Pradesh presents another example of digital transformation. The village is actually known as the Super Smart Village due to its excellent use of smart connectivity.*

Connectivity at the Grassroots

a. **Bharat Net :** The cabinet approved the extension of Bharat-Net to inhabited villages in rest of states and UTs as well. To ensure timely implementation and wider coverage of the plan, the government has also revised its strategy to implement the program. The states coming under this programme are Rajasthan, Himachal Pradesh, Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Kerala, Karnataka, West Bengal, Assam, Meghalaya, Manipur, Mizoram, Tripura, Nagaland and Arunachal Pradesh.
- **Broadband connectivity:** The proliferation of broadband in rural areas will bridge the rural-urban divide of digital access and accelerate the achievement of Digital India. The penetration and proliferation of broadband is also expected to increase direct and indirect employment and income generation.
- **Sansad Adarsh Gram Yojana (SAGY) :** On Jayprakash Narayan's birth anniversary in 2014, PM has unveiled a blueprint for **Sansad Adarsh Gram Yojana (SAGY)** which originally had a provision for the members of parliament from both houses to identify, adopt and develop their villages from their constituency as model villages.

Initiatives by State Governments

- The Uttar Pradesh government has prepared an action plan to convert all rural areas into 'smart villages' with an objective to ensure that the benefits of the welfare schemes are provided to the last person of the society.
- **State of Maharashtra Agribusiness and Rural Transformation (SMART):** Maharashtra government is focusing on development of smart villages and has launched the project covering 10,000 villages. The scheme is being assisted by the World Bank.
- **Common Service Centers (CSCs) :** These centers have been set up by the Ministry of Electronics & IT under the Companies Act, 1956, aimed at providing a centralised collaborative framework for delivery of services to citizens.
  - o Recently, a remote village called Khodaganj in Nalanda district of Bihar was in news as an excellent example of how CSCs can be used to ensure well-being of the people apart from providing online services.
- **FAO Recognition :** The Food and Agriculture Organisation of the United Nations (FAO) runs its '1000 Digital Village Initiative' under which many countries including India are being covered.

o FAO's endorsement of India's progress is important as the organisation's efforts and assessments are not just focused on planning and implementation of digitisation plans but it attaches equal importance of their feasibility, inclusiveness and sustainability.

Conclusion

- Providing universal broadband connectivity is not an easy goal in a country which is so large and so diverse; however, Government has appropriate plans, missions, initiatives and programs in place to make that happen.
- We are moving towards that direction at a good pace and inspiring success stories are emerging from various parts of the country already. After the smart cities, the smart villages are going to be a big step forward in our quest to make India digital.

Towards Making India a Fit Nation

Introduction

- Fitness is a cumulative outcome of appropriate nutrition, good health as well as physical, social, psychological and spiritual wellbeing. A nation can attain fitness only when all Its' people are fitand fine and follow healthy lifestyle practices.
- *As per WHO,* ' Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity'.
- Although adequate quantity/quality of food is one of the human rights, as per **Global Hunger Index Report (2020),** nearly 811 million in the world are going hungry while more than 2 billion suffer from malnutrition; and many succumb to hunger.

Different Types of Hunger

- *Acute hunger-* the most extreme form of hunger, arise frequently during disasters like draughts, famines, El Nino and wars; and adversely affects people already suffering from chronic hunger.
- *Chronic hunger/long-term under nourishment*is globally most widespread and affects the people not having sufficient resources for good nutrition, clean water or health care.
- *Hidden hunger*, on the other hand, is the deficiency of several important micronutrients (such as iron, iodine, zinc or vitamin A) which in the long run causes several serious diseases/disorders and hampers overall development of the nation.

Nutrition

- Appropriate Nutrition is critical for proper growth, development and good health. It helps in building stronger immune system, better cognition, improving infant, child and maternal health, safer pregnancy/childbirth, lowering the risk of non-communicable diseases (such as diabetes and cardiovascular disease) and bestowing longevity.
- Children nutrition deserves special attention because nutritional deficiencies place them at high risk of physical/mental impairments and mortality.
- Hence, there is a dire need to develop and adopt innovative strategies for preventing/treating multiple forms of malnutrition.
- *National Institute of Nutrition-ICMR* recommends sourcing of macro and micro nutrients from all the food groups every day to achieve a balanced diet that would meet energy requirements (~2000kcal) of an Indian.

National Nutrition Month

a. **POSHAN Abhiyaan/National Nutrition Mission-the overarching scheme :** The scheme for holistic nourishment, Government's flagship programme for improving nutritional outcomes for children, pregnant women and lactating mothers.
b. **Children's Nutrition Park :** It is a unique move to provide the children high quality entertainment coupled with vital knowledge on nutrition and healthy eating habits; one of its main feature being the 'Nutri-Train' (covering 600 meters long track).
c. **National Health Policy**: National Health Policy envisages to attain the highest possible level of health and wellbeing for all (at all ages), through preventive/ promotive health care policies and universal access to quality health care services without any financial hardships.

d. **Integrative health emphasises on multimodal interventions (>=2) in a coordinated manner**: It may include conventional medicine, lifestyle changes, physical rehabilitation, psychotherapy and complementary health approaches in various combinations like Ayurveda, Homeopathic remedies, Naturopathy, Unani Medicine, Sidha, Yoga

Relation Between Health, Nutrition and Education

- To achieve optimal learning, **National education Policy 2020** recognises the need for proper nourishment and good health; therefore, it has proposed various health-related interventions.
  - o Nutrition, health, hygiene/sanitation physical education, sports, fitness and well-being are some of the key subjects and skills needed to be learnt/acquired by all through proper teaching-learning and training.
  - o Regular health check-ups, universal immunisation and growth monitoring/health monitoring will be carried out at the schools.
  - o For addressing mental/emotional health issues of the children, in addition to the social workers/counsellors, community shall also be involved.
  - o In addition to mid-day meals, it proposes the provision of healthy breakfast for school children.

Benefits of Physical Activity

- It lowers the risk of all-cause mortality including the cardiovascular mortality as well as lowers the incidence of hypertension, type-2 diabetes and site-specific cancers.
- It reduces adiposity and has a profound positive impact on mental health (by minimising anxiety and depression), cognition and sleep.

Benefits of Regular weight monitoring

- It can help to gauge weight gain/weight loss as well as in assessing the extent of overweight/obesity or chronic energy deficiency.
- It also helps in computing BMI-a better marker of fitness.

Steps Taken by Government
Fit India Movement

- In 2019, on **National Sports Day (birth anniversary of Major Dhyan Chand),** PM launched this.
- It is an effort to bring about small lifestyle changes which can help to prevent many of the lifestyle diseases as well as improve professional efficiency through mental and physical fitness.
- Under this people's movement, numerous initiatives/ activities and focused campaigns have been undertaken to promote fitness in an easy/fun-filled way along with an emphasis on indigenous/rural/tribal games or sports.
  - o Efforts are also being made to ensure that the concept of fitness reaches every school/college/university/panchayat/village; and that a platform is created for our citizens to share their experiences.
  - o It motivates people to inculcate at least 30-60 minutes of physical activity in their daily routine.
  - o **Fit India Mobile App** has been launched which indicates the fitness score by tracking the steps.
Khelo India
- A national programme for developing sports has been introduced to revive the sports culture at grass-roots level and establish India as a great sporting nation.
- In this direction, PM has given a call to all India's Olympians to visit 75 schools each by the Independence Day in 2023, enthuse sportsmanship in school children and spread awareness regarding adverse effects of malnutrition.
Fit India Freedom Run 2.0
- To commemorate the 75th Independence Day-Azadi Ka Amrit Mahotsav, a nationwide **Fit India Freedom Run 2.0 (Physical/Virtual Run)** has been launched for promoting fitness as well as to help people get rid of their excess weight/obesity, laziness, stress, anxiety and many other related diseases/disorders.
- It can be 'run anywhere, at any time' on a route of one's choice at his/her suitable time and pace.
The National Youth Policy
- It reiterates nation's commitment for all-round development of the India youth so that they can realise their full potential and contribute productively to the nation• building process.

- *The Target Olympic Podium Scheme* provides assistance to the country's top. The Sports Authority of India supports and nurtures talent in youth; and provides them requisite infrastructure, equipment, coaching facilities and competition exposure for their overall development.

Conclusion

- Fit and healthy individuals form healthy society and a strong nation. Malnutrition-in any or all forms, is unacceptable. Strategies for promoting good health should follow a holistic approach where fitness of body, mind and spirit is considered as an integrated concept.
- When people are fit, there will be much lesser disease/disability burden and thus, far lesser expenditure on treatment and rehabilitation; this in turn will enhance individuals', families' and the nation's growth and development.
- To maintain overall fitness and good health, lifestyle modifications, improved dietary patterns, appropriate physical activity, cessation of smoking/ tobacco consumption, restricting alcohol intake (if any) along with appropriate management of stress are mandatory.

Entrepreneurship: A Catalyst for Social Change

Introduction

- Entrepreneurship is identified as a key instrument in the process of industrialisation in particular and economic development in general. It acts as a driving force for new innovations and catalyst for social change.
- Rural areas provide abundant raw material from agricultural, horticultural and animal produce to start new enterprises in the field of food processing, dairy farming, sericulture, bee-keeping, mushroom cultivation, fisheries and other allied activities.

Background

- India has witnessed a tremendous growth in the field of agriculture, manufacturing, transport, communication, real estate, information technology and service sector during the planned era of economic development.
  - o The rapid growth in real per capita income has not percolated evenly to different sections of the society living in different regions of the country.
- The sector wise trends in the growth of Real Gross Value Added (RGVA) at factor cost reveal that during the last seven decades, primary sector witnessed a meagre growth rate (3.99 %)as compared to secondary (6.51%) and tertiary(6.36%) sectors.
- The unequal growth of agriculture and industrial sector, has led to wide inter-sectoral, inter-regional and inter-personal variations in the distribution of income, wealth, employment, consumption and quality of life, leading to rural-urban drift.

Consequences of Economic Inequality

Economic inequalities compromise the pace of poverty eradication and create in equalities among different social groups particularly the marginalised sections of society in terms of limited and unequal access to resources, education, skill, training, healthcare and employment.

Factors

1. **Entrepreneurship:** Entrepreneurship is identified as a key instrument in the process of industrialisation in particular and economic development in general. It acts as a driving force for new innovations and catalyst for social change through a meliorating the economic lot of vast majority of people living in poverty in rural and backward areas.
   a. Rural areas provide abundant raw material from agricultural, horticultural and animal produce to start new enterprises in the field of food processing, dairy farming, sericulture, bee-keeping, mushroom cultivation, fisheries and other allied activities.
   b. The rural enterprises not only provide job opportunities to the unemployed and under employed youth, but also help in making the full utilisation of agricultural produce.
2. **Infrastructure :** Infrastructure in the form of transport, power and communication is the basic requirement for the growth of entrepreneurial activities in a particular area. In order to improve rural infrastructure by connecting rural habitations with main roads, *Pradhan Mantri Gram SadakYojana (PMGSY)* was launched by Government of India on December 25th, 2000.

o *Power* is also one of the basic requirements for promoting entrepreneurship in an area. In order to strengthen and enhance power supply in rural areas, <u>*Deen Dayal Upadhyaya Gram JyotiYojana*</u> was launched on July 25th, 2015 with an estimated outlay of Rs. 43,033 crore.

o In the bid to bridge the rural-urban digital divide, the Government is extending the out reach of telecom network to the far flung and remote hinterland through the <u>***Bharat Net project***</u>

3. <u>**Demographic Dividend**</u> : The young generation of the country, particularly the rural youth can play an important role in bridging the rural-urban economic divide through the establishment of rural enterprises.

Initiatives to Promote Entrepreneurship

a. In a bid to improve employability of workers and promote entrepreneurial culture amongst youth, *National Skill Development Mission* was launched on July15th, 2015 on the occasion of *World Youth Skills Day*. This mission aims at consolidating and coordinating the skilling efforts at the national level.

b. With the vision to transform rural poor youth into an economically independent and globally relevant human resource, a skill training and placement program of Government of India named as ***Deen Dayal Upadhyaya Grameen KaushalyaYojana (DDU-GKY)*** was launched on September 25th, 2014.

- It occupies a unique position among the skill training programmes due to its focus on the rural poor youth in the age group 15-35years, who due to their poverty driven constraints could not get formal education and marketable skills.

- Under this programme it is mandatory to give minimum 160 hours of training in soft skills, functional English and computer literacy etc.

c. In order to preserve and boost the rich heritage of traditional arts and crafts of minorities, a centrally sponsored project for Upgrading Skills and Training in Traditional Arts/crafts for Development, popularly known as *Project USTTA Dwas launched on May 14th, 2015 by the Ministry of Minority Affairs*.

- It aims at capacity building and updating the traditional skills of master trainers/artisans belonging to minority communities and BPL families in the traditional art/craft fields of their choice.

d. With the twin objective of achieving the goal of Swachh Bharat Mission and creating the spirit of entrepreneurship among 'Safai Karamcharis'for their better livelihood, a scheme named as *Swachhta Udyami Yojana (SUY) was launched on 2nd October, 2014.*

o Under the Scheme, entrepreneurs among 'Safai Karmacharis' and identified manual scavengers can avail loan upto Rs. 25 lakh at concessional rate of interest of 4 percent per annum for the construction, maintenance and operation of community toilets on Public Private Partnership{PPP} mode.

e. In a bid to boost entrepreneurship among Scheduled Castes, <u>***Venture Capital Fund for Scheduled Castes***</u>, with the initial capital of Rs. 200 crore was launched by Ministry of Social Justice and Empowerment.

f. To promote digital awareness and education in rural areas, *Pradhan Mantri Gramin Digital Shiksha Abhiyan (PMGDISHA)* was launched on 7th October, 2017.

- Under this abhiyan, rural people between the age group of 14 to 60 years are being trained without any fees to operate computers, tablets, smart phones, etc and access government e-services, undertake digital payment, compose e-mails through the use of internet.

g. ***Samagra Shiksha Scheme was launched by GoI in2018***. It aims at enhancing the learning outcomes at the school level with the use of technology to empower both teacher and taught.

- The scheme aims at providing equal and adequate opportunities for rural youth to participate in technology based educational and training programs.

- It also focuses on promoting vocational education to make it more job-oriented.

h. In its endeavour to promote the culture of innovation and entrepreneurship by creating a scientific temper, ***Atal Innovation Mission (AIM) has been set up at NITI Aayog***.

- It aims to develop new programmes and policies for fostering innovation in different sectors, provide platforms and collaboration opportunities for different stakeholders.

Conclusion and Way Forward

- The community development infrastructure in education, skill training, healthcare, sanitation, labour welfare and other public services. Public investment in social infrastructure is essential for providing access to social services for the masses, especially the marginal and vulnerable sections ofthe society.

- To attract unemployed educated youth into agribusiness and agri-preneurship, impetus on creating scientific temper and fostering innovative spirit among the rural youth is the need of the hour.

- Focus on public investment in human capital is required to be enhanced to bring social changes in the desired direction. In order to reap the advantages of demographic dividend, it is imperative to improve educational standards, skilling the youth, empowering women, providing affordable healthcare to all and enhance job opportunities in a big way

Sustainable Solid and Liquid waste Management

Introduction

- Fifty five percent of the global population currently lives in urban areas and this is expected to increase to sixty eight percent by 2050. Higher urban population has resulted in an unprecedented increase in waste generation in recent years.
- India, too, has witnessed an unparalleled increase in the pace of urbanisation in the recent decades due to large scale rural-urban   migration. Around 400 million people living in India's urban areas generate 62 million tonnes of municipal solid waste annually.
  - o The existing infrastructure is inadequate to provide civic amenities to all urban residents, which has consequently resulted in uneven urban development and also impeded the process of efficient collection and disposal of waste in cities.

Improper discharge of waste

- **The World Health Organisation (WHO)** has observed that 22 types of diseases are associated with improper management of municipal solid waste. This leads to formation of leachate in the ground and contaminates the groundwater, which subsequently accentuates the water crisis in the country.
- Untreated sewage results in agricultural contamination, environmental degradation and a plethora of diseases such as Cholera, Typhoid, Hepatitis A, Dysentery, Schistcsorruasis, among others.
- Apart from this, the waste sector contributed to four percent of India's total GHG emission in year 2015.
- Improper management of waste also disproportionately affects poorer communities living in slums and areas nearer to landfills and dumpsites.

Government Initiatives

1. **The Swachh Bharat Mission (SBM)**
- It was launched in 2014 to eliminate open defecation, improve cleanliness, eradicate manual scavenging, establish modern and scientific management of municipal solid waste and hence achieve universal sanitation coverage in the country.
- The initiative has two thrust areas-
a. SBM (Urban)
b. SBM (Rural).
- A number of workshop have been conducted for *Urban Local bodies (ULBs)* by National Institute of Urban Affairs as part of the capacity building programme under SBM.
- Sessions have been conducted on **Swachh Survekshan, Open Defecation Free (ODF) and Faecal Sludge Management (ODF++) protocols**; star Rating of Garbage Free Cities and mandatory requirements for accessing SBM funds from the central and state government exchequers.

2. Solid Waste Management Rules in 2016

- The GoI revamped the Municipal Solid Wastes (Management and Handling) Rules 2000 and notified the new Solid Waste Management Rules in 2016.
- The new rules stipulate that all ULBs are responsible for proper collection, storage, transportation, processing and disposal of municipal waste and deciding a time-frame for setting up of solid waste management facilities.

3. Swachh Survekshan

- It is an annual survey of cleanliness conducted by the Ministry of Housing and Urban Affairs to foster a spirit of healthy competition amongst towns and cities and to improve service delivery to their citizens.
- The 1st survey was conducted in 2016 and covered 73 cities.
- Indore was adjudged the cleanest city in India, followed by Surat and Navi Mumbai.

4. Swachhata Hi Sewacampaign

- The campaign is organised at regular intervals in the country to spread awareness about efficient management of waste among masses.
- **Swachhta Pakhwadas** are also organised in different parts of India to ensure mass participation of citizens in cleanliness activities and to transform Swachh Bharat Mission into a citizen's movement.
- In addition to these, government launched the **Waste Segregation campaign in 2017** to spread awareness about the importance of waste segregation at source.

5. 'Compost Banao, Compost Apnao' scheme

- Ministry of Urban Development launched the scheme to convert biodegradable waste into compost, which can be used as fertiliser for agricultural production.
- Under this scheme, Resident Welfare Associations receive a government grant for purchase of a compost making machine.

6. Waste-to-Energy (WTE) technologies

- Ministry of New and Renewable Energy is promoting **Waste-to-Energy (WTE) technologies** to generate energy from agricultural, industrial and urban wastes of renewable nature such as municipal solid wastes, vegetable market wastes, slaughterhouse waste, agricultural residues and industrial/STP wastes andeffluents.
- To facilitate geographical mapping of waste availability and its energy generation potential across India, GIS Based Waste Mapping Tool has also been developed under the MNRE-GEF-UNIDO project.

7. The Gobardhan scheme

- It was launched under **Swachh Bharat Mission (Rural)** to convert biodegradable waste, such as cattle waste, kitchen leftovers, crop residue and market waste into biogas, to be used for domestic or industrial purposes in rural areas.

8. Jal Jeevan Mission (Urban)

- GoI launched the **Jal Jeevan Mission (Urban)** in Budget 2021 to ensure universal water supply in all 4,378 Urban Local Bodies and Liquid Waste management in 500 AMRUT cities.
- The Mission will be implemented over 5 years, with an outlay of Rs.2,87,000crores.
- Also, the **Swachh Bharat Mission Urban 2.0** was announced with a total financial allocation of Rs.1,41,678crores over a period of 5 years from 2021-2026.

Steps Taken by State Governments

A number of best practices in liquid waste management are also being followed in certain States.

- *The State of Maharashtra* introduced a policy of reusing treated waste water for cooling thermal power plants, serving industrial estates and servicing other non-potable purposes in 2017.
- _Gujarat_ has also launched its waste water treatment and reuse policy in 2018, with the aim of increasing reuse of its treated waste water and reducing dependence on freshwater resources.
- In addition to this, Faecal Sludge Treatment Plants (FSTPs) are also being run in the country, like in Devanahalii, *Karnataka*, through funding from Bill and Melinda Gates Foundation and Consortium for Decentralised Wastewater Treatment Systems (DEWATS) Dissemination (COD) Society.

Steps Taken by Individual and non-governmental organisation

- A number of initiatives have also been taken up by individuals and non-government organisations in India to contribute to efficient waste management.
- *Greensole* is an organisation which collects discarded footwear in Navi Mumbai and refurbishes them to provide recycled footwear to the lesser privileged sections of society.
- The entity provided bins to all major societies in the NMMC area and also provided an on-call collection service for collection of footwear.

Challenges and Initiatives to overcome

- Operation and maintenance of existing sewage treatment plants and sewage pumping stations across the country is not satisfactory. Also, sewage treatment plants do not conform to the general standards prescribed under the Environmental (Protection) Rules for discharge into streams as per the CPCB's survey report.

Hybrid Annuity Model (HAM)

- NITI Aayog introduced the concept of Hybrid Annuity Model (HAM) to promote Public Private Partnerships and prepared Model Concession Agreements to facilitate ULBs in the waste management process.
- Under HAM, capital expenditure is shared solely by the Urban Local Body while the operational expenditure is shared by both private players and the civic bodies.
- Under *Solid Waste HAM*, the concessionaire would be responsible for
  a. Bio-remediation of legacy waste;
  b. Setting up of waste treatment plants;
  c. Primary and secondary collection;
  d. Transportation, processing and disposal of solid waste;
  e. Sale/ disposal of processed waste, by-products and recycled items and operation and maintenance of the project.
- Under the *Liquid Waste HAM*, the concessionaire would be responsible for
  a. Construction of Sewage Treatment Plants (STPs),
  b. Faecal Sludge Treatment Plants (FSTPs),
  c. Door to door collection and transportation of faecal sludge
  d. Sale/disposal of processed waste and by-products and recycled items.

Waste Management in the World

- Countries like South Korea and Malaysia have one of the most efficient waste management systems across the world.
- *In South Korea, most municipalities have entrusted parts of their responsibility to private companies with a short-or long-term contract*.
  o South Korea is now the country with the second-highest recycling rate in the world (60%) after Germany.
- In Malaysia', the concept of Waste Eco Park (WEP) was introduced to centralise recycling companies from various industries under the same location.

Conclusion

- Community awareness and participation can go a long way in reducing the quantum of waste and save the planet from further degradation. Efficient waste management helps in attaining the **Sustainable Development Goals (SDGs).**
- **SDG 11** focuses on inclusive and sustainable urbanisation in all countries while **SDG 12** focuses on ensuring responsible consumption and production patterns across the world to minimise waste generation.
- **The 3 Rs-Reduce, Reuse and Recycle** minimise the use and consumption of resources on the planet and help in achieving the goal of circular economy.

Education as Driver of Rural Transformation

Introduction

- Rural social transformation signifies a major shift in rural formation. The scenario of transition in rural society, especially in the post-independence era suggests that the process of planned development has shaped a new rural society where education plays a key and fundamental role.

- Education in rural India is a catalyst to improve the economic and social well-being of the nation.
- The Government has brought out holistic educational programmes such as DIKSHA or SWAYAM that enhance educational opportunities for children through digital learning tools and content.
  - Though this made huge strides, the Indian education system, especially in rural areas, requires impactful policies and programmes that focus on providing vital infrastructure that can enable continuous education for its members.

Samagra Shiksha

- It is an Integrated Scheme for school education, w.e.f. 2018-19, which is an overarching programme for the school education sector extending from pre-school to class XII. It aims to ensure inclusive and equitable quality education at all levels of school education.
- It envisages the 'school' as a continuum from pre-school, primary, upper primary, secondary to senior secondary levels and subsumes the three erstwhile centrally sponsored schemes i.e. **Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and Teacher Education (TE).**

Education in Rural India

- According to the *Annual State of Education Report (ASER) 2019*, only 16 percent of children in Class 1 in 26 surveyed rural districts in India, can read the text at the prescribed level, while almost 40 percent cannot even recognise letters.
- There is a discernible gap between the rural and urban education system for which rural children face many difficulties. According to the **Annual State Education Report survey**, two-thirds of rural children In India reported that they did not receive learning materials or activities at all during the period of the pandemic.
  - Additionally, one in three children had no learning activity during this time.
- Gender also plays a role in the education of rural children with high rates of withdrawal from school among girls.

Women and Education

- Education of women is the most powerful tool to change their position in society especially in rural areas as it reduces in inequalities and functions as a means of improving their status within the family and develops the concept of participation.
  - Empowerment can be viewed as a means of creating a social environment in which one can make decisions and make choices either individually or collectively for social transformation. It strengthens the innate ability by way of acquiring knowledge, power and hygiene.

National Education Policy 2020

The National Education Policy 2020 emphasises digital learning as an alternative to the conventional classroom model but implementing this in rural India will face some challenges.

Financial issues : To start with, meagre incomes lead to education taking a backseat. Parents tend to see education as an Expense rather than an investment. They would rather have the children work and earn. When it comes to higher education, lack of good institutions close by leads to students have to look at shifting to cities, which adds to their expenses. This leads to low rates of enrolment and higher dropout rates.

Lack of Guidance: Students in smaller regions have great potential and are motivated to study but lack right mentoring. This is required not just for the children but also for their parents.

Lack of Infrastructure and Faculty: Children have limited or no access to basic learning tools such as well-equipped classrooms, computers, labs, playgrounds, among other things. Often, the teachers are not qualified or do not turn up, leading to a poor quality of education. This also leads to low morale among students to attend school.

Gender Inequality: In some places, girls are not allowed to go to school. Or if allowed, it is only up to a certain age. They are not allowed to move out of their hometown for higher education or better jobs.

Way Forward

- In these unprecedented times, the integration of technology with education holds great promise. The numerous e-learning platforms that are using crowd-sourced educational materials where knowledge seekers can connect to a pool of knowledge providers, with the internet serving as an intermediary. This crowd-sourced knowledge base of the Internet can effect positive change in communities by allowing people to connect and experience uniform knowledge exchange.

- The problem of shortage of quality teachers in rural areas can be solved by accessing online teachers from urban areas using e-learning. The trending 'smart classrooms' supported by MNCs aim at improving learning outcomes among affluent urban schoolchildren.
- Education in a rural setting should be focused on making rural people responsible for their participation in the following elements of rural development
  a. Employment and Income Opportunities
  b. Increase in Productivity of Rural Labour Force.
  c. Education Develops Leadership

Promoting Tribal Entrepreneurship: Towards a Holistic Strategy
Introduction
- The STs-community is not a homogenous group and is diversely distributed across Indian states. A part of this community also resides in remote locations, depending primarily on forest resources for their livelihood. Expanding their livelihood portfolios by creating employment and entrepreneurial avenues will be crucial to mainstream them in larger development discourse.
- Further, there is a growing realisation that the conditions of tribal community may have worsen in this pandemic and subsequent lockdown. With a looming livelihood crisis, jobs and incomes may have been lost, driving many from this community into poverty.

Present Status and Challenges
- As per 2011 census, STs constitutes 8.60 percent of total population. These groups are more concentrated in rural areas and often live in some of the poorest and most backward regions of the country, including areas severely affected by internal conflict and violence.
- As per latest available NSSO enterprises survey data, during 2015-16, in rural OAMEs segment, STs owned only seven percent of enterprises. It is evident that STS community not only own a disproportionately low share as compared to their population Weight but also operate mostly in tiny enterprises, i.e. OAMEs.
- Therefore, to create a level playing field for ST entrepreneurs, it is important to have an enabling environment that nurtures businesses run by STs Community.

Policies and Schemes
- There are multiple Central Government ministries such as Ministry of Micro, Small and Medium Enterprises (MSME) and Ministry of Skill Development and Entrepreneurship (MSDE), State Government department and agencies, formal financial institutions, training and capacity development institutions, incubation centres and so on responsible for inclusive and sustainable enterprise promotion.
- At the state level as well, many initiatives are undertaken, such as providing free plots, loans at subsidised interest rates, relaxations in lending norms for term loans, providing free training programmes etc. to empower the entrepreneurs from STs communities.
- Big industry associations such as FICCI, CII as a part of Corporate Social Responsibility (CSR), have envisaged steps for the creation of entrepreneurs from SCs and STs community.

1. **The National SC/ST Hub Scheme (NSSH)**
- Implemented by the Ministry of MSMEs aims to promote SC/ST entrepreneurs and improve their participation in Government procurement processes.
- This scheme provides skill training, subsidy for procurement of plant and machinery, subsidy for participation in domestic and international trade fairs, reimbursement of membership fees of Export Promotion Councils, subsidy on registration fees under single point registration fees of NSIC and so on.

2. **The Associated Chambers of Commerce and Industry of India (ASSOCHAM)**
   o In December 2020, ASSOCHAM in association with the Ministry of Tribal Affairs announced the 'Tribal Entrepreneurship Development Programme (TEDP), with a target to identify at least 350 tribal artists and help them expand their enterprises.
   o Under this programme, artisans will be identified from all across the country engaged in Tribal Textiles, Paintings and Wall art, Super foods, Traditional Medicinal Plants and Products, and Forest Produce.

3. **Pradhan Mantri Van Dhan Yojana (PMVDY)**: **PMVDY** by the MoTA is a market-linked Entrepreneurship Development Programme for forming cluster of tribal Self Help Groups (SHGs) and strengthening them into Tribal Producer Companies.

4. **Technological Interventions for Tribal Empowerment (TITE)** : It is a grant-in-aid scheme of the Department Science and Technology (DST) under Tribal Sub Plan. It aims at improving living conditions and empowering scheduled tribes based on sustainable science and technology (S & T) activities/application.

5. MoTA and Ministry of Food Processing Industries (MoFPI) has been implementing *TRIFOOD Scheme* to promote value addition to Minor Forest Produce (MFP). Recently, a mentorship-led entrepreneurship development programme has been initiated by Ministry of Tribal Affairs (MoTA) in partnership with Facebook to boost entrepreneurship among tribal youth.

Schemes and Programmes of State Governments to promote entrepreneurship among ST communities

- Gujarat Govt. signed an MoU with Amazon to support tribal entrepreneurs.
- **The Telangana government's Dalit Bandhu scheme** for empowering Dalit families and enabling entrepreneurship among them through a direct benefit transfer of Rs 10 lakh per family. The government will provide reservations for Dalits in issuing licenses for small trading operations/shops, medical shops, fertiliser shops, rice mills, etc. Tribal communities are also rich in unique cuisine, jewellery, handicrafts, traditional products, medicinal herbs and so on.

Way forward and Formulating a Holistic Strategy

- Social group identity plays an important role in providing the access to livelihood and entrepreneurial avenues. It is apparent that the proportion of enterprises owned and managed by STs is low as compared to other social groups and disproportionally low as compared to their share in total population.
  - o Following initiatives may be taken to promote tribal entrepreneurship:
    - a. To undertake a mapping or profiling exercise (of skills, capabilities and experience, potential for entrepreneurship) of STs communities.
    - b. All local stakeholders (e.g. private sector, panchayats, line departments, community centres, incubators and accelerators) that could support entrepreneurship must be identified and work in close partnership.
    - c. Accreditation and certification of existing skills through Recognition of Prior Learning must be leveraged.
    - d. Customised training modules, curricula and content may be designed, keeping in mind the specific needs of the target groups and contexts.
    - e. Entrepreneurship opportunities must be supplemented by social welfare schemes.
    - f. Various insurance instruments and social safety nets must be developed to mitigate the immediate impacts of COVID-19 pandemic.
    - g. **The Dalit Indian Chamber of Commerce and Industry (DICCI)** must play a proactive role in providing necessary support and guidance to both existing and aspiring tribal entrepreneurs.
    - h. A robust data driven ecosystem is called for to improve the participation by marginalised social groups like STs in business and entrepreneurial avenues.

MGNREGA: Transforming Rural Livelihoods

Introduction

- The social inclusion of every strata of society, mainly of those who are vulnerableand disadvantaged, through social innovation is called, and rightly so, Social Transformation.
- As per the 2011 census, rural population in India is 833.1 million which is 68.84 percent of the total population of India. Hence, it is pertinent that the road to social transformation in India goes through our rural areas.
- The concept of **social transformation** gained significance in social sciences post World War II.
  - o The meaning of this concept is "changing form or appearance or character or alter out of recognition".
  - o Social transformation thus indicates change in the form of society.

Background

- In 1991, the then Indian government proposed a pilot scheme to generate employment in rural areas with the aim to generate employment for the agricultural labour during the lean season, add to the infrastructure development and to enhance food security. This scheme then was called the **Employment Assurance Scheme** which later evolved into the **MGNREGA**after its merger with the **Food for Work Programme** in the early 2000s.

About MGNREGA

- MGNREGA was officially launched in 2006, under the **Mahatma Gandhi National Rural Employment Guarantee Act**, which was passed on 23rdAugust, 2005. As of 11th to February, 2021, a total of 708 districts have been covered under this scheme.
- **The beneficiaries of this scheme are:** Wage seekers, Gram Sabha (GS), three-tier Panchayati Raj Institutions (PRIs), Programme Officer at the Block level, District Programme Coordinator (OPC), State Government, Ministry of Rural Development (MoRD), Civil Society and other stakeholders (In line departments, convergence departments, SHGs)

MGNREGA Mandate

- As per the MGNREGA mandate, At least 60 percent of the allocated amount must be spent on wages to unskilled labours and the remaining 40 percent for semi-skilled/skilled labour and material.
- The scheme is implemented through the Gram Panchayats.
- **Section 17 of the MGNREGA** has mandated **Social audit** of all Works executed under the MGNREGA.
  - o Social audits focus on the performance of a programme in fulfilling Its Intended social objectives and ethical vision through consultation with a range of stakeholders including social programme beneficiaries, community members, government officials and verifying the information obtained with documents and physical evidence.
  - o Thus, social audits examine and assess the social impact of specific programmes and policies.

Salient Features of MGNREGA

a. It gives legal guarantee of wage employment to the adult members of rural households who are willing to do unskilled manual labour subject to a maximum of 100 days per household. It is applicable for all villages in the District

b. Job cards issued to every household registered under MGNREGA.The registered job card holders can seek employment by giving a group / individual application

c. A minimum of 10 job seekers shall apply to sanction a new work under MGNREGA
d. Employment provided by sanctioning one of the works under "Shelf of Works" as identified and prioritised by the village community within 15 days from the date of receipt of applications for providing employment under MGNREGA.*"Shelf of works"* will be identified by the village community for S years which can be taken up in their villages as per the job demand and entitled person days
e. The works proposed by the village community cannot be altered by anyone unless they are not in conformity with the guidelines of MGNREGA. The work shall be provided within 5 km jurisdiction from the village.
   o *If the work provided is beyond 5 km, the job seekers shall be given 10 percent of the minimum wages as additional amount .*
f. State Government to pay 25 percent of minimum wage as compensatory daily unemployment allowance on failure to provide employment for the families demanding the works under MGNREG Act.
g. Equal payment for men and women and wages are to be paid within a fortnight 1/3 beneficiaries should be women
h. No contractors and machinery allowed Grievance redressal mechanism to be set up for ensuring a responsive implementation process.

Ombudsman

a. NREGA Workers' Complaint → Ombudsman.
- Ombudsman may issue direction for conducting spot investigation Lodge FIRs against the erring parties or Initiate proceedings Suo-motu in the event of any circumstance arising jurisdiction that may cause any grievance

Initiatives taken for smooth Implementation of MGNREGA

a. Use of ICT tools, space technology, focus on improving livelihood resource base of people, provision of diversified livelihood opportunities through convergent programme implementation etc. are some of the major features of changes brought in programme management under the government.
b. High budget allocation to meet the objectives of the Act and strengthening of monitoring system has been ensured.
c. Measures like electronic fund management system (eFMS), Aadhaar seeding, Geo tagging of assets and strengthening of Social Audit System are some steps towards bringing in more transparency and accountability in the programme implementation.
d. Emphasis on proper work file maintenance, setting up of Citizen Information Boards as part of Janta Information Systems is some of the other measures.
e. To ensure that MGNREGA workers receive their wages on time, **National Electronic Fund Management System (NEFMS)** has been put in place.
f. Apart from meeting the demand for wage employment on the ground, the government is laying stress on strengthening the livelihood resource base of the poor and the vulnerable.

Pradhan Mantri Awas Yojana-Gramin (PMAY-G)

- PMAY-G was launched by PM in 2016.It is one of the flagship programmes of the Government of India which is driven by the objective of providing "Housing for All" by the year 2022.
- The scheme envisioned providing other facilities to make it an aspirational home for the beneficiaries through convergence with other schemes like **Swachh Bharat Mission, PM Ujjwala Yojana** for providing LPG connection and unskilled wage component of 90-95 days under MGNREGS.

Conclusion

- Augmentation of livelihood potential is a major thrust under MGNREGS. Besides this, skilling the MGNREGS workers through Barefoot Technician program is another initiative.
- Also, the Ministry had set up a Committee under the Chairmanship of Additional Secretary with representatives of relevant Central Ministries and five State Governments to examine the issue of Alignment of MGNREGA Wages with Minimum Agricultural Wages.
- Overall, this scheme government has seen great changes which have brought relief to strained rural population of India. Although there are still some minor challenges but the government is committed to overcome them in time bound manner.

Empowering Senior Citizens

Introduction

- India presently has 14crore senior citizens.As the nodal ministry for matters relating to the senior citizens,the Ministry of Social Justice and Empowerment (MoSJ&E) has taken many steps for their welfare.
  o The ministry develops and implements acts, policies and programmes for senior citizens in collaboration with state Government/Union Territory administrations to ensure that senior citizens lead a secured, dignified and productive life.
- *A new national policy for senior citizens* is being worked upon and will incorporate issues such as financial and food security, housing and welfare.
  o The MoSJ&E confirms that the new policy will replace the confirmed that the new policy will replace the existing *National Policy on Older Persons (MPOP)* announced in 1999 to reaffirm the commitment to ensure the well-being of the Older persons.
  o The policy envisaged State support to ensure financial and food security, healthcare, shelter and other needs of older persons, equitable share in development, protection against abuse and exploitation, and availability of services to improve the quality of their lives.

Statistics

- Over the years, constant increase in life expectancy due to improvement in the healthcare facilities has contributed to increase in proportion of population of senior citizens. The 2011 census reported that the population of senior citizens in India had increased to 10.38 crore, constituting 8.6 percent of the total population.
- The population of senior citizens in India is projected to increase to 22.74 crores in 2036, according to the May 2006 Report of the 'Technical Group on Population Projections for India and States (2011-2036).
- More than 70 percent of the population of senior citizens is in rural areas of India. The total population of India is projected to increase from 121.10 crore in 2011 to 152.20 crore in 2036.Therefore, the percentage of senior citizens against total population is expected to increase to 14.9 percent.

Initiatives

Elderline: It is a toll-free short code 14567 launched for registration and redressal of grievances and monitoring the performance of States and UTs. **The National Institute of Social Defence (NISD)**, an autonomous Institute under this Ministry, is the Implementing Agency of this helpline.

International Day of Older Persons: Every year on the **International Day of Older Persons** on **October 1**, the MoSJ&E organises health camps, inter-generational walkathons across the country with active participation of senior citizens, youth and celebrities.

- To mark this day, **the Vayoshrestha Sammon** is conferred as a national award on eminent senior citizens and institutions under various categories for their contribution.
- Recipients for the award are drawn from diverse fields.

Seniorcare Ageing Growth Engine (SAGE) : The government hopes to achieve the objective by providing upto Rs. one crore as financial assistance through equity participation, through an open invitation on a portal named **Seniorcare Ageing Growth Engine (SAGE).**

Schemes for the welfare of senior citizens

1. **Atal Vayo Abhyuday Yojana (AVYAY):** The mission of AVYAY is to create a society in which senior citizens live a healthy, happy, empowered, dignified and self-reliant life along with strong social and inter-generational bonding.
- It was formerly known as National Action Plan for Senior Citizens (NAPSrC).
- The NAPSrC, has two components-the **Integrated Programme for senior citizens (IPSrC)** and the **State Action Plan for Senior Citizens (SAPSrC).**
2. **Rashtriya Vayoshri Yojana (RVY):** Under the Scheme physical aids and assisted living devices are provided to senior citizens belonging to BPI (Below Poverty Line) category, free of cost, to restore near normalcy in their bodily functions.
- The RVY was launched on April 1, 2017, after the government proposed in the 2015-16 Budget speech a Centre sector scheme to provide physical aids and assisted living devices for the senior citizens suffering from age related disabilities/infirmities, who belong to BPL category and for persons whose monthly family income is not more than Rs. 15,000.

3. **The Maintenance and Welfare of Parents and Senior Citizens (MWPSC) Act**: It was enacted on December 29, 2007. The Act provides provisions for maintenance for parents and senior citizens by children or relatives as obligatory and Justiciable measure through a Tribunal constituted for the purpose.

- It also provides revocation of conditional transfer of property by senior citizens In case of non-maintenance and envisages punishment for intentional abandonment of senior citizens by children or relatives.

4. **National Social Assistance Programme (NSAP):** T**he Ministry of Rural Development** runs the Programme that extends social assistance for poor households for the aged, women who have lost their husbands, 'Divyangs' and in cases of death of the primary breadwinner.

- This scheme provides financial assistance to persons of age 60 years and above and belonging to families living below poverty line.
- A monthly central assistance of Rs 200 is provided to person in the age group of 60.79 years and Rs. 500 per month to persons of age 80 years and above.
- Department of Food and Public Distribution also Implements **Antyodaya Anna Yojana (AAY)** under which rice and wheat at a highly subsidised cost, is extended to households, headed by widows/terminally ill/ disabled persons/ senior citizens, with no assured means of maintenance of societal support.

5. **Senior Able Citizens for Re-Employment in Dignity (SACRED) Portal:** The scheme on Livelihood and Skilling Initiatives for senior citizens include the Portal. The portal facilitates identification of such persons through virtual matching of preferences. For the year 2021-22, an amount of Rs. 12 crore has been allocated for this from the Senior Citizens Welfare Fund.

Conclusion

- Longevity is an expression of our culture. In 1947, when India got Independence, the longevity was only 38 years and now it is 69 years for men and 73 years for women respectively.
- India is home to 140 million elderly people according to projections based on 2011 Census and there are 17,000 persons who turn 60 every day.
- The biggest empowerment that senior citizens need is emotional empowerment.

Governance and Public Service Delivery

Introduction

- Effective and efficient governance is a key ingredient in ensuring all-round development of rural areas at par with the urban ones and thus, analysing the performance on this front is crucial to getting an accurate picture of rural India's Socio-Economic journey.
- As a result, the need for an all-inclusive and sustainable development for rural areas has been felt much more strongly in the recent years, bringing issues of rural governance at the forefront of policy discourse and primacy in India.

Rural India over the years

- At the time of independence, the newly formed nation inherited an impoverished population, a famine and drought-Prone geography and a ravaged economy. However, the miracle of the **'Green Revolution'** and later the **'Operation Flood' in milk** helped the economy leapfrog from being food grain and milk deficient to currently being among the largest producers and exporters of ago and dairy produce globally.
- However, rapid urbanisation in the last few decades due to increasing industrialisation and mobility, have contributed in diminishing dependence on agriculture and by extension, its rural areas.
- Inspired by India's success story in milk and grain production, similar approaches are being planned and undertaken in the fisheries sector for instance, envisioning to make India a 'Blue Economy' in the next few years.
  o Such endeavours are aimed at diversifying the Agri-basket of our rural economy while also promoting village and local entrepreneurship.
- Other noteworthy and impactful mechanisms include **Self-Help Groups (SHGs), Farmer Producer Organisations (FPOs)** and other community-based cooperative mechanisms that not only leverage the collective power of community to address an issue at hand but also act as shining examples of micro-entrepreneurship at the lowest level.

Governance and Service Delivery Initiatives and Reforms

Jan Dhan Yojana: Implementation of the **Direct Benefit Transfer (DBT)** to transfer monetary benefits directly into the accounts of beneficiaries to opening over 400 million bank accounts of the unbanked, mostly rural people,under this scheme.

Digital India Mission: Under this mission Common Service Centres (CSCs) are setting up across rural India, to deliver essential public services to rural folk in one place. This initiative works in tandem with the **'Smart Village' initiative** through which over 1 lakh villages have been digitised and connected with Wi-Fi, optical fibre network and a host of other digital services.

Khadi Industries: The last 6-7 years have seen Khadi becoming a mass movement, turning from a loss-making entity to a highly profitable one, recording gross turnover well over Rs. 5,000 crore last year despite the pandemic. Khadi is now a formidable brand on its own and has caught the eye and attention of fashionist as, both urban and international.

Steps Taken

Enhancing rural connectivity: Government flagship schemes such as **Pradhan Mantri Gram Sadak Yojana (PMGSY),** focusses on multiplying connectivity and mobility among rural territories by different means of transport.

- It increases urban-rural engagements and reduces the divide between 'Bharat' and 'India' as rural and urban India are commonly known, respectively.

Homelessness and Abject Poverty: To address the issue of homelessness, the government launched the **PM-Awas (Gramin) Yojana** aimed at providing 2.95 crore houses to the eligible rural population in the country so as to achieve the PM's objective of "Housing for All."

Survey of Villages and Mapping with Improvised Technology in Village Areas (SVAMITVA): To help rural areas avoid the trap of debt and property disputes that have for so long hampered land acquisition and monetisation for infrastructure and development projects, the government launched the **SVAMITVA**.

e-SHRAM portal: The use of technology for inculcating formalisation in rural governance has similarly been replicated in the launched **e-SHRAM portal of the Ministry of Labour.**

- It seeks to onboard millions of unorganised workers from across the country on a single portal and help prepare a single National Database of Unorganised Workers (NDUW) in the country.

Conclusion

- The journey of rural India since Independence has been nothing short of miraculous. It has transformed itself from being an agrarian geography largely unaffected by the benefits of India's post-1991 economic marvel to one becoming increasingly entrepreneurial, and connected with the rest of the country thus, playing a proactive role in the larger India growth story.

- Government initiatives and schemes such as DBT, JAM, PM-Awas Yojana (PMAY), CSCs, PM-KISAN, SWAMITVA, Ayushman Bharat, PM-KVY, PM-GSY, UDAN and PMUY, have been touched upon and examined to demonstrate that public service delivery in rural areas has indeed become more targeted and transparent on the back of effective governance leading to significant ease of living benefits for rural residents and by extension, enabling them to be more engaging and active contributors in the broader Indian growth paradigm that leaves no one behind.