OFFICERS' PULSE

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AT A GLANCE & IN DEPTH.

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POLITY

1) National Commission for Safai Karamcharis

About NCSK

- The National Commission for Safai Karamcharis (NCSK) was established in **1993** as per the provisions of the **National Commission for Safai Karamcharis Act, 1993,** initially for the period upto March 31,1997. Later the validity of the Act was extended for five years and then again for two years i.e up to February 29, 2004.
- After that it was lapsed and the tenure of the commission was extended as a **non-statutory body** under the **Ministry of Social Justice and Empowerment.** The tenure of the Commission was being extended from time to time through government resolutions. The present tenure is valid upto March 31, 2022.
- The major beneficiaries under the commission are the **Safai Karamcharis and identified manual scavengers** in the country. According to the government data, there were 58,098 manual scavengers identitied in the country as on December 31, 2021.
    - *Safai Karamchari means a person engaged in, or employed for any sanitation work and includes his/her dependents.*

Functions

- The NCSK has been giving its recommendations to the Government regarding specific programmes for welfare of Safai Karamcharis, study and evaluate the existing welfare programmes for Safai Karamcharis, investigate cases of specific grievances etc.
- Also as per the provisions of the **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013,** the NCSK has been assigned the work to monitor the implementation of the Act, tender advice for its effective implementation to the Centre and State Governments and enquire into complaints regarding contravention/non-implementation of the provisions of the Act.

Why in News?

- The Union Cabinet has approved the extension of the National Commission for Safai Karamcharis for three years with effect from April 1, 2022.

Significance

- Though the Government has taken many steps for the upliftment of the Safai Karamcharis, the deprivation suffered by them in socio-economic and educational terms is still far from being eliminated.
- Although manual scavenging has been almost eradicated, sporadic instances do occur. Hazardous cleaning of sewer/septic tanks continues to be an area of the highest priority for the Government.
- Hence, the Government feels that there is a continued need to monitor the various interventions and initiatives of the Government for welfare of Safai Karamcharis and to achieve the goal of complete mechanization of sewer/septic tanks cleaning in the country and rehabilitation of manual scavengers.

2) National Disaster Response Force

What's in the news?

- The National Disaster Response Force (NDRF) Raising Day was marked on January 19. The NDRF was formed on this day in 2006.

About NDRF

- The National Disaster Response Force is a specialised, multi-skilled, humanitarian force in India, which has been playing a crucial role in the country's disaster management and community awareness for Disaster Risk Reduction (DRR).

Formation

- The successive natural calamities from 1990 to 2004 led to the enactment of the **Disaster Management Act** on December 26, 2005. The result was the formation of the National Disaster Response Force. This was set up to lay down the plans, policies, and guidelines for disaster management.

Structure

- The **National Disaster Management Authority (NDMA)** is the parent body of NDRF, which currently consists of 15 battalions from the Border Security Force (BSF), Central Reserve Police Force (CRPF), Central Industrial Security Force (CISF), Indo Tibetan Border Police (ITBP), Sashastra Seema Bal (SSB) and Assam Rifles.
- With more than 13,000 personnel, the battalions of the NDRF have been equipped to respond to **natural as well as man-made disasters.** They are also trained to respond during **chemical, biological, radiological and nuclear (CBRN) emergencies**.

Roles

- The role of the NDRF is disaster management and community awareness for Disaster Risk Reduction (DRR) in India.
- The personnel in NDRF are trained in flood rescue, rope rescue, collapsed structure search and rescue, and other activities to support people during any calamities.

3) Right to Information Act

About RTI Act, 2005

- Under the Right to Information Act, 2005, **Public Authorities** are required to make disclosures on various aspects of their structure and functioning.
- This includes: (i) disclosure on their organisation, functions, and structure, (ii) powers and duties of its officers and employees, and (iii) financial information.
- The intent of such *suo moto* disclosures is that the public should need minimum recourse through the Act to obtain such information. If such information is not made available, citizens have the right to request for it from the Authorities.
- This may include information in the **form of documents, files, or electronic records** under the control of the Public Authority. The intent behind the enactment of the Act is to **promote transparency and accountability** in the working of Public Authorities.

Who is included in the ambit of 'Public Authorities'?

- The RTI Act defines "public authorities" in **Section 2(h).**
- A "public authority" means any authority or body or institution of self- government established or constituted
    - by or under the Constitution;
    - by any other law made by Parliament;
    - by any other law made by State Legislature;
    - by notification issued or order made by the appropriate Government, and includes any –
    - body owned, controlled or substantially financed;
    - Non-Government organization substantially financed, directly or indirectly by funds provided by the appropriate Government.

Section 8 of the RTI

- This provides for **exemption from disclosure of information** that are more valid in reasons
    - Which would affect the sovereignty and integrity of India, the security, strategic,

scientific or economic interests of the State;
  - Which has been expressly forbidden to be published by any court of law or tribunal;
  - Which would cause a breach of privilege of Parliament or the State Legislature;
  - Information including commercial confidence, trade secrets or intellectual property;
  - Information received in confidence from foreign government;
  - Information which would endanger the life or physical safety of any person; etc.

How is the right to information enforced under the Act?

- The Act has established a **three tier structure** for enforcing the right to information guaranteed under the Act.
- The first request for information goes to the **Central/State Assistant Public Information Officer** and **Central/State Public Information Officer**, designated by the Public Authorities. These Officers are required to provide information to an RTI applicant **within 30 days** of the request.
- Appeals from their decisions go to an **Appellate Authority**.
- Appeals against the order of the Appellate Authority go to the **State Information Commission or the Central Information Commission**. These Information Commissions consist of a **Chief Information Commissioner, and up to 10 Information Commissioners.**

Section 4(2) of the RTI

- It mandates that different authorities and government departments should **voluntarily disclose *(suo motu)* much information to the public at regular intervals through various means**, including the internet, so that the public have minimum resort to the use of this Act to obtain information.

Why in News?

- The Supreme Court has asked for the government's response to a plea seeking the effective implementation of Section 4(2) in the Right to Information Act, which obliges public authorities to suo motu disclose information to the public in order to maintain transparency in governance.
- The petition termed the Section as the soul of the Right to Information, without which the Act would only be an "ornamental legislation".
- It backed its cause by citing reports of the Central Information Commission on the lack of compliance by public authorities.

For doubts and queries email us at doubts@officerspulse.com

ENVIRONMENT

1) Forest, tree cover in India up by 2,261 sq. km in two years

What's the news?

- According to the **17th India State of Forest Report-2021**, Forest and tree cover in the country has increased by **2,261** square kms since the last assessment in 2019.

Key Findings

- The Environment Ministry highlighted that the total forest and tree cover was **80.9 million hectares,** which accounted for **24.62%** of the geographical area of the country.
- The report found that there had been a **1,540 sq. km increase in forest cover and 721 sq. km increase in tree cover** since the last report in 2019.
- The report states that **17 States and Union Territories** had more than **33%** of their area under forest cover
- Out of 17 states and UT's, five states/UTs namely Lakshadweep, Mizoram, Andaman & Nicobar Islands, Arunachal Pradesh and Meghalaya have more than 75 percent forest cover while 12 states/UTs namely Manipur, Nagaland, Tripura, Goa, Kerala, Sikkim, Uttarakhand, Chhattisgarh, Dadra & Nagar Haveli and Daman & Diu, Assam, Odisha, have forest cover between 33 percent to 75 percent.
- Total **mangrove cover** in the country is 4,992 sq km. An increase of **17 sq Km in mangrove cover** has been observed as compared to the previous assessment of 2019.
- Top three states showing mangrove cover increase are **Odisha (8 sq km) followed by Maharashtra (4 sq km) and Karnataka (3 sq km).**
- Total **carbon stock** in the country's forest is estimated to be **7,204 million tonnes** and there is an **increase of 79.4 million tonnes** in the carbon stock of the country as compared to the last assessment of 2019. The annual increase in the carbon stock is **39.7 million tonnes.**
- The survey has found that **35.46 % of the forest cover is prone to forest fires**. Out of this, 2.81 % is extremely prone, 7.85% is very highly prone and 11.51 % is highly prone.
- **Bamboo forests** have grown from 13,882 million culms (stems) in 2019 to 53,336 million culms in 2021.

Top States

- The report observed an increase in forest cover in **open forest followed by very dense forest.**
- Top three States showing an increase in forest cover are **Andhra Pradesh (647 sq. km) followed by Telangana (632 sq. km) and Odisha (537 sq. km),Karnataka (155 sq km) and Jharkhand (110 sq km.)**
- **Area-wise Madhya Pradesh had the largest forest cover**, followed by Arunachal Pradesh, Chhattisgarh, Odisha and Maharashtra.
- The top five States in terms of forest cover as a percentage of their total geographical area were **Mizoram (84.53%), Arunachal Pradesh (79.33%), Meghalaya (76%), Manipur (74.34%) and Nagaland (73.90%).**

Decline of Forest cover in Northeast

- The Northeast states account for **7.98% of total geographical area** but 23.75% of total forest cover.
- The forest cover in the region has shown an **overall decline of 1,020 sq km in forest cover.**
- While states in the Northeast continue to have some of the largest forested areas, such as Mizoram (84.5% of its total geographical area is forests) or Arunachal Pradesh (79.3%), the two states have respectively lost 1.03% and 0.39% of their forest cover, while Manipur has lost 1.48 %, Meghalaya 0.43%, and Nagaland 1.88%.
- The report has attributed the decline in the Northeastern states to a spate of

natural calamities, particularly landslides and heavy rains, in the region as well as to anthropogenic activities such as shifting agriculture, pressure of developmental activities and felling of trees which is of great concern as the **Northeastern states are repositories of great biodiversity.**

What kind of Forests are growing?

- Three categories of forests are surveyed – very dense forests (canopy density over 70%), moderately dense forests (40-70%) and open forests (10-40%). Scrubs (canopy density less than 10%) are also surveyed but not categorized as forests.
- **Very dense forests have increased by 501 sq km** while there is a **1,582 sq km decline in moderately dense forests or "natural forests".**
- According to Experts, the decline, in conjunction with an increase of 2,621 sq km in open forest areas, shows a **degradation of forests** in the country.
- Also, scrub area has increased by 5,320 sq km – indicating the complete degradation of forests in these areas.

About India State of Forest Report (ISFR)

- The ISFR is a **biennial publication of the Forest Survey of India** under the Ministry of Environment, Forests and Climate Change which has been mandated to **assess the forest and tree resources** of the country.
- The first survey was published in 1987, and **ISFR 2021 is the 17th.**
- With data computed through wall-to-wall mapping of India's forest cover through remote sensing techniques, the ISFR is used in planning and formulation of policies in forest management as well as forestry and agroforestry sectors.
- Forest cover is defined as an **area more than one hectare in extent and having tree canopy density of 10% and above**, irrespective of the species and type of land.
- Tree cover includes **land covered by individual trees less than one hectare in extent outside the forests.**
- Green cover is a combination of both.

New features of ISFR 2021

- The ISFR-2021 provides information on **forest cover, tree cover, mangrove cover, growing stock, carbon stock in India's forests, forest fire monitoring, forest cover in tiger reserve areas, above ground estimates of biomass using SAR data & climate change hotspots in Indian forests.**
- In ISFR 2021, the FSI has for the first time **assessed forest cover in tiger reserves, tiger corridors and the Gir forest which houses the Asiatic lion.**
- The forest cover in **tiger corridors has increased by 37.15 sq km (0.32%)** between 2011-2021, but **decreased by 22.6 sq km (0.04%) in tiger reserves.**
- Forest cover has increased in 20 tiger reserves in these 10 years, and decreased in 32.
- Eg: Buxa, Anamalai and Indravati reserves have shown an increase in forest cover while the highest losses have been found in Kawal, Bhadra and the Sundarbans reserves.
- **Pakke Tiger Reserve in Arunachal Pradesh** has the highest forest cover, at nearly 97%.
- A new initiative of FSI has also been documented where the **'Above Ground Biomass'** has been estimated.

Estimate of Impact of Climate Change

- The report estimates that by 2030, **45-64% of forests in India will experience the effects of climate change and rising temperatures**, and forests in all states (except Assam, Meghalaya, Tripura and Nagaland) will be highly vulnerable climate hot spots.
- **Ladakh** (forest cover 0.1-0.2%) is likely to be the most affected.
- India's forests are already showing **shifting trends of vegetation** types, such as **Sikkim** which has shown a shift in its vegetation pattern for 124 endemic species.
- In 2019-20, 1.2 lakh forest fire hotspots were detected by the SNPP_VIIRS sensor, which increased to 3.4 lakh in 2020-21. The highest numbers of fires were detected in

Odisha, Madhya Pradesh and Chhattisgarh.

2) Dip in Eastern Swamp Deer population in Kaziranga

What's the news?

- According to a survey, the population of the vulnerable eastern swamp deer, extinct elsewhere in South Asia, has **dipped in the Kaziranga National Park and Tiger Reserve.**

News in Detail

- The Officials attributed the decrease from 907 individuals in 2018 to 868 during the Eastern Swamp Deer Estimation on January 10 and 11due to **two high floods in 2019 and 2020.**
- On a brighter side, the animal is now **distributed to areas beyond the park known as the world's best address of the one-horned rhinoceros.**
- The **eastern swamp deer is endemic to Kaziranga** and is not the primary prey of the park's carnivores, primarily the tiger, but its population is **crucial for the ecological health of the tiger reserve.**
- The **primary prey** of the Kaziranga carnivores is the **hog deer** numbered between 35,000 and 40,000 followed by the barking deer, sambhar, water buffaloes and rhinos.
- The eastern swamp deer was once concentrated in the **central Kohora and Bagori ranges** of Kaziranga. The animal had numbered 1,161 the highest ever – in 2011 while the lowest of 213 individuals was recorded in 1966.
- The 1,302 sq. km Kaziranga had an uptick in the number of **waterfowl species** from 112 counted a year ago to 126 during the fourth Wetland Bird Estimation indicating a total of 66,776 birds belonging to the 126 species.
- The birds were counted in 211 different points in 157 waterbodies involving 35 enumeration teams, including volunteers from local educational institutes, NGOs and officers and frontline staff of the Forest Department.
- The **bar-headed goose** topped the list with 16,552 birds followed by the northern pintail at 9,493 and the common teal at 5,631.
- **Ferruginous duck**, an important species with a count of 2,236, may be regarded as a highlight of this estimation.

About Swamp Deer or Barasingha

- It is the **state animal of Uttar Pradesh and Madhya Pradesh.**
- The swamp deer differs from all other Indian deer species in that the antlers carry more than three times (spikes). Because of this distinctive character it is designated **"bārah-singgā",** meaning "twelve-horned".
- Swamp deer are already extinct in Pakistan and Bangladesh. It is now found only in **South- Western Nepal and Central and North-Eastern India.**
- There are **three subspecies** of swamp deer found in the Indian Subcontinent.
    - Western swamp deer (*Rucervus duvaucelii*) found in Nepal,
    - Southern swamp deer (*Rucervus duvaucelii branderi*) found in **Central and North India** and
    - Eastern swamp deer (*Rucervus duvaucelii ranjitsinhi*) found in the **Kaziranga and Dudhwa National Parks.**
    - With their numbers estimated at over 3,000, **Dudhwa National Park** has the largest number of barasingha in the country. They are also found in significant numbers in **Kanha National Park** in Madhya Pradesh.

- **Protection Status:** IUCN Red List: **Vulnerable;** CITES: **Appendix I;** Wildlife Protection Act (1972): **Schedule I.**

Conservation Issues

- The swamp deer populations outside protected areas and seasonally migrating populations are threatened by poaching for antlers and meat, which are sold in local markets.
- Swamp deer lost most of its former range because wetlands were converted and used for agriculture so that suitable habitat was reduced to small and isolated fragments.

About Kaziranga National Park

- Formed in 1908 on the recommendation of Mary Curzon (wife of Lord Curzon), the Kaziranga national park is located in **Assam**.
- In 1985, the park was declared as a **World Heritage Site by UNESCO.**
- Kaziranga was declared as **Tiger Reserve** in 2006 and it is also recognised as an **Important Bird Area** by Birdlife International for conservation of avifaunal organisms.
- In the park one can see **four types of vegetation** like alluvial inundated grasslands, alluvial savanna woodlands, tropical moist mixed deciduous forests, and tropical semi-evergreen forests.
- The park is famous for its **One-horned Rhinoceros**; about 2200 rhinoceros exist in this park, which is **half of the world's one-horned rhino population.**
- The park also harbors significant populations of other threatened species including tigers, elephants, wild water buffalo and bears as well as aquatic species including the Ganges River dolphin.
- **River Brahmaputra** flows adjacent to the park. River fluctuations by the Brahmaputra system result in spectacular examples of riverine and fluvial processes.

3) 2021 was among the Seven Hottest years on record: WMO

What's the news?

- According to the World Meteorological Organization (WMO), a United Nations body, 2021 was **one of the seven hottest years on record.**

Key Findings

- As per six international data sets consolidated by the WMO, although **La Niña conditions between 2020 and 2022 had a cooling effect on the global average temperatures**, 2021 was still one of the seven hottest years on record.
- La Niña refers to a large-scale **cooling of the ocean surface temperatures in the central and eastern equatorial Pacific Ocean** which has a temporary global cooling effect.
- The average global temperature last year was **1.11 (± 0.13) degrees Celsius above pre-industrial levels**, spanning the period from 1850 to 1900.
- Last year was the **seventh consecutive year**, starting with 2015, when the global average temperature was more than 1 degree Celsius above pre-industrial levels.
- Since the 1980s, **each decade has been hotter than the previous one**, according to the data put together by the UN body, and the trend is likely to continue.
- The hottest seven years have all been recorded since **2015, with 2016, 2019 and 2020 topping the list.**
- The year 2021 will be remembered for a **record-shattering temperature** of nearly 50 degrees Celsius in Canada, comparable to the values reported in the hot Saharan desert of Algeria, exceptional rainfall, and deadly flooding in Asia and Europe as well as drought in parts of Africa and South America.
- According to the Annual Climate Statement 2021 released by the India Meteorological Department, 2021 was also the **fifth hottest** during the past **121 years for India, after 2016, 2009, 2017 and 2010.**
- The Paris Agreement aims to **hold the increase in the global average temperature to well below 2 degrees Celsius** above pre-industrial

levels while pursuing efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels.

About World Meteorological Organisation

- The World Meteorological Organization (WMO) is an intergovernmental organization with a membership of 193 Member States and Territories.
- Established by the ratification of the **WMO Convention** on 23 March 1950, WMO became the **specialized agency of the United Nations** for meteorology, operational hydrology and related geophysical sciences.
- The Secretariat, headquartered in **Geneva**, is headed by the Secretary-General.
- Its supreme body is the World Meteorological Congress.

4) The Challenge of Antimicrobial Resistance (AMR)

What is antimicrobial resistance?

- Antimicrobial resistance happens when **microorganisms (such as bacteria, fungi, viruses, and parasites)** change when they are exposed to antimicrobial drugs (such as antibiotics, antifungals, antivirals, antimalarials, and anthelmintics).
- Microorganisms that develop antimicrobial resistance are sometimes referred to as "**superbugs**".
- As a result, the **medicines become ineffective** and infections persist in the body, increasing the risk of spreading to others.

What accelerates the emergence and spread of antimicrobial resistance?

- Antimicrobial resistance occurs naturally over time, usually through genetic changes.
- However, the **misuse and overuse of antimicrobials** is accelerating this process.
- In many places, antibiotics are overused and misused in people and animals, and often given without professional oversight.
- Examples of misuse include when they are taken by people with viral infections like colds and flu, and when they are given as growth promoters in animals or used to prevent diseases in healthy animals.
- Antimicrobial resistant-microbes are found in people, animals, food, and the environment (in water, soil and air).
- They can spread between people and animals, including from food of animal origin, and from person to person.
- Poor infection control, inadequate sanitary conditions and inappropriate food-handling encourage the spread of antimicrobial resistance.

Why in news?

- Based on estimates from 204 countries and territories, the **Global Research on Antimicrobial Resistance (GRAM) report** published in the Lancet provides the most comprehensive estimate of the global impact of AMR so far.

Major Findings

- Its headline finding is that as many as **4.95 million deaths** may be associated with bacterial **AMR in 2019.**
- Estimates included in the paper show that **AMR is a leading cause of death globally**, higher than HIV/AIDS or malaria.
- Eg: In South Asia, over 389,000 people died as a direct result of AMR in 2019 with the death rate being the highest in Western sub-Saharan Africa, at 27.3 deaths per 100,000 and lowest in Australasia, at 6.5 deaths per 100,000.
- The six leading pathogens for deaths associated with resistance were **Escherichia coli, followed by Staphylococcus aureus, Klebsiella pneumoniae, Streptococcus pneumoniae, Acinetobacter baumannii, and Pseudomonas aeruginosa** which were responsible for **3.57 million** deaths associated with AMR in 2019.
- One pathogen–drug combination, **methicillin-resistant S aureus**, caused more than 100,000 deaths attributable to AMR in 2019, while six more each caused 50 000 – 100,000 deaths.

Major Implications of the study

- **Common infections** such as lower respiratory tract infections, bloodstream infections, and intra-abdominal infections are now killing hundreds of thousands of people every year because bacteria have become resistant to treatment which includes historically treatable illnesses, such as **pneumonia, hospital-acquired infections, and foodborne ailments.**
- In 2019, one in five global deaths attributable to AMR occurred in **children under the age of five** – often from previously treatable infections.
- AMR is threatening the ability of hospitals to keep patients safe from infections and undermining the ability of doctors to carry out essential medical practice safely, including surgery, childbirth and cancer treatment since infection is a risk following these procedures.
- Out of the seven deadliest drug-resistant bacteria, **vaccines are only available for two (Streptococcus pneumoniae and Mycobacterium tuberculosis).**
- While all seven of the leading bacteria have been identified as **'priority pathogens'** by the World Health Organization (WHO) only two have been a focus of major global health intervention programmes **S. pneumoniae (primarily through pneumococcal vaccination) and M. tuberculosis.**

Way Forward

- A greater action towards **monitoring and controlling infections**, globally, nationally and within individual hospitals.
- Access to **vaccines, clean water and sanitation** ought to be expanded.
- Being **"more thoughtful" about our use of antimicrobial treatments** – expanding access to lifesaving antibiotics where needed, **minimizing use** where they are not necessary to improve human health and acting according to WHO recommendations on the same.
- **Increase funding** for developing new antimicrobials and targeting priority pathogens such as K. pneumoniae and E. coli and ensuring that they are **affordable and accessible** to most of the world.

5) Endangered Turtles to be released with GPS tags in Bengal's Sundarbans

What's the news?

- The West Bengal forest department is planning to **release another batch of batagur baska**, a critically endangered freshwater turtle species, **tagged with GPS transmitters in Sundarbans** this year to understand its survival and dispersal patterns.
- Ten batagur baskas - seven females and three males- were fitted with GPS devices and released in a river in Sundarbans mangrove forest on January 19 after being reared in a pond in Sajnekhali area in South 24 Parganas district, West Bengal.

News in detail

- A joint exploration by a team of **Turtle Survival Alliance India Programme and Sundarban Tiger Reserve in 2008** found a cohort of eight males, three females, and one juvenile batagur baska in a pond in Sajnekhali.
- The baska population **"declined sharply due to unsustainable harvesting"** and the species now teeters on the brink of functional extinction.
- The GPS tagging will enable **real-time monitoring of the turtles** and help get information about their reproduction and the way they adapt to the environment.
- This will also help **"understand survival and dispersal patterns of the freshwater turtles"** and plan large scale release programmes in the future and will further provide basic ecological data on the conservation requirements.

About Batagur Baska

- Batagur Baska also known as the **"Northern River Terrapin" is one of Asia's largest freshwater and brackishwater turtles** native to Southeast Asia.

- Its distribution is currently restricted to the **Sundarbans in India and Bangladesh.**
- It is entirely aquatic, inhabiting **estuaries and tidal portions of large rivers** but with terrestrial nest sites, that is, sandbars and riverbanks.
- The terrapin's immense population decline has resulted from extensive exploitation of its flesh and eggs, including habitat alteration and destruction that have degraded the turtle's nesting areas and feeding habitat.
- **Captive breeding** is currently the only feasible intervention to re-establish a wild population.
- **Protection Status: IUCN Red List-Critically Endangered CITES: Appendix I; Wildlife Protection Act (1972): Schedule I.**

ECONOMY

1) Chips to Startup (C2S) Programme

What's in the news?

- In line with the Government's vision to transform India into the next semiconductor hub, the **Ministry of Electronics and Information (MeitY)** has sought applications from 100 academia, R&D organisations, start-ups and MSMEs under its Chips to Startup (C2S) Programme.

About C2S Programme

- The Chips to Startup (C2S) Programme aims to **train 85,000 number of high-quality and qualified engineers** in the area of Very large-scale integration (VLSI) and Embedded System Design as well as result in development of 175 ASICs (Application Specific Integrated Circuits), Working Prototypes of 20 System on Chips (SoC) and IP Core repository over a period of 5 years.
- The programme would be implemented at about 100 academic institutions/R&D organisations across the Country (including IITs, NITs, IIITs, Government/Private Colleges and R&D Organisations).
- Startups and MSMEs can also participate in the programme by submitting their proposals under Academia- Industry Collaborative Project, Grand Challenge/Hackathons, etc.
- The C2S Programme **addresses each entity of the value chain in electronics** viz. quality manpower training, research and development, hardware IPs design, System design, application-oriented R&D, Prototype design and deployment with the help of academia, industry, start-ups and R&D establishments.
- **C-DAC (Centre for Development of Advanced Computing),** a scientific society operating under MeitY, will serve as the nodal agency for the programme.

2) Immediate Payment Service

About IMPS

- Immediate Payment Service (IMPS) is a **real-time remittance service available anytime, anywhere across India.** Using IMPS customers can **transfer money real-time to any person or to a merchant, for any personal or commercial purpose.**
- IMPS is **available round-the-clock** and operates even during bank holiday, weekends or festive holidays.
- IMPS can be used on any platform - **Mobile, Internet and ATM** across any bank in India.
- This service is offered by **National Payments Corporation of India (NPCI).**

Benefits of IMPS

- Instant
- Available 24 x7
- Safe and secure, easily accessible and cost effective
- Multiple access mechanism to choose from (Mobile/ Internet / ATM channels)

Why in News?

- To encourage customers to adopt digital banking, State Bank of India (SBI) has enhanced the limit on Immediate Payment Service transactions from ₹2 lakh to ₹5 lakh with nil charges on transactions via digital channels – internet banking/mobile banking.

3) Rare Earth Metals

What's in the news?

- Two U.S. senators have proposed a law aiming to end China's dominance on rare-earth metal supplies. 80% of the United States' rare-earth imports in 2019 were from China.
- The Bill aims to "protect America from the threat of rare-earth element supply disruptions, encourage domestic production of those elements, and reduce USA's reliance on China".
- The law would require the departments of the Interior and

Defense to create a **"strategic reserve"** of rare earth minerals by 2025.

- It also aims to ensure greater transparency on the origins of the components, restricts the use of rare-earth minerals from China in "sophisticated" defense equipment, and urges the Commerce Department to investigate Beijing's "unfair trade practices".

What are rare earth elements?

- The rare earth elements (REE) are a set of **seventeen metallic elements.** They are called 'rare earth' because **earlier it was difficult to extract them from their oxides forms technologically.**
- They are an **essential part of many high-tech devices.** The 17 Rare Earths are cerium (Ce), dysprosium (Dy), erbium (Er), europium (Eu), gadolinium (Gd), holmium (Ho), lanthanum (La), lutetium (Lu), neodymium (Nd), praseodymium (Pr), promethium (Pm), samarium (Sm), scandium (Sc), terbium (Tb), thulium (Tm), ytterbium (Yb), and yttrium (Y).
- Despite their name, **rare-earth elements are not rare.** All the metals except **radioactive promethium** are actually more abundant in Earth's crust than silver, gold, and platinum.

Why are they important?

- These elements are important in technologies of consumer electronics, computers and networks, communications, clean energy, advanced transportation, healthcare, environmental mitigation, and national defence, among others.
- Rare earth minerals are crucial to the manufacture of magnets used in industries of the future, such as wind turbines and electric cars.
- REEs are needed in high-temperature superconductivity, safe storage and transport of hydrogen for a post-hydrocarbon economy, reduce sulphur oxide emissions and hence it has abundant value.
- According to the Rare Earth Technology Alliance (RETA), the estimated size of the Rare Earth sector is between $10 billion and $15 billion. About 100,000-110,000 tonnes of Rare Earth elements are produced annually around the world.

Who is the top producer?

- **China** has over time acquired global domination of rare earths. At one point, China produced 90 per cent of the rare earths the world needs.
- Today, however, it has come down to 60 per cent. The remaining is produced by other countries.

What is India's position?

- **India** has the **world's fifth-largest reserves** of rare earth elements, **but it imports** most of its rare earth needs in finished form **from China**.
- With adjustments to the existing policy, India could emerge as a rare earths supplier to the world and use these resources to power a high-end manufacturing economy.

India's Current Policy on Rare Earths

- India has granted government corporations such as **Indian Rare Earths Limited (IREL)** a monopoly over the primary mineral that contains REEs: **monazite beach sand**, found in many coastal states.
- IREL produces **rare earth oxides** (low-cost, low-reward "upstream processes"), selling these to foreign firms that extract the metals and manufacture end products (high-cost, high-reward "downstream processes") elsewhere.

Reforms and Solutions

- The key challenge for India today is to **scale up upstream and downstream processes** in the rare earths value chain. **India must open its rare earth sector up to competition and innovation**, and attract the large amounts of capital needed to set up facilities to compete with, and supply to, the world.
- The best move forward might be to create a **new Department for Rare Earths (DRE) under the Ministry of Petroleum & Natural Gas**, drawing on its exploration, exploitation, refining, and regulation capabilities.
- This DRE should oversee policy formulation and focus on attracting

investment and promoting R&D, with its first move being to **allow private sector companies to process beach sand minerals within appropriate environmental safeguards.** It should also create an autonomous regulator, the **Rare Earths Regulatory Authority of India (RRAI),** to resolve disputes between companies in this space and check compliance.

- There are three possible approaches to maximising India's rare earth potential. First, the DRE could secure access to REEs of strategic importance by offering **viability gap funding** to companies to set up facilities in the upstream sector. This could make Indian Rare Earth Oxides (REOs) globally competitive.
- Alternatively, it could **focus on downstream processes and applications,** such as manufacturing magnets and batteries; this would require a **focus on port infrastructure and ease of doing business measures** to allow Indian manufacturers to import REOs from producers cheaply.
- Finally, it could **coordinate with other agencies to partner directly with groupings** such as the Quad, **building up a strategic reserve as a buffer** against global supply crises.

Way Forward

- India has already missed one global wave of industrial manufacturing. Its rare earth reserves and the post-pandemic economic situation offer it an opportunity to ride the next wave towards high-tech manufacturing. It must be sure not to miss this chance.

INTERNATIONAL RELATIONS

1) India extends another $500 million LoC to Sri Lanka

What's in the news?

- India has extended a $500 million-**Line of Credit (LOC)** to Sri Lanka for urgent fuel imports, days after providing $900 million relief to the island nation facing one of its worst economic downturns.
    - *A line of credit, also known as a credit line, is an open-ended, revolving loan that a borrower may access on demand.*
- The announcement follows a virtual meeting between Mr. Jaishankar and Sri Lanka's Finance Minister Basil Rajapaksa recently, when they reviewed a **$1.5 billion credit facility** to help Sri Lanka augment its fast-draining foreign reserves, crucial to importing essentials food items, medicines, and fuel.
- Of the $1.5 billion, a sum of $500 million has been extended for fuel imports. These measures are in line with India's commitment to stand with Sri Lanka, contribute to Sri Lanka's economic growth and impart greater momentum to bilateral economic and commercial partnership.
- With this, a total $2.4 billion assistance has been provided by New Delhi, as the island battles a major economic crisis.

https://www.thehindu.com/business/Economy/india-extends-another-500-million-loc-to-sri-lanka-for-emergency-fuel-import/article38289095.ece

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SCIENCE AND TECHNOLOGY

1) Web3

What is it?

- The concept of **Web3,** also called **Web 3.0**, is used to describe a potential **next phase of the internet**.
- The model, a **decentralised internet** to be **run on blockchain technology,** would be different from the versions in use, Web 1.0 and Web 2.0.
- In web3, **users will have ownership stakes in platforms and applications** unlike now where tech giants control the platforms.

What is the difference between Web1 and 2?

- **Web 1.0 is the world wide web or the internet** that was invented in **1989**.
- The internet in the Web 1.0 days was **mostly static web pages** where users would go to a website and then read and interact with the static information. Even though there were e-commerce websites in the initial days it was still a closed environment and the users themselves could not create any content or post reviews on the internet.
- Web 2.0 started in the late 1990s itself though 2004 was when most of its features were fully available. It is still the age of Web 2.0 now.
- The **differentiating characteristic** of Web 2.0 compared to Web1.0 is that **users can create content**. They **can interact and contribute in the form of comments,** registering **likes, sharing and uploading** their photos or videos and perform other such activities.
- Primarily, a **social media kind of interaction** is the **differentiating trait** of Web 2.0.

Need for Web3

- In **Web 2.0**, **most** of the **data** in the internet and the internet traffic are **owned or handled by very few companies.** This has **created issues related to data privacy, data security and abuse of such data**.
- There is a sense of disappointment that the original purpose of the internet has been distorted. It is in this context that Web3 is significant.

How does it function

- As per the **Web3 foundation,** Web3 will deliver a decentralized **and fair internet** where users control their own data.
- Currently if a seller has to make a business to the buyer, both the buyer and seller need to be registered on a "shop" or "platform" like Amazon or Ebay or any such e-commerce portal. What this "platform" currently does is that it authenticates that the buyer and seller are genuine parties for the transaction.
- Web3 **tries to remove the role of the "platform"**. For the buyer to be authenticated, the usual proofs aided by block chain technology will be used. The same goes for the seller. With **block chain**, the time and place of transaction are recorded permanently. Thus, Web3 **enables peer to peer (seller to buyer) transactions** by **eliminating the role** of the **intermediary.** This concept can be extended to other transactions also.
- The **key concepts** in Web3 seen so far are **peer to peer transaction and block chain.** The spirit of Web3 is **Decentralized Autonomous Organization (DAO)** which is that all the business rules and governing rules in any transaction are transparently available for anyone to see and software will be written conforming to these rules. Crypto-currency and block chain are technologies that follow the DAO principle. With DAO, there is no need for a central authority to authenticate or validate.

Concerns

- From a technology perspective, Web3 **will require deviation from the current architecture** where there is a front-end, middle layer and back-end.

- Web3's architecture will **need backend solutions for handling block chain, persisting and indexing data in block chain, peer to peer communications** and so forth. Similarly, the middle layer, also called the business rules layer, will need to include handling block chain-based backend.

Why in News?

- Industry experts like Elon Musk and Jack Dorsey have expressed concerns over the future of Web3.

2) Self Driving Cars

Why in News:

- The Consumer Electronic Show (CES), an influential tech event held annually, has seen an increase in self-driving cars.

What is the technology behind Self Driving Cars?

- At the heart of this technology are **three sensors: camera, radar and LIDAR (Light Detection and Ranging)**, all of which help the vehicle accurately perceive its surroundings.
- **Cameras and radar sensors** routinely provide 'driver-assist' features such as: ensuring that cars stay within lane markings, warning of approaching vehicles during lane changes and maintaining a safe distance to the vehicle in front.
- A **camera** system operates much like a human eye — it **can discern colours, shapes, recognise traffic signage, lane markings** etc. Most cars have stereo cameras i.e., two cameras separated by a short distance. This **enables it to perceive depth** (like humans). However, a **camera** does have its **limitations**. It **does not transmit any sensing signals** and **relies on ambient light** that is reflected from objects. So, th**e absence of** adequate ambient **light** (at night) limits its ability, as can other environmental conditions like fog and blinding sunlight.
- A r**adar sensor transmits its own signals,** which **bounce off targets** and reflect back to the radar. Thus, unlike a camera, **a radar is not dependent on ambient light**. Further, a radar **transmits radio waves which can penetrate fog**. The **radar measures the time** between the transmission of the signal and arrival of a reflected signal from a target to estimate the distance to the target. **A moving target induces a frequency shift** in the **signal** (**'Doppler shift'**) which enables the radar to instantaneously and accurately measure target speed. Thus, **radars can accurately measure the range and velocity of targets** largely independent of environmental conditions such as fog, rain and bright sunlight. However, unlike a camera, **a radar cannot discern colour nor recognise street signs.** A radar **also has poor 'spatial resolution'.**
- A **LIDAR scans the environment with a laser beam.** In many respects, LIDAR combines the best features of both radar and camera. Like a radar, i**t generates its own transmit signal** (thus does not depend on daylight), and can **accurately determine distances** by measuring the **time difference** between the transmitted and the reflected signal. The narrow laser beam that is used for sensing ensures that it has a spatial resolution that is similar to a camera. However, LIDAR does have its disadvantages — **LIDAR signals cannot penetrate fog, discern colour or read traffic signs.** The technology is also significantly **costlier** than radar or camera.

Latest developments

- While radar companies are developing imaging radars that significantly improve the spatial resolution of radar, there is new technology being explored that can bring down the cost of LIDAR.
- At the same time, the capabilities o**f camera-based vision** perception continue to be enh**anced with the application of Deep Learning**. However, each sensor has its limitations based on physics and technology.
- While only a camera can recognise traffic signs, it cannot match the

performance of radar in adverse weather conditions. Likewise, a radar cannot match the spatial resolution of a camera or a LIDAR.

DEFENCE

1) Amarjyoti War Memorial

What is it?

- The eternal flame at the Amar Jawan Jyoti underneath India Gate in Delhi was an **iconic symbol** of the **nation's tributes to the soldiers who have died for the country** in various wars and conflicts **since Independence.**
- **Established** in **1972**, it was **to mark India's victory over Pakistan** in the 1971 War, which resulted in the creation of Bangladesh.
    - The then Prime Minister Indira Gandhi had inaugurated it on Republic Day 1972, after India defeated Pakistan in December 1971.

Why was it placed at India Gate?

- The **India Gate, All India War Memorial,** as it was known earlier, was **built** by the **British** in **1931**. It was erected as a **memorial** to around **90,000 Indian soldiers of the British Indian Army,** who had died in several wars and campaigns till then.
    - India Gate, **designed by Sir Edwin Lutyens**, was **unveiled by Lord Irwin** on February 12, 1931
- As it was a memorial for the Indian soldiers killed in wars, the Amar Jawan Jyoti was established underneath it by the government in 1972

Why in News:

- The government has put out the eternal flame of the Amar Jawan Jyoti underneath India Gate and merged it with the one instituted at the National War Memorial in 2019

What is the National War Memorial and when was it made?

- The **National War Memorial** was inaugurated in **2019** to **commemorate all the soldiers** who have **laid down their lives in the various battle**s, wars, operations and conflicts of **Independent India**. There are many independent memorials for such soldiers, but no memorial existed commemorating them all at the national level.

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ART AND CULTURE

1) Kathak

The Origin

- The word **Kathak** has been **derived** from the **word Katha** which means a story.
- It is one of **India's classical dances.**
- It was mostly a temple or village entertainment in which the dancers told stories from ancient scriptures.
- The **Vaishnavite cult** which swept North India in the 15th century. and the resultant **bhakti movement contributed** to a whole new range of lyrics and musical forms, including Kathak.
- **Radha-Krishna tales** were portrayed in **rasa lila folk plays**, which merged folk dance with the basic gestures of kathak story-tellers.
- **Kathak** was performed in the court of the **Mughal emperors and their nobility,** where it **gained its current characteristics** and developed into a type of dance with a specific style.
- It became a notable art form under the patronage of Wajid Ali Shah, the last Nawab of Awadh.

About the Dance

- **Typically a solo performance**, the dancer frequently pauses to read verses before executing them via movement. The dance is **performed by both men and women.**
- Because Kathak is **popular in both Hindu and Muslim populations**, the **costumes** for this dance style are **constructed** in **accordance** with the **respective cultures' customs.**
- The **emphasis is on footwork**, with dancers wearing **ankle-bells** doing straight-legged motions that are skilfully managed.
- Being the **only classical dance of Indi**a having **links with Muslim culture,** it represents a unique **synthesis of Hindu and Muslim** genius in art. Further, Kathak is the **only form of classical dance wedded to Hindustani or the North Indian music.**

Why in News?

- Kathak maestro Pandit Birju Maharaj passed away recently.

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PIB ANALYSIS

1) Indian Renewable Energy Development Agency

About IREDA

- Indian Renewable Energy Development Agency Limited (IREDA) is a Government of India Enterprise under the **administrative control of Ministry of New and Renewable Energy (MNRE).**
- IREDA was established as a **Non-Banking Financial Institution** in 1987.
- It engages in promoting, developing and extending **financial assistance** for setting up projects relating to new and renewable sources of energy and energy efficiency/conservation.

Why in News?

- The Cabinet Committee on Economic Affairs, chaired by the Prime Minister Narendra Modi has approved the equity infusion of Rs.1500 crore in Indian Renewable Energy Development Agency Limited.
- This equity infusion will help in employment generation of approximately 10200 jobs-year and CO2 equivalent emission reduction of approximately 7.49 Million Tonnes CO2/year.
- Additional equity infusion will enable IREDA to enhance its networth which will help it in additional Renewable Energy financing, thus contributing better to the Government of India targets for Renewable Energy.

2) National Bamboo Mission

About National Bamboo Mission:

- In October 2006, the Government of India (GOI) launched the National Bamboo Mission (NBM) on the basis of the National Mission on Bamboo Technology and Trade Development Report, 2003.
- The NBM's key objective was to address issues relating to the development of the bamboo industry in the country, provide a new impetus and direction and enable the realisation of India's considerable potential in bamboo production.

Main Objectives:

- To **increase the area under bamboo plantation in non forest Government and private lands** to supplement farm income and contribute towards resilience to climate change as well as availability of quality raw material for industries.
- To **improve post-harvest management** through establishment of innovative primary processing units near the source of production, primary treatment and seasoning plants, preservation technologies and market infrastructure.
- To **promote product development** keeping in view market demand, by assisting R&D, entrepreneurship & business models at micro, small and medium levels and feed bigger industries.
- To **rejuvenate the underdeveloped bamboo industry** in India.
- To **promote skill development, capacity building, awareness generation** for development of bamboo sector from production to market demand.
- To realign efforts so as to **reduce dependency on import** of bamboo and bamboo products by way of improved productivity and suitability of domestic raw material for industry, so as to enhance income of the primary producers.

Why in News?

- The Ministry of Development of North-East Region conducted an awareness progress about the National Bamboo Mission for addressing Livelihood Concerns of Tribal Communities.

3) Asia Ministerial Conference on tiger conservation

What's in the news?

- Minister for Environment, Forest and Climate Change Bhupender Yadav

participated in the 4th Asia Ministerial Conference on tiger conservation, an important event for reviewing progress towards the **Global Tiger Recovery Programme** and commitments to tiger conservation.

- Stating that India has achieved the remarkable feat of doubling the tiger population in 2018 itself, 4 years ahead of the targeted year 2022, he informed that the model of success of India's tiger governance is now being replicated for other wildlife like the Lion, Dolphin, Leopard, Snow Leopard and other small wild cats, while the country is on the threshold of introducing Cheetah in its historical range.

Tigers

- The tiger is classified into **nine subspecies**, three of which (Javan, Caspian, and Bali) are extinct. A fourth, the South-China subspecies, is most likely extinct in the wild, with no signs of its existence in the last decade. The existing subspecies are **Bengal, Indochinese, Sumatran, Siberian, and Malayan.**
- Tigers are globally listed as **"Endangered"** on the IUCN Red List of Threatened Species. The Malayan and Sumatran sub-species are listed as **"Critically Endangered."**
- Tigers are found mainly in the forests of tropical Asia, although they historically occurred more widely in drier and colder climes. Some species are also found in cold regions (Siberian Tigers of Russia) as well as marshy lands (Bengal tigers in Sundarbans).
- Tiger has been protected under **Appendix I** of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1975 which means commercial international trade in tiger is prohibited.

St. Petersburg Tiger Summit

- It was the first global summit to protect tigers from extinction. It was hosted in 2010.
- 13 tiger range countries namely **India**, Laos, China, Vietnam, Russia, Nepal, Bhutan, Myanmar, Cambodia, Indonesia, Bangladesh, Thailand and Malaysia participated in this event.
- They adopted a **Global Tiger Recovery Program** with the aim of **Tx2- doubling the number of wild Tigers by 2022**, through combating threats, engaging with local communities and improving tiger habitat management.
- It also encourages trans-boundary collaboration between countries for tiger conservation.
- ***Note:*** According to the **All India Tiger Estimation Report 2018**, India has achieved its target of doubling the number of tigers two years before the committed date of 2022. The tiger population in India now stands at almost 2,970 tigers.

Why are Tigers important for India?

- India today is home to 70 per cent of the world's tiger population.
- Tigers are **indicators of the ecological wellness of planet earth**. Being the dominant predators of the ecosystem, they **ensure that the numbers of herbivores like deer are kept balanced**. A steep fall in tiger population could lead to a rise in herbivore population, which could potentially destroy forests by consuming the trees and plants.
- **Madhya Pradesh** hosts most of the tigers as a state while **Jim Corbett National Park in Uttarakhand** houses the most number of tigers in any protected area.
- India started **Project Tiger** in 1973 with 9 Tiger reserves in the country and today we have 53 tiger reserves in the country.

News in Depth

AIR NEWS

1) Sukanya Samriddhi Yojana

About the Scheme

- Sukanya Samriddhi Yojana is a **government-backed small savings scheme that helps parents secure the future of their girl child.** It was launched as a **part of the 'Beti Bachao Beti Padhao' campaign.**
- This scheme can be easily opened at post offices and designated private or public banks in the form of a savings account in the name of the baby girl. The **interest rates** for Sukanya Samriddhi Yojana are **declared quarterly.**

Eligibility criteria for opening a Sukanya Samriddhi Yojana account

- Only parents or legal guardians of the girl child can open a Sukanya Samriddhi account in the name of the girl.
- The **girl child should be less than 10 years** at the time of account opening. The account can be operational till the girl reaches the **age of 21 years.**
- To meet the requirement of the child's higher education expenses, **partial withdrawal of 50 per cent of the balance is allowed after she turns 18.**
- The **investment can start at Rs. 250 and go up to Rs. 1,50,000 annually.**
- A single girl child cannot have multiple Sukanya Samridhhi accounts.
- **Only two Sukanya Samriddhi Yojana accounts are allowed per family**, i.e., one for each girl child.

Why in News?

- The Government has released details about the number of beneficiaries enrolled under thee Sukanya Samriddhi Yojana.

2) Koyla Darpan Portal

What's in the news?

- Government of India has launched Koyla Darpan Portal to **share Key Performance Indicators related to the Coal Sector.**
- The portal will have the Key Performance Indicators related to Coal Production, Status of Coal Stock in Thermal Power Plants, Allocation of Blocks, Monitoring of Major Coal Mines and Coal Price.
- The portal is accessible through the website of the Ministry of Coal for maximum public outreach.

3) National Commission for Minorities

About NCM

- The Union Government set up the National Commission for Minorities (NCM) as a **statutory body** under the **National Commission for Minorities Act, 1992.**
- Initially five religious communities, viz., **Muslims, Christians, Sikhs, Buddhists and Zoroastrians (Parsis)** were notified as minority communities by the Union Government. Further in 2014, **Jains** were also notified as another minority community.
- It's objective is **to safeguard and protect the interests of minorities** as provided in the Constitution of India and laws enacted by the Parliament.
- The functions of NCM broadly include:
  - (a) **evaluate the progress of the development** of minorities under the Union and States;
  - (b) **monitor the working of the safeguards** provided in

the Constitution and in laws enacted by Parliament and the State Legislatures;
(c) **make recommendations for the effective implementation of safeguards** for the protection of the interests of minorities by the Central Government or the State Governments;
(d) **look into specific complaints** regarding deprivation of rights and safeguards of the minorities and take up such matters with the appropriate authorities;
(e) **conduct studies, research and analysis** on the issues relating to socio-economic and educational development of minorities;
(f) **make periodical or special reports** to the Central Government on any matter pertaining to minorities and in particular difficulties confronted by them; and
(g) any other matter which may be referred to it by the Central Government.

- The NCM receives petitions/grievances from the aggrieved persons and the said petitions/grievances being received by Commission are dealt with by calling for reports from the concerned authorities under the Union and State Governments.
- On receipt of the reports, the Commission makes **appropriate recommendations** to the respective authorities for redressal of the grievances.

Why in News?

- The National Commission for Minorities has taken cognizance of a complaint received regarding illegal mining in the Ropar District in Punjab.

THE HINDU EDITORIALS

1) Storm warnings of a megacity collapse

Context:

- The unpredicted spell of staggering rain over Chennai on December 30, 2021 reminds us of the **risk of urban collapse due to extreme weather events.**

Challenges of urban governance

Unredrawn policies

- In spite of immense community support and active mobilisation for change, post catastrophic 2015 flood, Chennai and Mumbai witnessed **change in laws just on paper.**

Undermined role of local governments

- Though considerable importance is given to technological tools, private sector talent and mapping strategies to identify a city's assets and to plan spatially, **the central role for democratically-elected local governments is undermined.**
- **Neglect of municipal councils, lack of empowerment and failure to build capacity** among municipal authorities have produced frequent urban paralysis in extreme weather.

Reshifted focus

- In Chennai, the focus after every flood has been on the storm water drain network, while **commercial encroachments get insufficient attention.**
- Fate of encroachments along Mumbai's Mithi river is an example where the Mithi River Development and Protection Authority, after the 2005 flood, **favoured removal of dwellings, while sparing 'permanent structures' that were too big to touch.**

Weak regulations

- **Loose metropolitan boundaries** with little control over neighbouring local governments produce **unclear building regulations** that lead to the problem in the management of wetlands, reservoirs, and watercourses.

Multidimensional measures

- All dimensions of a city's growth, starting with affordable housing, play a central role in **adapting to future climate change.** Hence following measures can be adopted
    - A **top-level department for climate change adaptation** is best suited to serve as a unifier, bringing all relevant departments in a State, such as housing and urban development, transport, water supply, energy, land use, public works and irrigation.
    - **Prioritise ecological and sustainability concerns over aesthetics**, and reject market-oriented 'fantasy plans'.
    - **Lower carbon emissions growth even during infrastructure** creation by using biophilic design and green materials.
    - A **comprehensive master urban plan** for all the cities is needed.

Conclusion

- **Urban development would be more sustainable and equitable if the guiding principle is climate change.**
- Instead of flashy retrofitted 'smart' urban enclaves, focus should be on creating sound, functional metropolitan cities that can handle floods, heat waves, pollution and mass mobility to keep the engines of the economy running.

2) Establishment and Strengthening of Veterinary Services

Introduction

- The twentieth livestock census indicated that India today has a livestock population of approximately **537 million; of this, 95.8% is concentrated in rural areas.**
- A majority of livestock farmers have two to four animals per household,

enhancing the longevity and the productivity of their livestock will go a long way towards **alleviating rural poverty.**

- Presently, there are an estimated 66,000 veterinary hospitals, polyclinics, dispensaries, aid centres across the country.

Issues with livestock sector

Poor accessibility to veterinary services

- Most of the country's livestock being in rural and remote areas, travelling long distances to access veterinary services **adversely impacts the longevity and the productivity** of the livestock.

Inadequate veterinary treatment facilities

- **Inadequate testing and treatment facilities for veterinary diseases** pose a major challenge, especially now where there is a drastic rise in cases of zoonotic diseases.
- Most villages in the country lack testing facilities, and even when samples are collected, they need to be sent to blocks/districts nearby for test results.

Quacks and Antibiotic resistance

- As approximately **70% of India's milk supply is sourced from farmers** who own less than five animals, losses due to mastitis alone amount to a milk loss of approximately 10 litres per day per farm.
- Quacks or untrained animal health workers are **easily accessible** and this has led to the inappropriate administration of antibiotics because of **flawed prescriptions** especially in cases of mastitis (inflammation of the udder in cattle).
- **Antimicrobial resistance** can be caused because of factors such as high or low dosages, incorrect duration of medication, and overprescription.
- The World Health Organization (WHO) has listed antibiotic-resistant "**priority pathogens"** — a catalogue of 12 species/families of bacteria that pose the greatest threat to human health.

Government measure

- To mitigate this problem, the Government has identified a slew of measures within the revised provisions of the **Livestock Health and Disease Control (LH&DC) programme**.
- A major focus has been on the **'Establishment and Strengthening of Veterinary Services – Mobile Veterinary Units (MVUs)'.**
- Until now, the Government has been providing doorstep services related to **artificial insemination and vaccination for livestock.**
- LH&DC scheme seeks to plug the challenges posed by the limitations of stationary hospitals by providing **veterinary diagnostic and treatment facilities at a farmer's doorstep for ailments, diseases or any other emergency veterinary conditions by MVUs.**

What is a MVU?

- A typical MVU is a **four-wheeler van**, with working space for one veterinarian, one para-veterinarian and a driver-cum-attendant.
- It also has **space for essentials** such as equipment for diagnosis, treatment and minor surgery, other basic requirements for the treatment of animals, audio-visual aids for awareness creation and GPS tracking of vehicle.
- The LH&DC scheme envisages **one MVU for one lakh animals**; however, the number of vans in use could be higher in regions with difficult terrain.

Need for MVUs

- The MVUs will build on the **doorstep delivery model,** as stationary hospitals cannot be easily accessed by most livestock farmers.
- MVUs can play a major role in **plugging the gap of inadequacy in testing and treatment** facilities for veterinary diseases.
- The MVU model will **mitigate the issue of antimicrobial resistance** and is in alignment with the 'One Health vision' laid down by the Global Action Plan of WHO.

Significance of MVUs

- MVUs have been **successfully running** either on hire or on State ownership basis in several States **(Andhra Pradesh, Gujarat, Madhya Pradesh, Odisha, Telangana, West Bengal,**

etc.) with positive results and increased outreach, especially in geographically difficult terrains.
- Increasing adoption of MVUs across the country will lead to a **surge in employment opportunities** for veterinarians and assistants.
- There is a great deal of scope for **innovations and intervention** by the private sector in the context of animal health and MVUs.
- With the growing prevalence of the Public-Private Partnership (PPP) model, the MVU model is poised to **generate higher returns on investment.**

Conclusion
- The main thrust for the near future will be on **focused upgradation of veterinary health-care services, disease surveillance and training (CVE), and disease reporting in real time** and for which MVUs are a step in the right direction.

3) A BIT to review

Context
- The report of the Standing Committee on External Affairs on **'India and bilateral investment treaties (BITs)'** was presented to Parliament recently.

What is BIT?
- **Bilateral Investment Treaties** are **reciprocal agreements between two countries** to promote and **protect foreign private investments** in each other's territories.
- BITs establish **minimum guarantees** between the two countries regarding the treatment of foreign investments, such as
  - **National treatment** (treating foreign investors at par with domestic companies),
  - **Fair and equitable treatment** (in accordance with international law), and
  - **Protection from expropriation** (limiting each country's ability to take over foreign investments in its territory).
- Till 2015, India had signed BITs with 83 countries (of which 74 were in force). These BITs were negotiated based on the **Indian Model BIT of 1993.**
- India revised its Model BIT text in 2015.

How do Provisions of Model BIT, 2015 differ from Model BIT of 1993?
- It heavily **narrows down the definition of "investment"** needed to qualify for BIT protection — from an asset-based to an enterprise-based one.
- It contains a **clause mandating exhaustion of domestic remedy** prior to initiating international arbitration proceedings.
- Model BIT has **done away with the 'Fair and Equitable Treatment' clause** and has **included a detailed 'Treatment of Investments' clause** with a broadly-worded undertaking that neither party shall subject investments to measures that are manifestly abusive, against norms of customary international law and to un-remedied and egregious violations of due process.

Context of review
- The broader context in which the Committee took up the task of reviewing India's approach towards BITs has core elements.
  - India adopted a **new Model BIT in 2016**, which marked a significant departure from its previous treaty practice.
  - **India is in the process of negotiating new investment deals** (separately or as part of free trade agreements) with important countries such as **Australia and the U.K.**

Recommendations of the committee

Expedite the existing negotiations
- It articulated its discontentment at the fact that India has signed very few investment treaties after the adoption of the Model BIT.
- It recommends that India **expedite the existing negotiations and conclude the agreements at the**

earliest because a delay might adversely impact foreign investment.

BITS influence FDI inflows positively

- The committee recognises the potential of BITs in luring foreign direct investment (FDI).
    - While individual BITs do not impact investment inflows, the cumulative effect of all BITs signed by India **positively influenced FDI inflows.**
- In this regard the committee recommends that India **should sign more BITs** in core or priority sectors to attract FDI.

Fine tune Model BIT

- The committee recommends that India's **Model BIT be fine-tuned** because the Model BIT gives precedence to the state's regulatory interests over the rights of foreign investors.

Bolstering the capacity of government officials

- The committee recommends bolstering the capacity of government officials in the area of **investment treaty arbitration.**
- An institutionalised mechanism for capacity-building is needed through the involvement of public and private universities that have competence in this field.
- The government should also consider establishing chairs in universities to foster research and teaching activities in international investment law.

What did the committee miss?

- The Committee could have emphasised on **greater regulatory coherence, policy stability, and robust governance structures.**

INDIAN EXPRESS EXPLAINED

1) Buoyant exports but unfavourable trade balance

Context

- **India's exports have risen nearly 50 per cent** year on year in the first nine months of this fiscal, putting the country on track to hit a **target of $400 billion in merchandise exports.**
- **India's imports** have also risen sharply during the same period leading to a **sharp uptick in India's fiscal deficit.** India is pursuing a number of new Free Trade Agreements (FTAs) to expand opportunities for Indian exporters.

How have Indian exporters performed in FY22?

- **India's exports between April and December 2021 hit $301.4 billion,** up 49.7 per cent year on year and 26.5 per cent above exports during the same period in 2019. Exports of two traditional sectors — **petroleum products and gems and jewellery** — have been key contributors to the export growth in December, rising by 152 per cent and 16.2 per cent respectively, over the previous fiscal.
- India's exports have been buoyed by a **worldwide increase in trade with global merchandise trade.** Global trade in both goods and services in 2021 is estimated to be worth $28 trillion, up 23 per cent from 2020 and 11 per cent when compared to pre-Covid-19 levels.
- Among non-petroleum and non-gems and jewellery exports, **engineering goods**, such as iron and steel products, **organic and inorganic chemicals** as well as **textile products** such as cotton yarn and fabrics have been key contributors to export growth in this fiscal.
- Outbreaks of Covid-19 infections in key competitors such as Vietnam, leading to disruptions in supply, have also likely contributed to an increased demand for Indian exports.
- **India's services exports have grown at an estimated 18.4 per cent to $177.7billion** in the first nine months of the fiscal.

How have India's imports grown and what is the impact on the current account deficit?

- **India's merchandise imports have grown even faster than exports** — at 68.9 per cent year-on-year in the first nine months of the current fiscal to $ 443.8 billion, up from $262.8 billion in the previous fiscal. Key imports for India during this fiscal so far include **petroleum and petroleum products, gold and electronic goods.**
- The rise in imports has led to an increase in the **trade deficit to $142.4 billion** in the April-December period, up from $61.4 billion in the year-ago period, and $125.9 billion in the corresponding period in FY20.
- **India's services trade surplus is estimated to be about $74.4 billion in the first three quarters.** Experts have estimated that **India's current account deficit for the fiscal will be about $40-$45 billion.**

What are key developments in Indian trade?

- India is currently in the process of **negotiating FTAs with the UK, UAE, Australia, Israel and the EU** and is aiming to close **interim trade deals with the UAE, Australia and the UK** within this year.
- Commerce minister Piyush Goyal has noted that Indian industry should be prepared to give market access to trading partners if it wants to benefit from greater market access for its own products.

2) Pig-to-human heart operation

Context

- Recently, David Bennett, a 57-year-old from the U.S. became the first person to **receive a heart transplant from a genetically-modified pig.** Surgeons at the University of Maryland Medical

Center transplanted the porcine heart into Mr. Bennett suffering from terminal heart failure.

- Since transplantation of a pig heart into a human, called **xenotransplantation**, is an experimental procedure, doctors had to seek an emergency authorisation from the U.S. FDA (Food and Drug Administration).
- Approval was granted as Mr. Bennett was facing near-certain death due to his condition and was too ill to qualify for a routine human heart transplantor, an artificial ventricular assist device.

Is David Bennett the first person to be transplanted with a porcine organ?

- Last year, surgeons at the New York University Langone Health medical centre **transplanted a kidney of a genetically modified pig into a brain-dead person.** The second such pig kidney experiment at the same university was carried out on November 22, 2021 on a person maintained on a ventilator.
- The genetic modification was to **deceive the human immune system** from recognising the kidney as foreign and reject it. Since the recipients were already brain-dead, the purpose of the transplantation was not to save the patient; it was purely an experiment to find out if an organ from a genetically modified pig would be compatible, function normally and not be rejected.

What vital genetic modifications were done to make the pig heart transplantation possible?

- Since the **human immune system rejects anything that is foreign**, whether from another person who is immunologically matched to the recipient or from a different species such as a pig, scientists had to **tweak the pig genome to make the organ less likely to be rejected.**
- Revivicor, a U.S.-based company, is raising a small herd of genetically engineered pigs. These pigs have **10 of their genes genetically modified** to reduce the possibility of rejection. Of the 10 genes, four were inactivated, including one that causes an aggressive immune response and another that causes the heart to grow after transplantation.
- In addition, **six human genes were inserted into the pig genome** to further reduce the risk of rejection. The recipient is also on an experimental drug to suppress the immune system so that the transplanted pig heart is not rejected.
- The DNA of pigs also contains many **retroviruses that can infect human cells.** The presence of such a virus in the transplanted organ raises the risk of infection in human recipients. Dozens of retroviruses have been removed from the organ to make it safer when transplanted.
- Unlike the traditional breeding techniques to know both copies of a gene, the advent of genome-editing tools such as **CRISPR/Cas9,** which allows precise removal of specific genes has made gene modification simpler, fast and accurate.
- A genetically modified pig cell is fused with a pig ovum that has its DNA removed. The ova that contain only the genetically engineered genome start dividing to become pig foetuses. This is the same technique that was used to clone **Dolly, the sheep.**
- The embryos are then implanted into surrogate mothers. The gestation period is just 114 days, unlike in the case of humans. **Pigs have been preferred as ideal candidates** for xenotransplantation despite their immune system being different from humans for the simple reason that the **porcine organs are anatomically similar to those of humans.**

What are the reasons for xenotransplantation becoming more acceptable?

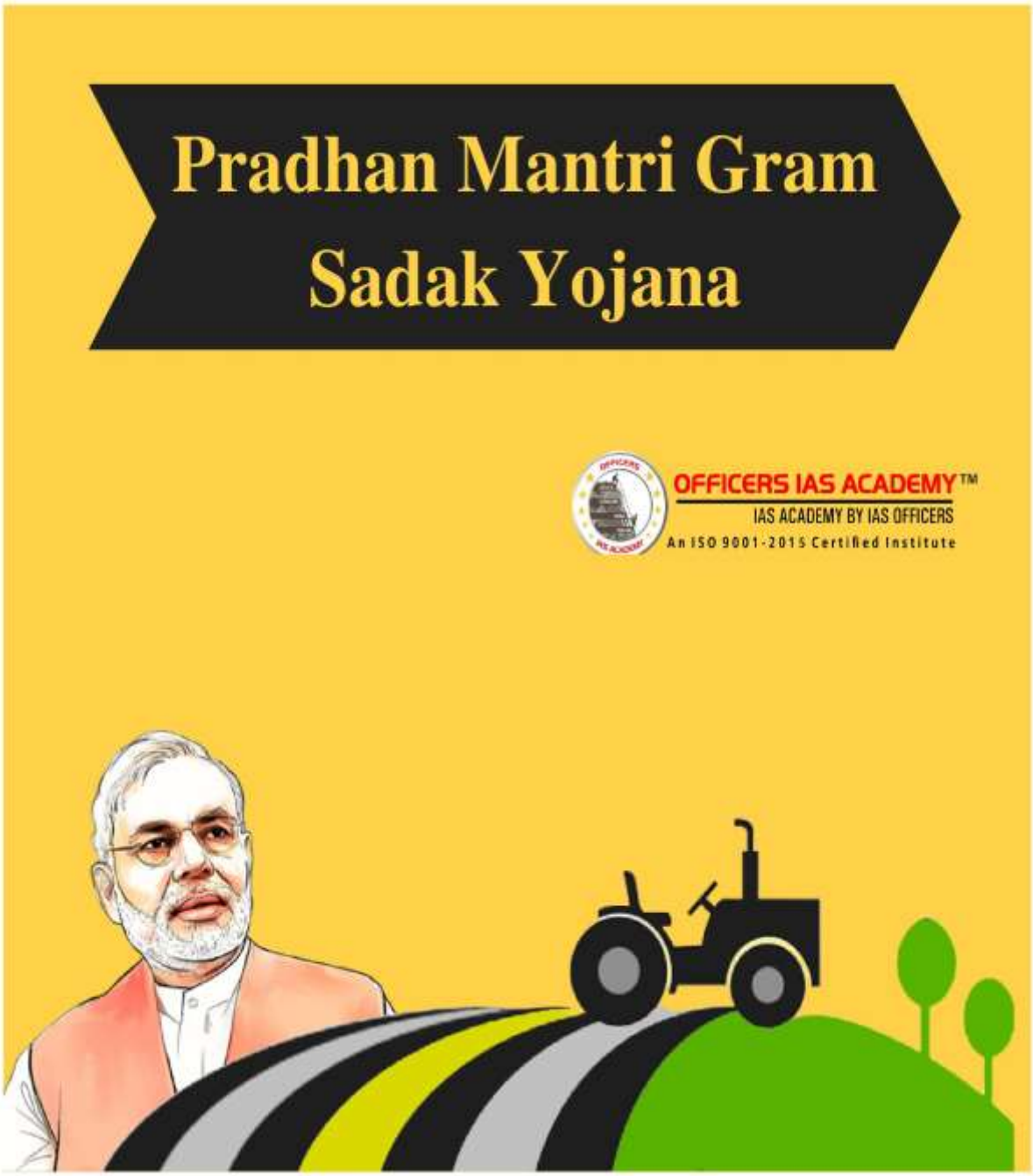
- Last year, nearly 4,000 people in the U.S. received human donor hearts, but the need is far more. The highest demand is for kidneys.
- According to the health ministry, around 0.18 million people in India are estimated to suffer from renal failure every year, but only about 6,000 renal

transplants are carried out in the country.

- About 25,000-30,000 liver transplants are needed annually in India but only about 1,500 are being performed. In the case of the heart, 50,000 people suffer from heart failure and are in need of a heart transplant. Yet, only 10-15 heart transplants are carried out in India each year.
- Harvesting organs from genetically engineered pigs is seen as a **viable alternative to meet organ shortage**. Besides scientific challenges, there are several **ethical challenges** to overcome before xenotransplantation of porcine organs becomes a reality.

INFOGRAPHIC OF THE WEEK

1) Pradhan Mantri Gram Sadak Yojana



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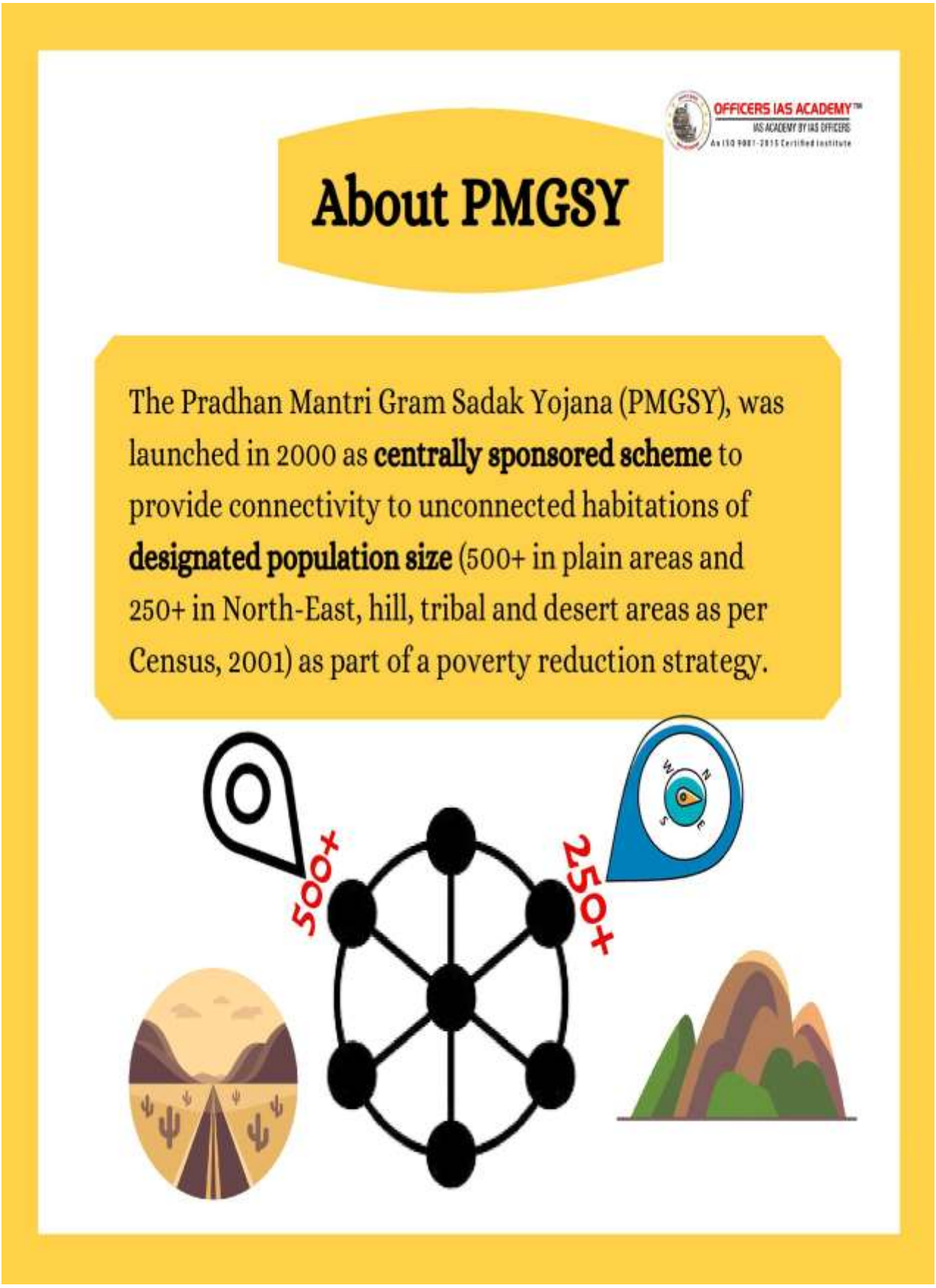

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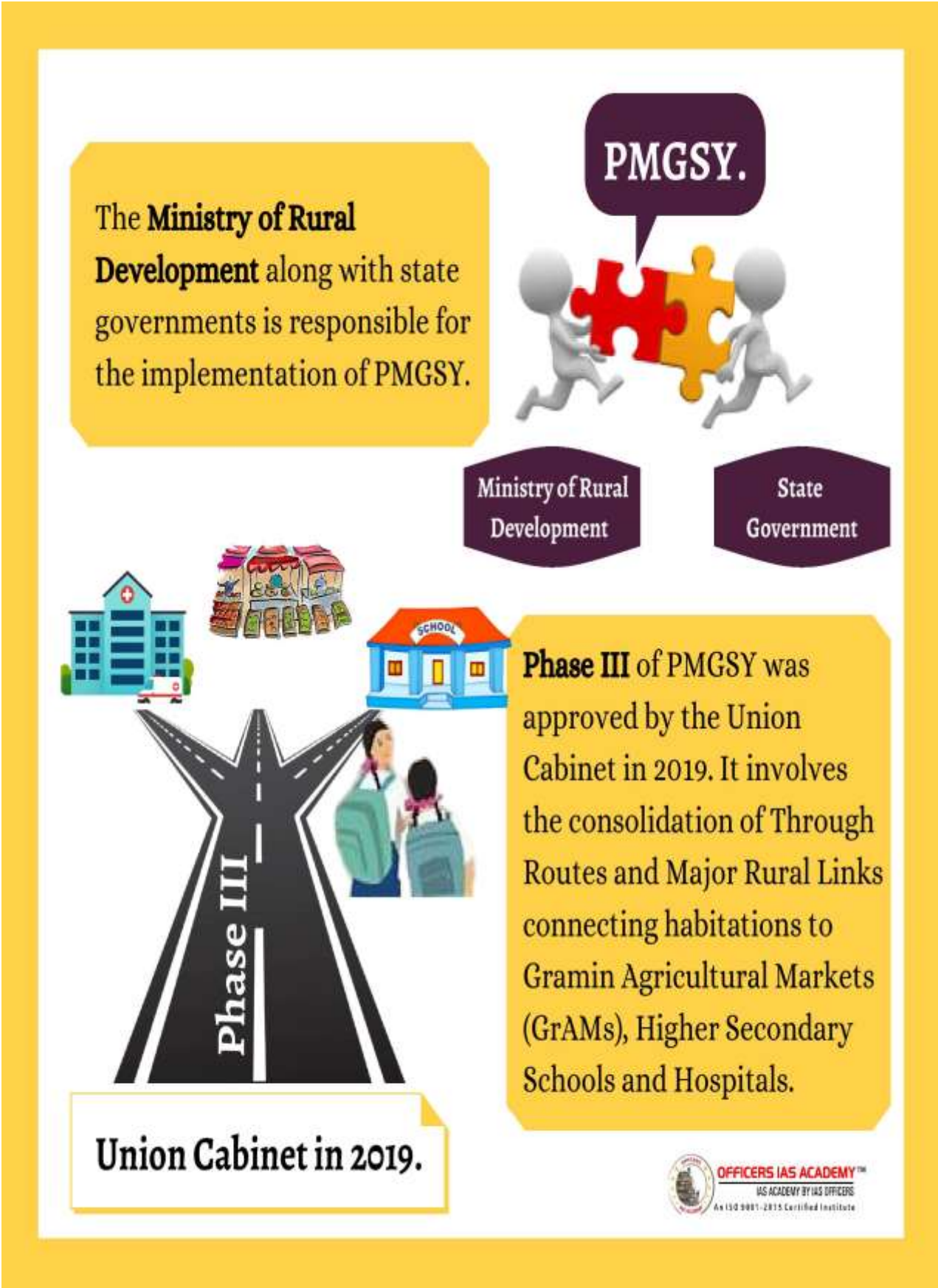

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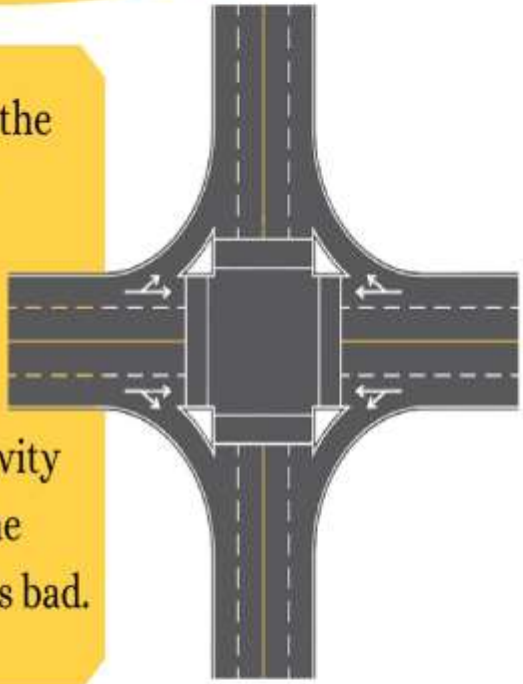
Guiding Principles of PMGSY

The spirit and the objective of the scheme is to provide good all-weather road connectivity to unconnected Habitations. A habitation which was earlier provided all-weather connectivity would not be eligible even if the present condition of the road is bad.



The unit for this Programme is a Habitation and not a Revenue village or a Panchayat. A **Habitation** is a cluster of population, living in an area, the location of which does not change over time.

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The PMGSY shall cover **only the rural areas.** Urban roads are excluded from the purview of this Programme.

Funding pattern

The Union Government

North-Eastern and Himalayan State — 90%

other states — 60%

The Union Government bears **90% of the project cost** in respect of projects sanctioned under the scheme in North-Eastern and Himalayan States, whereas for other states the Union Government bears **60% of the cost.**

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Initiatives related to PMGSY

Road Connectivity Project for Left Wing Extremism affected Areas (RCPLWEA): It was launched in 2016 as a separate vertical under PMGSY to provide all-weather road connectivity with necessary culverts and cross-drainage structures in 44 districts (35 are worst LWE affected districts and 09 are adjoining districts), which are critical from security and communication point of view.

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Meri Sadak mobile app: It was launched to enable citizens to register complaints regarding the quality and pace of construction of PMGSY roads.

Why in News?

A total of 1,29,549 km road length has been constructed during the last three years and the current year under various interventions/verticals of PMGSY.

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