

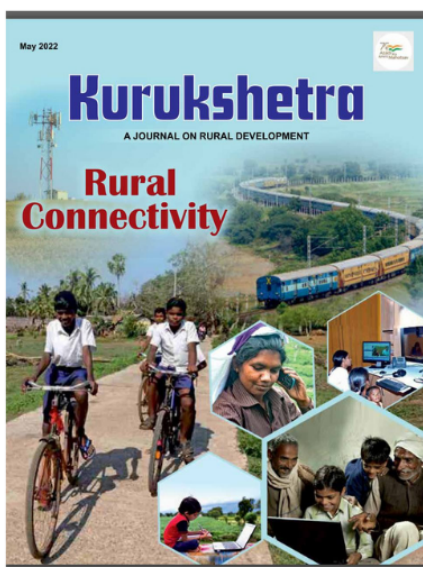
# OFFICERS' Pulse

May 2022 - AT A GLANCE



*The Indian* **EXPRESS**

DownToEarth **Business Standard**



**Current Affairs Monthly**  
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# Schemes

## 1) MGNREGS

### About the Programme

- The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005, guarantees **100 days of work** each financial year to **any rural household** willing to do public work-related unskilled manual work at the statutory minimum wage.
- In addition to this, there is a provision for upto **additional 50 days of unskilled wage employment** in a financial year in drought/natural calamity notified rural areas. The **State Governments** may make provision for providing additional days beyond the period guaranteed under the Act from their own funds.
- The act makes it **obligatory** for the State to give rural households work on demand. In case such employment is not provided within 15 days of registration, the applicant becomes eligible for an **unemployment allowance**.
- The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) was initiated as directed in MGNREGA to implement the mandate of the Act.
- The **Ministry of Rural Development (MRD)** is monitoring the entire implementation of the MGNREGS in association with state governments.
- The employment will be provided **within a radius of 5 km**: if it is above 5 km extra wage will be paid.
- The wages are revised according to the **Consumer Price Index-Agricultural Labourers (CPI-AL)**.
- While **60 per cent of the total expenditure** has to be on **wage**, **40 per cent** spending has to be on the **creation of material assets**.
- Permissible works predominantly include water and soil conservation, afforestation and land development works.
- **Work site facilities** such as crèche, drinking water, shade have to be provided.
- **Gram sabhas** must recommend the works that are to be undertaken and **at least 50% of the works must be executed by them**.
- **Social Audit** has to be done by the Gram Sabha.

### Funding

- Funding is **shared between the centre and the states**.
- The funding pattern of the scheme comprises 100% funding for unskilled labour cost and 75% of the material cost by Central Government and rest shall be borne by the State Government.

### Why in News?

- The Centre has made it **mandatory that the attendance of workers under the MGNREGS be captured through a mobile application with time-stamped and geo-tagged photographs** rather than the attendance marked in registers.
- There are nearly 15 crore active workers under the MGNREGS. The latest development is expected to **check any leakage in the programme and bring in more transparency**.

### Key Features of the Scheme

- **Every rural household** has the right to register under MGNREGA.
- **One-third** of the stipulated workforce must be **women**.
- **Work site facilities** such as creche, drinking water and shade have to be provided.

- This is also expected to stop any bogus attendance of workers through fake entries in physical registers and ensure only genuine ones on the job get paid and the attendance is captured in real-time.
- There were also concerns that the physical register system could be manipulated, which could lead to pilferage of MGNREGS funds.

### Concerns

- However, concerns have been raised related to **patchy Internet connectivity** in rural areas and little or no technical support. **The biggest setback after the move has been for women employees.** In a majority of cases, the employees' families are averse to giving phones to women, especially smartphones. Hence, many women have dropped out of MGNREGS.
- There are other pitfalls that remain, primarily relating to **technical glitches and minimal technical support.**

## 2) PM-KUSUM Scheme

### About the Scheme

- The Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (PM KUSUM) Scheme was launched in 2019 for **installation of solar pumps and grid connected solar and other renewable power plants** in the country.
- It was launched by the **Ministry of New and Renewable Energy.**
- Under the scheme, farmers are provided subsidies for setting up stand-alone solar pumps and to solarise their grid-connected pump sets.
- This scheme enables farmers to set up **solar power generation capacity on their barren lands** and to **sell it to the power grid.**

- The Scheme consists of **three components:**

- **Component-A:** Setting up of decentralized ground/ stilt mounted grid connected solar or other renewable energy based power plants up to 2 MW capacity
- **Component-B:** Installation of stand-alone solar agriculture pumps of capacity up to 7.5 HP
- **Component-C:** Solarisation of existing grid connected agriculture pumps of capacity up to 7.5 HP.

### Benefits of the Scheme

- The Scheme will have substantial environmental impact in terms of **savings of CO2 emissions.** All three components of the Scheme combined together are likely to result in saving about 27 million tonnes of CO2 emission per annum.
- Further, Component-B of the Scheme on standalone solar pumps may result in **saving of 1.2 billion liters of diesel per annum** and **associated savings in the foreign exchange** due to reduction of import of crude oil.
- The scheme has potential to generate employment opportunities equivalent to 6.31 lakh job years for skilled and unskilled workers.
- In addition, the scheme would provide **additional income to farmers**, by giving them the option to sell additional power to the grid, through solar power projects set up on their barren lands.
- The scheme also reduces the government's burden of **power subsidy in the agriculture sector.**

### Why in News?

- The Ministry of New and Renewable Energy has observed



that some fraudulent websites have claimed to be the registration portal for the PM-KUSUM scheme, collecting money and information from the people interested in the Scheme.

- In order to avoid any loss to the general public, MNRE has issued public notices, advising the general public not to deposit any registration fee or share any personal information on such websites.

### 3) Pradhan Mantri Ujjwala Yojana

#### About PMUY

- The **Ministry of Petroleum & Natural Gas** launched PMUY in 2016 to **provide clean cooking fuel to poor households**.
- It aims to provide **8 crore deposit free LPG connections to poor households**. The connections are issued in the **name of women** of the households.
- The scheme increases the usage of LPG and helps in reducing health disorders, air pollution and deforestation. Use of fossil fuels and conventional fuel like cow-dung, firewood etc. has serious implications on the health of rural women and children.
- Initially, the beneficiaries were identified through Socio Economic Caste Census (SECC), 2011 data. **The scope of PMUY has now been expanded to cover all the poor families in the country** subject to fulfilling the terms and conditions.
- Under the scheme, **cash assistance of Rs. 1600** is given to the beneficiaries to get a deposit-free new connection. Further, **interest free loans** are provided to purchase a stove and refill by Oil Marketing Companies.

#### PMUY 2.0

- Last year, the Government of India launched the second phase of Pradhan Mantri Ujjwala Yojana - Ujjwala 2.0.
- During Ujjwala 1.0, launched in 2016, a target was set to provide LPG connections to 5 crore women members of BPL households. Later, the target was revised to **8 Crore LPG connections which was achieved in August 2019**.
- In the **Union budget for Financial Year 2021-22**, a provision for an **additional one crore LPG connection** under the Pradhan Mantri Ujjwala Yojana was announced. These one crore additional connections under Ujjwala 2.0 aim to provide **deposit-free LPG connections to those low-income families who could not be covered under the earlier phase of this scheme**.
- Along with a deposit free LPG connection, Ujjwala 2.0 will **provide first refill and hotplate free of cost to the beneficiaries**.

#### Why in News?

- According to an Right to Information (RTI) response from oil marketing firms, in the last financial year, 90 lakh beneficiaries of the PMUY did not refill their cylinders. And over 1 crore beneficiaries refilled their cylinders only once.
- Since the COVID-19 pandemic started in 2020, fuel prices fluctuated and kept rising with the disruptions of fuel imports. Thus, even after providing subsidies under Central schemes like Ujjwala Yojana, the LPG rates were too high for consumers to refill even once.
- With being unable to refill LPG cylinders due to exorbitant prices, many of them have returned to getting fuel from wood, cow dung, etc.

## Initiatives

### 1) PRAGATI platform

#### About the platform

- PRAGATI (Pro-Active Governance And Timely Implementation) is a ICT based multi-purpose and multi-modal platform launched in **2015** by the **Prime Minister's office (PMO)**.
- It is aimed at **addressing common man's grievances** and simultaneously **monitoring and reviewing important programmes and projects** of the Government of India as well as projects flagged by State Governments.
- It is also a robust system for bringing **e-transparency and e-accountability** with real-time presence and exchange among the key stakeholders.
- It also promotes **cooperative federalism** as it brings on one platform the Secretaries of Government of India and the Chief Secretaries of the States.

#### Who designed it?

- The system has been designed in-house by the **PMO team with the help of National Informatics Center (NIC)**.

#### Key features of PRAGATI application

- It is a **three-tier system** (PMO, Union Government Secretaries and Chief Secretaries of the States).
- The Prime Minister will hold a **monthly programme** where he will interact with the Government of India Secretaries, and Chief Secretaries through video-conferencing enabled by data and geo-informatics visuals.

#### Why in News?

- Prime Minister Narendra Modi recently chaired the meeting of the 40th edition of PRAGATI, the ICT

based multi-modal platform for Pro-Active Governance and Timely Implementation, involving Centre and State governments.

#### Related Information

##### About NIC

- The National Informatics Centre under the **Ministry of Electronics and Information Technology (MeitY)** is the technology partner of the Government of India.
- It was established in 1976 with an objective to provide technology-driven solutions to Central and State Governments in various aspects of development.
- NIC has been instrumental in adopting and providing Information and Communication Technology (ICT) and eGovernance support to the Central Government.

### 2) Jal Jeevan Mission

#### About Jal Jeevan Mission

- Launched in 2019, the chief objective of the Mission is to provide **Functional Household Tap Connection (FHTC) to every rural household by 2024** and thereby ensuring potable water supply in adequate quantity i.e. **@ 55 lpcd** (Litres per capita per day) of prescribed quality on a long-term and regular basis.
- This Mission is under the **Department of Drinking Water and Sanitation, Ministry of Jal Shakti**.
- It focuses on **integrated demand and supply-side management** of water at the local level.
- The programme also implements **source sustainability measures** as mandatory elements, such as recharge and reuse through greywater management, water

conservation and rainwater harvesting.

- JJM looks to create a **Jan Andolan** (People's Movement) for water, thereby making it everyone's priority.
- JJM is a **'bottom up' approach** where community plays a vital role from planning to implementation, management, operation and maintenance. To achieve this, **Village Water & Sanitation Committee (VWSC)/ Pani Samiti** are being constituted and strengthened; **Village Action Plans** are developed through community engagement; **Implementation Support Agencies (ISAs)** are engaged to support village communities in programme implementation and create awareness among people.
- **Water quality monitoring & surveillance activities** are given top priority under the Jal Jeevan Mission. Five women in each village are being trained to test water samples of any kind of contamination by using **Field test Kits (FTKs)**.
- Every water supply asset created under Jal Jeevan Mission is **geo-tagged**.
- The fund sharing pattern is 90:10 for Himalayan and North-Eastern States; 50:50 for other States and 100% for UTs.

#### Why in News?

- India has achieved the milestone of 50% rural households having access to tap water connections. At the announcement of the Jal Jeevan Mission on 15<sup>th</sup> August 2019, out of 19.27 Crore households only 3.23 Crore (17%) households in India had tap water connections.
- Goa, Telangana, A&N Islands, D&N Haveli and Daman & Diu, Puducherry and Haryana have

already achieved 100% household connections.

- Punjab, Gujarat, Himachal Pradesh and Bihar have coverage of more than 90% and are progressing fast towards attaining the status of **'Har Ghar Jal'** (i.e. every rural household in these villages having assured tap water supply in their home).

#### Related Information

##### Jal Jeevan Mission (Urban)

- In the Union Budget 2021-22, the Government announced that Jal Jeevan Mission (Urban) will be launched to provide **universal coverage of water supply to all households** through **functional taps in all 4,378 statutory towns** in accordance with **SDG Goal-6** ("clean water and sanitation for all").

#### Key Highlights

- The project will focus on **rejuvenation of water bodies** to augment sustainable fresh water supply and creating **green spaces and sponge cities** to reduce floods and **enhance amenity value** through an Urban Aquifer Management plan.
- JJM(U) will promote **circular economy of water** through development of a city water balance plan for each city focusing on recycle/reuse of treated sewage, rejuvenation of water bodies and water conservation. **20% of water demand** to be met by reused water with development of institutional mechanisms.
- **Information, Education and Communication (IEC) campaign** is proposed to spread awareness among masses about conservation of water.
- In order to promote **Public private partnership**, it has been mandated for cities having million plus



population to take up PPP projects worth minimum of 10 percent of their total project fund allocation.

- **Funding Pattern:**
  - For Union Territories, there will be 100% central funding.
  - For North Eastern and Hill States, central funding for projects will be 90%.
  - Central funding will be 50% for cities with less than 1 lakh population, one third for cities with 1 lakh to 10 lakh population and 25% for cities with million plus population.
- Mission will be monitored through a **technology-based platform** on which beneficiary response will be monitored along with progress and output-outcome.

### 3) E-Shram Portal

#### About the Portal

- In 2021, the **Ministry of Labour and Employment** unveiled the e-shram portal which aims to **register 38 crore unorganised workers**, such as construction labourers, migrant workforce, street vendors and domestic workers, among others.
- The workers will be issued an **e-Shram card containing a 12 digit unique number**, which will help in including them in social security schemes.
- The portal would lead to the creation of a **national database of unorganised workers**.
- Apart from being **Aadhaar-linked**, it will collect details of the name, occupation, address, educational qualification, skill types and family of the registered workers.
- The portal was developed by the Ministry of Labour & Employment, in technical collaboration with the

**National Informatics Centre** (an attached office under the Ministry of Electronics and Information Technology).

- The portal is open to workers engaged in the **unorganised sector** and **aged between 16 and 59**.

#### Why in News?

- More than 27 crore unorganised workers have registered on the e-Shram portal so far.

### 4) National Mission for Clean Ganga

#### About NMCG

- National Mission for Clean Ganga (NMCG) is registered as a society under the **Societies Registration Act 1860**.
- NMCG aims to **ensure effective abatement of pollution and rejuvenation of the river Ganga** by adopting a river basin approach to promote inter-sectoral co-ordination for comprehensive planning and management.
- It also aims to **maintain minimum ecological flows** in the river Ganga with the aim of ensuring water quality and environmentally sustainable development.
- NMCG acted as the **implementation arm of National Ganga River Basin Authority (NGRBA)** which was constituted under the provisions of the **Environment (Protection) Act (EPA), 1986**.
- NGRBA was dissolved in 2016, consequent to the constitution of **National Council for Rejuvenation, Protection and Management of River Ganga** (referred as **National Ganga Council**).

#### Why in News?

- The Executive Committee of the National Mission for Clean Ganga

has approved 11 projects with an estimated cost of around 660 crore rupees.

- These projects include construction of river embankment, promenade, public amenities like drinking water facility, public toilets, seating space, pavilions and ghats along River Ganga.

# Environment

## 1) UNCCD

### What is Desertification?

- Desertification is **land degradation in arid, semi-arid, and dry sub-humid areas**, collectively known as **drylands**, resulting from many factors, including human activities and climatic variations.
- Desertification is not limited to irreversible forms of land degradation, nor is it equated to desert expansion, but represents all forms and levels of land degradation occurring in drylands.

### Reasons for Desertification

#### Natural Causes:

- **Natural disasters** such as floods, droughts, and landslides cause soil erosion and fertile soil displacement.
- **Badland Topography** is the outcome of **water erosion** and is the first stage of desertification.
- **Wind invasion** diminishes soil fertility, rendering the region vulnerable to desertification.

#### Anthropogenic Causes:

- **Overgrazing** lowers the land's use, production, and biodiversity.
- **Soil salinity and water-logging in agricultural fields** due to flawed agronomic practices.
- Forests operate as a carbon sink, hence **deforestation** is a problem. Deforestation contributes to the greenhouse effect by releasing carbon dioxide back into the atmosphere.
- **Farming Practices** such as Slash and burn agriculture puts the state at risk of soil erosion. The mineral content of the soil is disturbed by heavy tilling and overirrigation.
- **Climate change** may increase desertification by altering temperature, rainfall, sun radiation,

and wind patterns on a regional and temporal scale.

- **Overpopulation and urbanisation** increase demand for natural resources and makes land prone to desertification.

### Impact of Desertification

- **Environmental:** Vegetation destruction, species extinction and biodiversity loss, infertility in the soil, pollution of the water supply, soil erosion and land degradation are some of the impacts of desertification.
- **Economic ramifications:** As land is degraded, **food production is reduced** and it will lead to increase in poverty.
- **Social:** Increase in poverty, large scale migrations, negative impact on food security and higher threats of malnutrition from reduced food and water supplies.

### More on Desertification

- According to the most recent UN estimates, **up to 40 per cent of our planet's land is degraded**. This will directly affect half of humanity and is a threat to about 50 percent of global GDP or around \$44 trillion.
- The **rate of soil erosion is 100 times faster than the rate of soil formation**.
- Annual area of drylands has increased at more than 1% every year in the last 50 years.

### Status in India

- India faces a severe problem of land degradation, or soil becoming unfit for cultivation.
- As per **ISRO**, **nearly 30% of land in the country is degraded**.
- About 82 percent of these losses were attributed to the **deterioration in the quality of land under agriculture, forests,**

and pastures, and the remaining to the changes in the land-use pattern — diverting land to less productive use.

#### What is UNCCD?

- The United Nations has three major Conventions: **the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD).**
- These conventions were the result of the **1992 UN Conference on Environment and Development in Rio de Janeiro**, also called the **Earth Summit**.
- Established in **1994**, the UNCCD is the **sole legally binding international agreement linking environment and development to sustainable land management**.
- The Convention **specifically addresses the arid, semi-arid and dry sub-humid areas, known as the drylands**, where some of the most vulnerable ecosystems and peoples can be found.
- The Convention has 197 parties including **India**.

#### Why in News?

- The 15th Conference of Parties (COP15) of the United Nations Convention to Combat Desertification (UNCCD) was recently held in Abidjan, Côte d'Ivoire, in West Africa.
- The COP15 theme, **'Land. Life. Legacy: From scarcity to prosperity'**, is a call to action to ensure land, the lifeline on this planet, continues to benefit present and future generations.
- The Conference concluded with a global pledge to boost drought resilience and invest in land restoration for future prosperity.

#### Highlights of COP15

- The global leaders representing UN member states agreed to establish an **Intergovernmental Working Group on Drought** for 2022-2024 to look into possible options to support a shift from reactive to proactive drought management.
- The UN members also agreed and committed to **accelerate the restoration of one billion hectares of degraded land by 2030**.
- The UN member states will focus on improving data gathering and monitoring to track progress against the achievement of land restoration commitments.
- They committed to establishing a **new partnership model for large-scale integrated landscape investment programmes**.
- The leaders came on board and also committed to **prioritise and ensure women's involvement in land management for effective land restoration**.
- Other significant outcomes of the COP 15 included: **Abidjan Call** issued by the Heads of State and Government to boost long-term environmental sustainability and **Abidjan Declaration on achieving gender equality** for successful land restoration.

#### Measures to tackle Desertification by Government of India

- The **National Action Programme to Combat Desertification** was created in 2001 to address challenges of rising desertification and to take necessary responses. The **Ministry of Environment, Forest, and Climate Change** is in charge of implementing it.
- **India's Atlas of Desertification and Land Degradation** was issued in 2016 by the **Indian Space Research Organisation (ISRO)**.

This Atlas presents state-wise desertification and land degradation status maps depicting land use, process of degradation and severity level.

- India is on track to achieve its national commitment on **Land Degradation Neutrality (LDN)**, and the country is working to **restore 26 million hectares of degraded land by 2030**.
  - *LDN is a state whereby the amount and quality of land resources, necessary to support the ecosystem functions and enhance food security, remain stable or increase within specified temporal and spatial scales and ecosystems.*

#### Way Forward

- UNCCD's COP15 is the first Conference of the Parties of the three Rio Conventions taking place in 2022, ahead of the UN Framework Convention on Climate Change COP27 and the UN Convention on Biological Diversity COP15.
- There is a need to ensure **greater synergies among the three Rio Conventions**, including complementarities in the implementation of these treaties through nature-based solutions and target-setting at the national level, said the leaders representing the UN member states.
- Importance should be given to make **soil conservation an integral part of all land-related programmes** to curb further deterioration in this limited natural resource and contribute to meeting the COP15's main objective of combating desertification and acquiring resilience against droughts.

## 2) Green Hydrogen

### Hydrogen

- Hydrogen is a **colourless, odourless, tasteless, non-toxic and highly combustible gaseous substance**. It is also the **lightest, simplest and most abundant member** of the family of chemical elements in the universe.
- Hydrogen is a **clean fuel** and an efficient energy carrier. It is emerging as an important source of energy since it has **zero carbon content** in contrast to hydrocarbons which have net carbon content between 75 and 85 per cent. When burnt, Hydrogen produces **water as a by-product** and is, therefore, **environmentally benign**.
- It has **huge potential in the transportation sector as a direct replacement to fossil fuels**, as it is possible to store hydrogen on-board.

### How is Hydrogen Generated?

- Hydrogen (H<sub>2</sub>) is one of the most abundant elements available on earth. However, it is **not found in elemental form**.
- The richest source of hydrogen is **water**. Hydrogen is also found in **organic compounds and fossil fuels** like petroleum, natural gas, coal and biomass.
- Hydrogen for commercial use is produced from **catalytic steam reforming of natural gas, naphtha and other hydrocarbons, partial oxidation of hydrocarbons, gasification of coal and electrolysis of water**.
- The energy industry refers to different "types" of hydrogen to differentiate how it is produced.

### What is Green Hydrogen?

- Green hydrogen is produced through **electrolysis using renewable sources of energy**



such as solar, wind or hydel power. It is produced by splitting water into hydrogen and oxygen using renewable electricity.





- That makes green hydrogen the **cleanest option** – hydrogen from renewable energy sources **without CO2 as a by-product**.

#### Other Types of Hydrogen

- Hydrogen can be 'grey', 'brown', 'Turquoise' and 'blue' too.
  - The vast majority of industrial hydrogen is currently produced from natural gas through a conventional process known as **steam methane reforming (SMR)**. The standard SMR process produces what is known as **Grey Hydrogen** and has the **major disadvantage of releasing large quantities of by-product CO2** into the atmosphere - the main culprit for climate change.
  - Grey hydrogen has increasingly been produced

also from **coal**, with significantly higher CO2 emissions per unit of hydrogen produced so much that it is often called **brown or black hydrogen** instead of grey.

- **Blue hydrogen**, too, is produced using electricity generated by burning **methane or coal** but with **technologies to prevent the carbon released** in the process from entering the atmosphere;
- **Turquoise hydrogen** is made using a process called **methane pyrolysis** to produce hydrogen and **solid carbon**. As a result, there is no requirement for carbon capture and storage (CCS) and the carbon can even be used in other applications. Where the electricity driving the pyrolysis is renewable, the process is **zero-carbon**.

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

Note: SMR = steam methane reforming.

\* Turquoise hydrogen is an emerging decarbonisation option.

#### What are the advantages of hydrogen as a fuel?

- The intermittent nature of renewable energy, especially wind, leads to **grid instability**. Green

hydrogen can be **stored for long periods of time**.

- The stored hydrogen can be used to produce electricity using **fuel cells**. In a fuel cell, a device that converts the energy of a chemical into

electricity, hydrogen gas reacts with oxygen to produce electricity and water vapour. Hydrogen, thus, can act as an **energy storage device and contribute to grid stability**.

- Experts say the **oxygen**, (produced as a by-product), can also be **monetised** by using it for industrial and medical applications or for enriching the environment.

#### Why is India pursuing green hydrogen?

- India's average **annual energy import bill is more than \$100 billion** and the increased consumption of fossil fuel has made India a **high carbon dioxide (CO<sub>2</sub>) emitter**, accounting for nearly 7% of the global CO<sub>2</sub> burden.
- In order to become **energy independent by 2047**, the government stressed the need to introduce green hydrogen as an alternative fuel that can make India not only become self-sufficient in green hydrogen but also **produce green hydrogen for export markets**.

#### Measures Taken

- India is developing the **National Green Hydrogen Energy Mission to scale up green hydrogen production and utilisation across multiple sectors**. As part of this, India is **targeting initially approximately 1 million tonnes annual green hydrogen production by 2030**.
- The Mission is expected to create a framework for generating demand for green hydrogen in sectors such as petroleum refining and fertiliser production; support for indigenous manufacturing of critical technologies; research and development activities; and an enabling policy and regulatory framework.

- India is also participating in **Mission Innovation Challenge for clean hydrogen** to accelerate the development of a global hydrogen market by identifying and overcoming key technology barriers to the production, distribution, storage, and use of hydrogen at a gigawatt scale. **By 2050 India intends to produce three-fourths of its hydrogen from renewable resources**.
- The Mission Innovation is a **global initiative of 22 countries and the European Commission** (on behalf of the European Union) catalysing investment in research, development and demonstration to make clean energy affordable, attractive and accessible for all. Mission Innovation was launched in 2015.
- Considering India's objective of **raising non-fossil energy capacity to 500 gigawatts by 2030**, it is imperative that our energy mix involves other green technologies on a medium-to-long term basis.

#### Why in News?

- Oil India Limited (OIL), an Indian National Oil Company under the ownership of Ministry of Petroleum and Natural Gas, has commissioned India's first 99.99% pure green hydrogen plant in eastern Assam's Jorhat.

### 3) Eco-sensitive zones

#### What are Eco-sensitive zones?

- As a general principle, **land falling within 10 kms** (in some exceptional cases it can even go beyond that) of the **boundaries of the National Parks and Wildlife Sanctuaries** are categorised as Eco-Fragile Zones or Eco-sensitive Zones.

- They are declared under the **Environment Protection Act, 1986** and are notified by the **Ministry of Environment, Forest and Climate Change**.
- The purpose of declaring Eco-sensitive Zones around National parks and Sanctuaries is to create some kind of "**Shock Absorber**" for the Protected Areas. They would also act as a **transition zone** from areas of high protection to areas involving lesser protection.
- The activities in the eco-sensitive zones would be of a **regulatory nature rather than prohibitive nature**, unless and otherwise so required.

#### Why in News?

- The Supreme Court has directed that **all national parks and wildlife sanctuaries in the country must earmark a minimum distance of one-kilometre as eco-sensitive zone** where prohibited activities specified by the Centre, including mining and establishment of any new permanent structure will not be permitted.
- The Court said that the order would apply in all such states/UTs **where the minimum ESZ is not prescribed**. However, in the event there are states which have prescribed minimum ESZ beyond one kilometer, the **wider margin as ESZ shall prevail**.
- A 10-km ESZ was declared by the Union government in 2001, but several State governments failed to execute it.

#### 4) Pollution caused one in six deaths worldwide in 2019

##### What's the news?

- The **Lancet Commission on Pollution and Health**, has

published its latest study which reveals that **pollution caused nearly 9 million deaths in 2019, or about one in six deaths worldwide**.

- *The Lancet Commission on Pollution and Health is an initiative made up of researchers from 23 institutions across 10 countries.*
- *The aim of the Commission is to reduce air, soil and water pollution by communicating the extraordinary health and economic costs of pollution globally and providing actionable solutions to policy-makers.*

#### Highlights of the Report

##### Largest Existential Threat

- Pollution is still the **largest existential threat to human and planetary health** and jeopardizes the sustainability of modern societies.
- The scientists credited the **drop in household pollution deaths** to programs in low- and middle-income countries that promoted the use of cleaner-burning cooking fuel in homes over smoky solid fuels such as animal dung and built infrastructure for clean drinking water and sewage disposal.
- That decline was offset, however, by a **rise in deaths attributable to industrial activity and emissions in growing cities, especially in Asia**.

##### Causes

- **Air pollutants** including fine particulates, methane and soot from the burning of fossil fuels were found to be the **top pollution killers**, responsible for 6.7 million deaths in 2019. Noxious air killed 1.67 million Indians in 2019,

accounting for **18% of all fatalities**.

- **Water pollutants**, including disease-causing microbes and heavy metals like arsenic and lead, accounted for 1.4 million deaths. **Lead** from the disposal of batteries and electronic waste, among other sources, was linked to 900,000 deaths.

### Impacts

- Air pollution has been linked to heart disease, stroke, lung disease, and asthma in children, any of which could lead to deaths related to exposure to pollutants. Adults who are poisoned by lead can die from hypertension, heart disease or kidney disease.
- Arsenic in drinking water can lead to bladder, skin, or lung cancer, while harmful bacteria in the drinking water could lead to deaths from diarrhoeal disease.
- Excess deaths due to pollution have led to **economic losses totalling \$4.6 trillion** in 2019, equating to **6.2% of global economic output**.

### Deep Inequity

- The study also notes **pollution's deep inequity**, with 92% of pollution-related deaths, and the greatest burden of pollution's economic losses, occurring in **low-income and middle-income countries**.
- The researchers called pollution a **"major global threat to health and prosperity"** especially in low-and middle-income countries, adding that it **claimed roughly as many lives as smoking and more than malaria, tuberculosis and HIV combined**.

### Way Forward

- The researchers called on nations to put **priority on tracking pollution and reducing its health burden** and urged international aid

organizations to **boost funding for programs aimed at curbing pollution**.

- They also called for the creation of an **international governmental body on pollution** along the lines of the Intergovernmental Panel on Climate Change, which periodically issues reports on climate science.
- Preventing pollution can also slow climate change, achieving a double benefit for planetary health and the report calls for a **massive, rapid transition away from all fossil fuels to clean, renewable energy**.

## 5) National Biofuel Policy

### About National Biofuel Policy 2018

- The National Biofuel Policy 2018 envisages an indicative target of **20% blending of ethanol in petrol and 5% blending of biodiesel in diesel by 2030**.

### Salient Features

1. The Policy categorises biofuels as **"Basic Biofuels"** viz. **First Generation (1G) bioethanol & biodiesel** and **"Advanced Biofuels"** - **Second Generation (2G) ethanol, Municipal Solid Waste (MSW) to drop-in fuels, Third Generation (3G) biofuels, bio-CNG etc.** to enable extension of appropriate financial and fiscal incentives under each category.
2. The Policy **expands the scope of raw material for ethanol production** by allowing use of Sugarcane Juice, Sugar containing materials like Sugar Beet, Sweet Sorghum, Starch containing materials like Corn, Cassava, Damaged food grains like wheat, broken rice, Rotten Potatoes, unfit for human consumption for ethanol production.
3. The Policy allows **use of surplus food grains for production of ethanol for blending with petrol**

with the approval of National Biofuel Coordination Committee.

4. With a thrust on Advanced Biofuels, the Policy indicates a **viability gap funding scheme for 2G ethanol Bio refineries** of Rs. 5000 crore in 6 years in addition to additional tax incentives, higher purchase price as compared to 1G biofuels.
5. The Policy encourages setting up of **supply chain mechanisms** for biodiesel production from non-edible oilseeds, Used Cooking Oil, short gestation crops.

#### Expected Benefits

- India is highly dependent on imports for meeting its energy requirements and imports around 85% of its crude oil domestic consumption requirements. Promotion of biofuels will lead to **reduction of this import dependency**.
- **Diversion of excess sugarcane & sugar to ethanol** is a correct way forward to deal with **surplus stocks**. Diversion of excess sugar would help in stabilizing the domestic ex-mill sugar prices and will also help sugar mills to get relieved from storage problems. It will improve their cash flows and facilitate them in clearance of cane price dues of farmers; and will facilitate mills to function in the coming years.
- Prolonged reuse of Cooking Oil for preparing food, particularly in deep-frying is a **potential health hazard and can lead to many diseases**. Used Cooking Oil is a **potential feedstock for biodiesel** and its use for making biodiesel will prevent diversion of used cooking oil in the food industry.
- By adopting 2G technologies, agricultural residues/waste which otherwise are burnt by the farmers can be converted to ethanol and

can **fetch a price for these waste** if a market is developed for the same.

- By reducing crop burning & conversion of agricultural residues/wastes to biofuels there will be **further reduction in greenhouse gas emissions**.
- The policy is also expected to **ensure waste management benefits and raise infrastructure** in rural areas.

#### Why in News?

- The Union Cabinet has approved amendments to the National Policy on Biofuels, 2018, to **advance the ethanol blending target of 20% blending of ethanol in petrol to 2025-26 from 2030**.

#### Other Major Amendments to the National Policy on Biofuels includes:

- Allowing more feedstocks for production of biofuels;
- Promoting the production of biofuels in the country, under the Make in India program, by units located in Special Economic Zones (SEZ)/ Export Oriented Units (EoUs);
- The amendments allows addition of new members to the **National Biofuel Coordination Committee (NBCC)**;
  - NBCC was constituted under the **Chairmanship of Minister, Petroleum & Natural Gas (P&NG)** to provide overall coordination, effective end-to-end implementation and monitoring of India's biofuel programme.
- It also grants permission for **export of biofuels** in specific cases.

#### Significance of the new amendments

- The amendments are expected to **reduce import of petroleum products** by generation of more biofuels. Since many more



feedstocks are being allowed for production of biofuels, it would help India achieve its **aim of 'energy independence' by 2047.**

- The new policy would also foster the **development of indigenous technologies.**
- A 2021 report by the **NITI Aayog** said that immense benefits would accrue to the country by 20% ethanol blending by 2025, such as saving ₹30,000 crore of foreign exchange per year, increased energy security, lowered carbon emissions, better air quality, self-reliance, better use of damaged foodgrains, increased farmers' incomes and greater investment opportunities.
- India achieved **9.45% ethanol blending** as of March 2022, according to the Ministry of Petroleum and Natural Gas. The Centre projects that this will reach 10% by the end of financial year 2022.

#### What is ethanol blending in petrol?

- Ethanol is a **biofuel**, that is, a fuel produced by processing organic matter. The auto fuels we commonly use are mainly derived from the slow geological process of **fossilisation**, which is why they are also known as fossil fuels.
- Mixing ethanol in auto fuel can result in savings and also protect against climate change.
- Ethanol in India is obtained **primarily from sugarcane via a fermentation process.** Ethanol is **high in oxygen content**, which therefore allows an engine to more thoroughly combust fuel.
- It can be mixed with fuel in different quantities and can help **reduce vehicular emissions.** Also, since it is plant-based, it is considered to be a **renewable fuel.**

#### Which countries are doing it?

- Given the constraints of finite sources of fuel, frequent fluctuations in prices and their overall impact on the environment, alternatives like ethanol in fuel are being explored by countries. Ethanol is considered to be highly suitable for blending.
- **Brazil** has mandated that ethanol content in gasoline sold in the country should be in the range of 18 percent to 27.5 percent while the **European Union** has a target for 10 percent of transportation fuel for each member country to come from renewable sources, such as biofuels, by 2020.

#### Related Information Biofuels

- Biofuels are liquid or gaseous fuels produced from biomass that are generally high in sugar (such as sugarcane, sugarbeet, sweet sorghum), starch (such as corn and cassava) or oils (such as soybeans, rapeseed, coconut, sunflowers, and palms). The two most commonly used biofuels are **ethanol and biodiesel.**
- **Categories of Biofuels:**
  1. **First generation Biofuels** are mainly produced from **food crop feedstock**, such as oil, sugar and starch crops, thus competing for agricultural areas used for food production.
  2. **Second generation Biofuels** differ in feedstock which, in this case, comes from **non-food plants** such as agricultural crops, residues and wood (so-called lignocellulosic biomass).
  3. **Third generation Biofuels** are produced from **micro-organisms** like algae. Its production is supposed to

be low cost and high-yielding – giving up to nearly 30 times the energy per unit area as can be realized from current, conventional ‘first-generation’ biofuel feedstocks.

4. **Fourth generation Biofuels** use **genetically modified (GM) algae** to enhance biofuel production. Key to the process is the capture and sequestration of CO<sub>2</sub>, a process that renders fourth-generation biofuels a **carbon negative source of fuel**.

#### **Pradhan Mantri JI-VAN Yojana**

- It provides Viability Gap Funding (VGF) to **Second Generation ethanol manufacturing projects** to increase availability of ethanol for ethanol blending programme.
- The scheme focuses to incentivise the 2G Ethanol sector and support the industry by creating a suitable ecosystem for setting up commercial projects and increasing Research & Development in this area.

## **6) Coalition for Disaster Resilient Infrastructure**

### **About CDRI**

- Launched in **2019** by the **Prime Minister Narendra Modi** at the **UN Climate Change Summit**, the Coalition for Disaster Resilient Infrastructure (CDRI) is an international collaborative platform involving the public and private sector, aiming to **promote the resilience of new and existing**

**infrastructure systems** to climate and disaster risks in support of sustainable development.

- CDRI envisions enabling **measurable reduction in infrastructure losses** from disasters, including extreme climate events. It seeks to rapidly expand the development and retrofit of resilient infrastructure to respond to the Sustainable Development Goals imperatives of expanding universal access to basic services, enabling prosperity and decent work.
- It aims to help tackle these objectives in a **multilateral approach**, which will help implement the Paris Agreement, through both global reduction of greenhouse gas emissions and enhanced climate change adaptation action.
- CDRI is a **multi-stakeholder global partnership** of national governments, UN agencies and programmes, multilateral development banks and financing mechanisms, the private sector, and academic and knowledge institutions. At present, it is **not an intergovernmental organization**, which are ordinarily treaty-based organizations.
- The **Governing Council** is the highest policy-making body of the CDRI, **co-chaired India and a representative of another national government** nominated by rotation every two years.
- The Coalition's secretariat is based in **New Delhi**.
- **Members of CDRI:** 31 countries and 8 organisations.



- Heat Wave: When actual maximum temperature  $\geq 45^{\circ}\text{C}$
- Severe Heat Wave: When actual maximum temperature  $\geq 47^{\circ}\text{C}$
- **For coastal regions**, when maximum temperature departure is  $4.5^{\circ}\text{C}$  or more from normal, Heat Wave may be described provided the actual maximum temperature is  $37^{\circ}\text{C}$  or more.
- Higher daily peak temperatures and longer, more intense heat waves are becoming increasingly frequent globally due to climate change. India too is feeling the **impact of climate change** in terms of **increased instances of heat waves which are more intense in nature with each passing year**, and have a devastating impact on human health thereby increasing the number of heat wave casualties.

#### Duration of a heatwave spell

- A heatwave spell generally lasts for a **minimum of four days** and on some occasions, it can **extend up to seven or ten days**.

#### Impacts

- The health impacts of Heat Waves typically involve **dehydration, heat cramps, heat exhaustion and/or heat stroke**. The extreme temperatures and resultant atmospheric conditions adversely affect people living in these regions as they cause **physiological stress, sometimes resulting in death**.
- Heatwaves can also **increase strain on water, energy and transportation** resulting in power

shortages or even blackouts. **Food and livelihood security** may also be strained if people lose their crops or livestock due to extreme heat.

- Multiple areas of the economic sector experience **reduced worker productivity during heatwaves**, especially agriculture and construction.
- Heatwaves, without concomitant increases in precipitation, can lead to **water shortages and increased stress for plants**, particularly in arid regions. This has the effect of reducing plant growth, the basis of energy production and the food chain, with an overall drying-out of the landscape.

#### Vulnerable Regions

- Heat waves are common over the **Core Heatwave Zone (CHZ)** — Rajasthan, Punjab, Haryana, Chandigarh, Delhi, West Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Orissa, Vidarbha in Maharashtra, parts of Gangetic West Bengal, Coastal Andhra Pradesh and Telangana, **as categorised by India Meteorological Department**.
- The regions in the **extreme north, northeast and southwestern India** are **less prone to heatwaves**.

#### Why in the news?

- The World Meteorological Organisation has noted that heatwaves are more intense and are starting earlier than in the past in India.

## Flora & Fauna

### 1) Fishing Cat Census conducted in Chilika

#### About Fishing Cat



- About twice the size of a typical house cat, the fishing cat (*Prionailurus viverrinus*) is a highly elusive wild cat species found primarily in **wetland and mangrove habitats**, even recorded in highly urbanised landscapes and montane forests.
- This unique species of wild cat is found distributed in patches across **South and Southeast Asia**. Confirmed records show fishing cat populations to be present in Sri Lanka, **India**, Nepal, Cambodia, Thailand, Pakistan, Bangladesh and Myanmar.
- In India, fishing cats have a patchy distribution along the Eastern Ghats, Sundarbans in West Bengal, Chilika lagoon and surrounding wetlands in Odisha, Coringa and Krishna mangroves in Andhra Pradesh.
- **Protection Status:** IUCN Red List: **Vulnerable**; CITES: **Appendix II**; Wildlife Protection Act (1972): **Schedule I**.
- Unlike most felines, fishing cats love water and are known for their expert hunting skills in aquatic habitats.
- Habitat loss and fragmentation, conflict with humans over poultry and livestock, as well as the

demand for bushmeat and trade for captive wildlife are causing fishing cat populations to decline.

#### Why in News?

- A census conducted by Chilika Development Authority (CDA) has revealed that the Chilika Lake has 176 fishing cats.

#### About Chilika Lake



- Chilika lake is the **largest brackish water lake in Asia**. It is located on the **Odisha's Coast**.
- It is also the **largest wintering ground for migratory waterfowl** found anywhere on the Indian sub-continent. Flocks of migratory waterfowl arrive from as far as the Caspian Sea, Lake Baikal, Aral Sea, remote parts of Russia, Kirghiz steppes of Mongolia, Central and South East Asia, Ladakh and the Himalayas, to feed and breed in its fertile waters.
- Chilika lake has been designated as a **"Ramsar Site"**, i.e. a wetland of International Importance.
- The lake was also included in the **Montreux Record** (Threatened list) in 1993 by Ramsar Secretariat due to the change in the ecological character of the lake ecosystem. Subsequently, however, due to successful restoration of the lake



ecosystem by Chilika Development Authority it was **removed from the Montreux Record in 2002.**

- The **Nalaban Island** within the lake is notified as a Bird Sanctuary

under Wildlife (Protection) Act, 1972.

# Agriculture

## 1) Direct Seeding of Rice

### What is it?

- Direct Seeding of Rice (DSR) refers to the process of **establishing a rice crop from seeds sown in the field rather than by transplanting seedlings from the nursery.**

- It aims to sow short duration and high yield varieties. It is done through DSR machines which are used for planting seeds of rice directly into the fields.

### Direct Seeding of Rice Vs Conventional transplanting

	Conventional transplanting	Direct Seeding of Rice
<b>Method of transplanting paddy</b>	<ul style="list-style-type: none"> <li>• Farmers prepare nurseries where the paddy seeds are first sown and raised into young plants.</li> <li>• These seedlings are then uprooted and replanted 25-35 days later in the main field.</li> <li>• The nursery seed bed is 5-10% of the area to be transplanted.</li> </ul>	<ul style="list-style-type: none"> <li>• There is <b>no nursery preparation or transplantation.</b></li> <li>• The seeds are instead <b>directly drilled</b> into the field by a tractor-powered machine.</li> </ul>
<b>Irrigation frequency</b>	<ul style="list-style-type: none"> <li>• For the first three weeks after transplanting, the plants have to be irrigated almost daily (if there are no rains) to maintain a water depth of 4-5 cm.</li> </ul>	<ul style="list-style-type: none"> <li>• Farmers have to only <b>level their land</b> and give <b>one pre-sowing irrigation.</b></li> <li>• Irrigation (apart from the pre-sowing irrigation) is necessary <b>only 21 days after sowing.</b></li> <li>• DSR can help reduce water consumption by as much as <b>25 per cent.</b></li> </ul>
<b>Herbicide</b>	<ul style="list-style-type: none"> <li>• <b>Water</b> acts as a herbicide for paddy.</li> </ul> <p><b>Underlying Principle:</b></p> <ul style="list-style-type: none"> <li>• Paddy growth is compromised by weeds that compete for nutrition, sunlight and water.</li> <li>• Water prevents growth of weeds by denying them oxygen in the submerged</li> </ul>	<ul style="list-style-type: none"> <li>• Water is replaced by real <b>chemical herbicides.</b></li> </ul> <p><b>About herbicides:</b></p> <ul style="list-style-type: none"> <li>• Two kinds of herbicides are used.</li> <li>• Pre-emergent: applied before germination. Eg. Pendimethalin</li> <li>• Post-emergent: sprayed 20-25 days after sowing,</li> </ul>

	stage, whereas the soft 'aerenchyma tissues' in paddy plants allow air to penetrate through their roots.	depending upon the type of weeds appearing. Eg. Bispyribac-sodium Fenoxaprop-p-ethyl
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### Advantages of DSR

#### Helps overcome labour shortage

- Direct seeding technique can solve labour shortage problems because like the traditional method it does not require a paddy nursery and transplantation of 30 days old paddy nursery into the main puddled field. With DSR, paddy seeds are sown directly with machines.

#### Herbicide cost still less than labour cost

- Though the purchase of herbicide incurs some cost, this is still lower than the cost paid out for labours.

#### Emission reduction

- The transplanting technique being a major source of **methane**, those emissions were reduced by **6 per cent to 92 percent** in the DSR method.

### Drawbacks of DSR

- The **seed requirement for DSR is higher**, at 8-10 kg/acre, compared to 4-5 kg in transplanting.
- It is doubtful that the **demand for herbicides** will be met.
- **Laser land levelling costs** of around Rs 1,000/acre is mandatory for DSR.

### Why in News?

- The Punjab government has announced Rs 1,500 incentive per acre for farmers opting for Direct Seeding of Rice which is known for saving water. DSR technique can help **save 15% to 20% water**. In some cases, water saving can reach **22% to 23%**.
- Since the area under rice in Punjab is almost stagnant around 3 million hectares for the last three to four

years, DSR can save 8100 to 1,0800 billion litres of water every year if the entire rice crop is brought under the technique.

- Results from research trials and farmers' field surveys have also indicated that **yield**, after DSR, are one to two quintals per acre **higher than puddled transplanted rice**.
- The alarming situation arising out of the fast-depleting groundwater, mainly due to water guzzling traditional methods of paddy transplantation, needs bold measures to check this serious trend instantly.

### Word of Caution

- Experts said that **suitability of soil** is the most important factor as farmers must not sow it in the light textured soil as this technique is **suitable for medium to heavy textured soils** including sandy loam, loam, clay loam, and silt loam which accounts for around 80% area of Punjab
- It **should not be cultivated in sandy and loamy sand** as these soils suffer from **severe iron deficiency**, and there is a **higher weed problem** in it.
- Also, direct seeding of rice should be **avoided in fields which are under crops other than rice** (like cotton, maize, sugarcane) **in previous years** as DSR in these soils is likely to **suffer more from iron deficiency and weed problems**.

## 2) NPOP & PGS

### Organic Farming in India

- Organic products are grown under a system of agriculture **without the use of chemical fertilizers and pesticides** with an **environmentally and socially responsible approach**.
- This is a method of farming that works at grass root level preserving the reproductive and regenerative capacity of the soil, good plant nutrition, and sound soil management, produces nutritious food rich in vitality which has resistance to diseases.
- **India's rank 8th in terms of World's Organic Agricultural land and 1st in terms of total number of producers as per 2020 data.**

### National Programme for Organic Production

- The **Agricultural and Processed Food Products Export Development Authority (APEDA)** under the Ministry of Commerce & Industries is implementing the National Programme for Organic Production (NPOP).
- The programme involves the accreditation of Certification Bodies, standards for organic production, promotion of organic farming and marketing etc.
- **All types of agriculture, horticulture and non-food crops** are grown under organic certification process.
- Livestock, aquaculture, animal feed processing and handling, mushroom production, sea weeds, aquatic plants and green house crop production have also come under the ambit of organic certification.
- **Organic products are currently exported from India only if they are produced, processed, packed**

**and labelled as per the requirements of the NPOP.**

- As per the established norm of organic production systems, the areas having chemical input usage history are required to undergo a **transition period of a minimum 2-3 years** to qualify as organic. During this period, farmers need to adopt standard organic agriculture practices and keep their farms under the certification process. On successful completion, such farms can be certified as organic after 2-3 years. The certification process also requires elaborate documentation and time to time verification by the certification authorities.

### Global Recognition

- The NPOP standards for production and accreditation system have been **recognized by European Commission and Switzerland** for unprocessed plant products as equivalent to their country standards. It enables India to export unprocessed plant products to these countries without the requirement of additional certification. The equivalency with the EU also facilitates the export of Indian organic products to the **United Kingdom** even in the post Brexit phase.
- Similarly, **The United States Department of Agriculture (USDA)** has recognized NPOP conformity assessment procedures of accreditation as equivalent to that of the National Organic Program (NOP) of the US.
- With these recognitions, Indian organic products duly certified by the accredited certification bodies of India are accepted by the importing countries. APEDA is also in the process of Bilateral equivalence with South Korea, Taiwan, Canada, Japan etc.

### PGS-India

- Participatory Guarantee Systems (PGS) for India programme for local and domestic market was launched by the **Ministry of Agriculture and Farmers' Welfare** with an aim to make the certification system affordable and accessible without the need for third party certification agencies.
- PGS-India is a quality assurance initiative that is **locally relevant, emphasizes the participation of stakeholders**, including producers and consumers and operates outside the frame of third party certification.
- In the PGS framework, people in similar situations (in this case smallholder producers) assess, inspect and verify the production practices of each other and take decisions on organic certification.
- The certification is in the form of a documented logo or a statement.

### Difference between NPOP and PGS India Certifications

- Both the programmes (NPOP and PGS-India) are independent of each other and products certified under one system cannot be processed or labeled under another system. While **NPOP certified products can be traded in export and in the domestic market**, **PGS-India certified products can be traded only in the domestic market**.
- Under the NPOP framework, **Accredited certification agencies** authorized under the programme are certifying organic producers. PGS-India programme was launched with an aim to make the certification system affordable and accessible **without the need for third party certification agencies**. Under the PGS, farmers in a group inspect each other's land

and vouch for its organic credentials.

- While NPOP is implemented by **APEDA** under the **Ministry of Commerce & Industries**, PGS-India is facilitated by the **Ministry of Agriculture and Farmers' Welfare** through **National Centre of Organic Farming (NCOF)** as its Secretariat.

### Advantages of PGS

- Procedures are simple, documents are basic, and farmers understand the local language used.
- All members live close to each other and are known to each other. As practising organic farmers themselves, they understand the processes well.
- Because peer appraisers live in the same village, they have better access to surveillance; peer appraisal instead of third-party inspections also reduces costs.
- Mutual recognition and support between regional PGS groups ensures better networking for processing and marketing.

### Limitations of PGS

- PGS certification is only for farmers or communities that can organize and perform as a group within the village or in close-by villages with continuous territory.
- **Individual farmers or group of farmers smaller than five members are not covered** under PGS. They either have to opt for third party certification or join the existing PGS local group.
- PGS ensures traceability only up to the end till it is in the custody of the PGS group. Once the product leaves the custody of PGS group there is no control of PGS on its integrity.

### Why in News?

- According to the Ministry of Agriculture & Farmers' Welfare, a total of 11.92 lakh farmers in the



country are practicing organic farming under PGS India and 16.02 lakh have registered in **TraceNet** under third party certification of the NPOP.

- *TraceNet is an internet based electronic service offered by **APEDA** to the stakeholders for facilitating process certification for export of organic products from India which comply with the NPOP standards.*
- **Madhya Pradesh** has more than one million hectares of area under NPOP, which is over 38% of the total area under the programme. Madhya Pradesh is followed by **Maharashtra** and **Rajasthan**.
- **Uttarakhand** has the highest number of farmers practicing organic farming under the PGS India scheme, followed by **Rajasthan** and **Uttar Pradesh**.

### Related Information

#### About APEDA

- The Agricultural and Processed Food Products Export Development Authority (APEDA) was established by the Government of India under the Agricultural and Processed Food Products Export Development Authority Act, 1985.
- The Authority replaced the Processed Food Export Promotion Council (PFEPCC).
- It functions under the **Ministry of Commerce and Industry**.
- The Authority has its headquarters in **New Delhi**.

#### Functions of APEDA

- **Development of industries** relating to the scheduled products for export by way of providing financial assistance or otherwise for undertaking surveys and feasibility studies, participation in enquiry capital through joint

ventures and other reliefs and subsidy schemes;

- **Registration of persons as exporters** of the scheduled products on payment of such fees as may be prescribed;
- **Fixing of standards and specifications** for the scheduled products for the purpose of exports;
- **Carrying out inspection** of meat and meat products in slaughterhouses, processing plants, storage premises, conveyances or other places where such products are kept or handled for the purpose of ensuring the quality of such products;
- **Improving of packaging** of the Scheduled products;
- **Improving of marketing** of the Scheduled products outside India;
- **Promotion of export oriented production and development** of the Scheduled products;

#### Products monitored

- APEDA is mandated with the responsibility of **export promotion and development** of the following scheduled products:
  - Fruits, Vegetables and their Products.
  - Meat and Meat Products.
  - Poultry and Poultry Products.
  - Dairy Products.
  - Confectionery, Biscuits and Bakery Products.
  - Honey, Jaggery and Sugar Products.
  - Cocoa and its products, chocolates of all kinds.
  - Alcoholic and Non-Alcoholic Beverages.
  - Cereal and Cereal Products.
  - Groundnuts, Peanuts and Walnuts.
  - Pickles, Papads and Chutneys.

- Guar Gum.
  - Floriculture and Floriculture Products.
  - Herbal and Medicinal Plants.
- In addition to this, APEDA has been entrusted with the responsibility to monitor **import of sugar**.

# Economy

## 1) Wholesale Price Index

### About WPI

- Wholesale Price Index (WPI) measures and tracks the changes in the **price of goods in the stages before the retail level**. It provides estimates of inflation at the wholesale transaction level for the economy as a whole.
- WPI basket **does not cover services**.
- It is released by the **Office of Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry**.
- The base year is **2011-2012**.
- The index basket consists of commodities under 3 main categories in decreasing order of weightage: **Manufactured products, Primary Articles and Fuel and Power**.

### Why in News?

- Inflation based on Wholesale Price Index surged to a record high of 15.1 per cent in April, with the rise in prices of vegetables, fruits, milk, manufacturing, fuel and power.
- This is the **highest WPI rate recorded in the 2011-12 series**.

### Related Information

#### About CPI

- Consumer Price Index (CPI) is an index which measures the weighted average of prices of a basket of **consumer goods and services** such as transportation, food and medical care.
- It is calculated by measuring price changes for each item in the **predetermined basket of goods and services** and averaging them.
- It is released by the **National Statistical Office (NSO)** under the Ministry of Statistics and Programme Implementation.

- The **base year** used to calculate CPI in India is **2012**.
- Retail inflation measured by the CPI was at 7.79 per cent in April, 2022.

### WPI Vs CPI

- While the WPI keeps track of the wholesale price of goods, the CPI measures the average price that households pay for a basket of different goods and services.
- The CPI basket consists of **services like housing, education, medical care, recreation etc. which are not part of WPI basket**. A significant proportion of WPI item basket represents **manufacturing inputs and intermediate goods** like minerals, basic metals, machinery etc. whose prices are influenced by global factors but these are not directly consumed by the households and are **not part of the CPI item basket**.
- Even as the WPI is used as a key measure of inflation in some economies, the RBI **no longer uses it for policy purposes**. The central bank currently uses the **Consumer Price Index** as a key measure of inflation to set the monetary and credit policy.
- Under the **flexible inflation targeting (FIT) framework**, RBI aims to contain CPI based inflation **within 4 percent with a band of (+/-) 2 percent**.

## 2) Purchasing Managers' Index

### What is PMI?

- Purchasing Managers' Index is an economic indicator which indicates the business activity & economic health of both the **manufacturing and service sectors**.

- PMI of India is compiled and constructed by **IHS Markit**, an information services provider.
- PMI is an **investor sentiment tracking index** and is more dynamic in nature. It is a survey-based measure that asks the respondents about changes in their perception of some key business variables from the month before. They are derived from monthly surveys of about 400 private companies.
- Variables used for calculating the PMI are: Output, New Orders, Employment, Input Costs, Output Prices, Backlogs of Work, Export Orders, Quantity of Purchases, Suppliers' Delivery Times, Stocks of Purchases and Stocks of Finished Goods.
- PMI, which is usually released at the **start of the month**, serves as a leading indicator of economic activity. It comes before the official data on industrial output, core sector manufacturing and GDP growth.

#### How to read PMI?

- While **PMI >50 implies an expansion of business and economic activity**, **PMI <50 means contraction**.

#### Why in News?

- Despite a rise in inflation, the Manufacturing Purchasing Managers' Index (PMI) rose to 54.7 in April, up from 54 in March.
- PMI is a leading indicator, giving analysts a good sense of the direction of a country's economy.

### 3) Index of Eight Core Industries

#### About ICI

- The **monthly** Index of Eight Core Industries (ICI) is a **production volume index**.
- The objective of the ICI is to provide an advance indication on

production performance of industries of 'core' nature. These industries are likely to impact on general economic activities as well as industrial activities.

- The Eight Core Industries- **Electricity, steel, refinery products, crude oil, coal, cement, natural gas and fertilizers**- comprise **40.27 per cent of the weight of items included in the Index of Industrial Production (IIP)**.
- **Industry Weight (In percentage):**
  - Petroleum & Refinery production - 28.04
  - Electricity generation - 19.85
  - Steel production - 17.92
  - Coal production - 10.33
  - Crude Oil production - 8.98
  - Natural Gas production - 6.88
  - Cement production - 5.37
  - Fertilizers production - 2.63
- ICI is released by the **Office of Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry**. The base year of the ICI is **2011-12**.

#### Why in News?

- India's core sector output, measured by the Index of Eight Core Industries, expanded 8.4% in April, the fastest pace in six months.

#### Related Information

##### About IIP

- The Index of Industrial Production (IIP) is a composite indicator that measures the **short-term changes in the volume of production** of a basket of industrial products during a given period with respect to that in a chosen base period.
- **Mining, manufacturing, and electricity** are the three broad

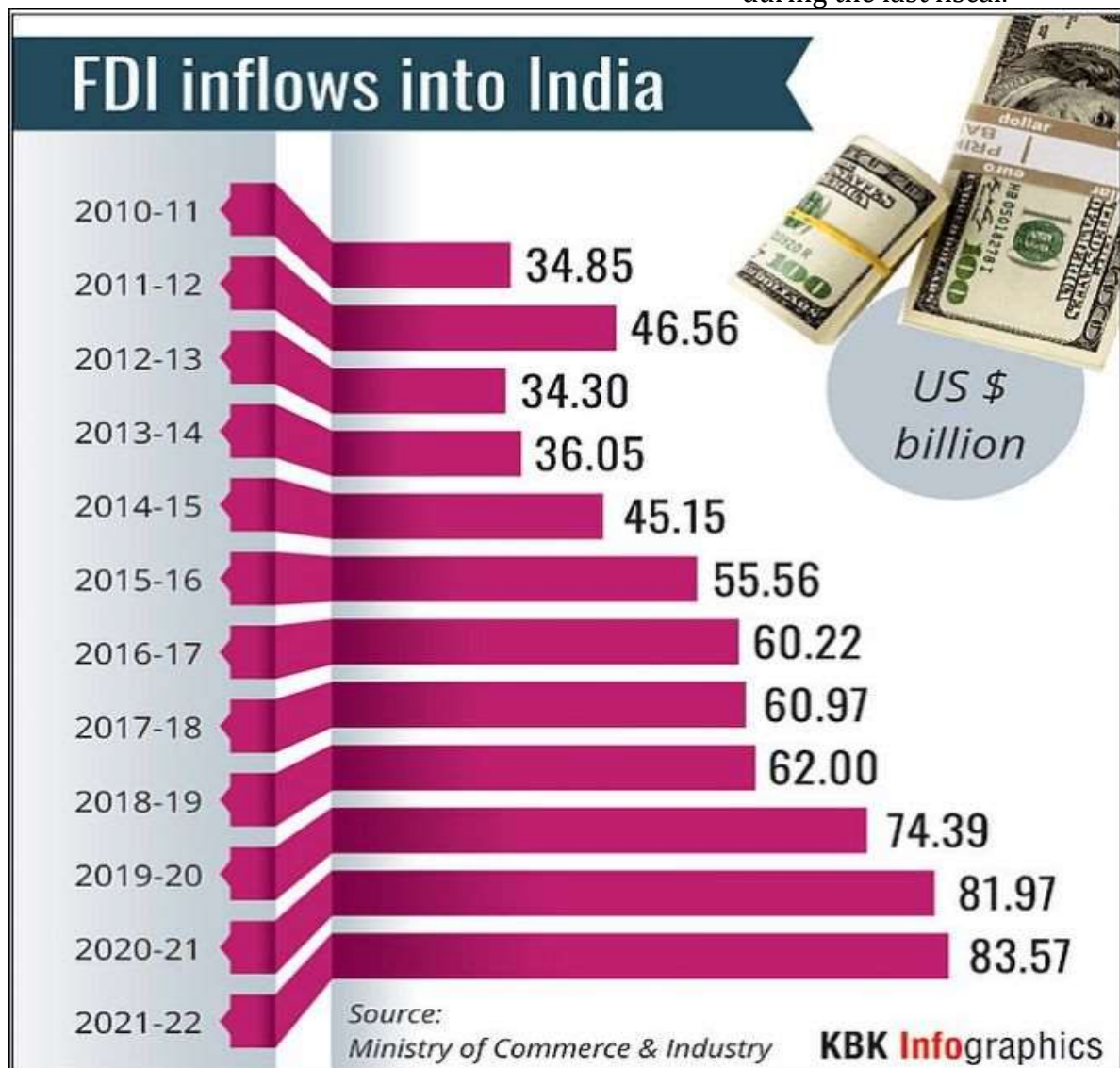
sectors in which IIP constituents fall.

- It is **compiled and published every month** by the **National Statistical Office (NSO)** under the **Ministry of Statistics and Programme Implementation**.
- The current base year is **2011-2012**.
- The Eight Core Industries comprise 40.27 per cent of the weight of items included in the IIP.

#### 4) India gets highest ever FDI

##### What's in the news?

- India has recorded the **highest ever annual Foreign Direct Investment (FDI) inflow of \$83.57 billion in 2021-22**. In 2020-21, the inflow stood at \$81.97 billion.
- In terms of top investor countries, **Singapore** is at the top with 27 per cent followed by **the US** (18 per cent) and **Mauritius** (16 per cent) during the last fiscal.



- Among sectors, **computer software and hardware** attracted maximum inflows. It was followed by the **services sector** and **automobile industry**.
- **Karnataka** is the top recipient state with 38 per cent share of the total FDI inflow reported during the fiscal year 2021-22 followed by **Maharashtra** and **Delhi**.



## 5) Repo Rate and its significance

### Context

- Recently, the Reserve Bank of India announced that the bank's **Monetary Policy Committee (MPC)** has decided to **raise the policy repo rate by 40 basis points to 4.40%, with immediate effect.**
  - MPC is a committee of the RBI which is entrusted with the task of fixing the benchmark policy interest rate (**repo rate**) to **contain inflation within the specified target level.**
  - Under the **flexible inflation targeting (FIT) framework**, the RBI targets to contain **Consumer Price Index (CPI) based inflation within 4 percent with a tolerance band of (+/-) 2 percent** for the period April 1, 2021, to March 31, 2026. (FIT is a monetary policy strategy used by the Central Bank to maintain the inflation level within a certain range)
  - The 2016 amendment of the Reserve Bank of India Act, 1934 provides for a **statutory and institutionalised framework** for the MPC.
  - The MPC has **six members: RBI Governor (Chairperson)**, RBI Deputy Governor in charge of monetary policy, one official nominated by the RBI Board and remaining 3 members would represent the Government.
  - The MPC makes decisions based on **majority vote**. In case of a tie, the **RBI**

governor will have a second or casting vote.

### What is the repo rate?

- The repo rate is one of several direct and indirect instruments that are **used by the RBI for implementing monetary policy.**
  - *Monetary policy is a set of tools that a nation's central bank has available to promote sustainable economic growth by controlling the overall supply of money that is available to the nation's banks, its consumers, and its businesses.*
- Specifically, the RBI defines the repo rate as the **fixed interest rate at which it provides overnight liquidity to banks against the collateral of government and other approved securities under the liquidity adjustment facility (LAF).**
  - *LAF is a tool used in monetary policy, primarily by the RBI through which the central bank manages the liquidity needs of the commercial banking system.*
  - *The LAF has two legs – **repo and the reverse repo**. If repo provides (injects) liquidity into the banking system, reverse repo receives (absorbs) liquidity from the system. This arrangement is effective in managing liquidity pressures and assuring basic stability in the financial markets.*
- When banks have short-term requirements for funds, they can place government securities that they hold with the central bank and borrow money against these securities at the repo rate.

- Since this is the **rate of interest that the RBI charges commercial banks when it lends them money**, it serves as a **key benchmark for the lenders** to in turn price the loans they offer to their borrowers.

#### What impact can a repo rate change have on inflation?

- Inflation can broadly be: **mainly demand driven price gains, or a result of supply side factors that in turn push up the costs of inputs** used by producers of goods and providers of services, thus spurring inflation, or most often caused by a combination of both demand and supply side pressures.

## 6) Comprehensive Economic Partnership Agreement

#### What's in the news?

- India and the United Arab Emirates (UAE)' Comprehensive Economic Partnership Agreement (CEPA) has entered into force.
- CEPA covers goods, services and digital trade, among others, that will allow 90% of India's exports a duty-free access to the Emirates.

#### India-UAE Ties

- India and the UAE enjoy excellent bilateral relations, which are deep rooted and historical, sustained and nurtured by close cultural and civilizational affinities, frequent high-level political interactions, and vibrant people to people linkages.
- India and the UAE have been each other's leading trading partners. From US\$ 180 million per annum in the 1970s, India-UAE bilateral trade has steadily increased to **US\$ 60 billion** in FY 2019-20 making the **UAE, India's third largest trading partner behind the US and China.**

- **The UAE is also the second largest export destination of India.** It is also an **important source of India's energy supply** and a key partner of India in the development of strategic petroleum reserves, upstream, and downstream petroleum sectors.

#### About the Pact

- The bilateral trade pact is **India's first in the region and the first comprehensive trade agreement with any country in a decade.**
- The Agreement is a **comprehensive agreement**, which will cover Trade in Goods, Rules of Origin, Trade in Services, Technical Barriers to Trade (TBT), Sanitary and Phytosanitary (SPS) measures, Dispute Settlement, Movement of Natural Persons, Telecom, Customs Procedures, Pharmaceutical products, Government Procurement, IPR, Investment, Digital Trade and Cooperation in other Areas.

#### Salient Features of India-UAE CEPA

- CEPA provides for an **institutional mechanism** to encourage and improve trade between the two countries. The CEPA between India and the UAE covers almost all the tariff lines dealt in by India and the UAE.
- **India will benefit from preferential market access provided by the UAE on over 97% of its tariff lines** which account for 99% of Indian exports to the UAE in value terms, especially for all labour-intensive sectors such as Gems and Jewellery, Textiles, leather, footwear, etc. India will also be offering **preferential access to the UAE on over 90% of its tariff lines.**
- As regards trade in services, India has offered **market access to the UAE in around 100 sub-sectors,**

while **Indian service providers will have access to around 111 sub-sectors** from broad service sectors such as 'business services', 'communication services', 'educational services', 'tourism and travel related services', 'recreational cultural and sporting services', etc.

- Both sides have also agreed to a **separate Annex on Pharmaceuticals** to facilitate access of Indian pharmaceuticals products, especially automatic registration and marketing authorisation in 90 days for products meeting specified criteria.

#### **Goods excluded from the deal**

- India has **excluded certain goods** from the agreement through a **"sensitive list" of products** amounting to 10 per cent of tariff lines that are excluded completely from the agreement.
- Dairy, fruits, vegetables, cereals, tea, coffee, sugar, food preparations, tobacco, toys, plastics, scrap of aluminium, and copper are among the products that are excluded from the pact. Certain other areas such as those that have seen sharp growth in domestic production or areas where the government is incentivising manufacturing through production-linked incentive schemes have also been excluded from the agreement.
- The government has emphasised that this agreement contains **strict rules of origin provisions** to prevent other countries from using the agreement to reroute their exports through UAE to benefit from lower tariffs.
- Most products require a value addition of 40 per cent in the exporting country under the new agreement to qualify for lower tariffs under the agreement.

- The agreement also has **safeguard mechanisms** that would be triggered if there was a significant surge in imports of a specific product in either country.

#### **Significance**

- The India-UAE CEPA will further cement the already deep, close and strategic relations between the two countries and will create new employment opportunities, raise living standards, and improve the general welfare of the peoples of the two countries.
- It is expected that the CEPA will lead to an increase in bilateral trade from the current \$60 bn to **\$100 bn in the next 5 years** and create lakhs of jobs in both countries.
- The agreement will also **pave the way for India to enter the UAE's strategic location**, and have relatively **easy access to the Africa market** and its various trade partners which can help India to become a part of that supply chain especially in handlooms, handicrafts, textiles and pharma.

### **7) SWIFT**

#### **Context**

- The European Union has announced that it will impose new sanctions on Russia for its military action against Ukraine, which includes **banning major Russian banks from the SWIFT network**.

#### **What is SWIFT?**

- SWIFT is a **messaging network used by banks and financial institutions globally for quick and faultless exchange of information pertaining to financial transactions**.
- The **Belgium-headquartered** SWIFT connects more than 11,000 banking and securities organisations in over 200 countries and territories.

- Each participant on the platform is assigned a **unique eight-digit SWIFT code or a bank identification code (BIC)**. If a person, say, in New York with a Citibank account, wants to send money to someone with an HSBC account in London, the payee would have to submit to his bank, the London-based beneficiary's account number along with the eight-digit SWIFT code of the latter's bank. Citi would then send a SWIFT message to HSBC. Once that is received and approved, the money would be credited to the required account.
- SWIFT is **merely a platform that sends messages and does not hold any securities or money**. It provides **standardised and reliable communication to facilitate the transaction**. While SWIFT **does not actually move money**, it operates as a middleman to verify information of transactions by providing secure financial messaging services.

#### What happens if one is excluded from SWIFT?

- If a country is excluded from the most participatory financial facilitating platform, its **foreign funding would take a hit, making it entirely reliant on domestic investors**. This is particularly troublesome when institutional investors are constantly seeking new markets in newer territories.
- Prior to this, only one country had been cut off from SWIFT — **Iran**. It

resulted in it losing a third of its foreign trade.

- An alternative system would be cumbersome to build and even more difficult to integrate with an already expansive system. SWIFT, first used in 1973, went live in 1977 with 518 institutions from 22 countries, its website states. SWIFT itself had replaced the much slower and far less dynamic **Telex**.

#### How is the organisation governed?

- SWIFT claims to be **neutral**. Its shareholders, consisting of 3,500 firms across the globe, elect the **25-member board**, which is responsible for oversight and management of the company.
- It is **regulated by G-10 central banks** of Belgium, Canada, France, Germany, Italy, Japan, The Netherlands, the United Kingdom, the United States, Switzerland, and Sweden, alongside the European Central Bank. Its **lead overseer is the National Bank of Belgium**.
- The **SWIFT oversight forum** was established in 2012. The G-10 participants were joined by the **central banks of India**, Australia, Russia, South Korea, Saudi Arabia, Singapore, South Africa, the Republic of Turkey, and the People's Republic of China.
- In 2021, the SWIFT financial messaging platform had recorded an average of 42 million FIN messages per day.

# Organisations

## 1) NATO

### About NATO

- Formed in **1949** with the signing of the **Washington Treaty**, NATO is a **security alliance of 30 countries from North America and Europe**.
- Established in the Cold War as a bulwark against Soviet aggression, NATO's fundamental goal is to safeguard the freedom and security of all its members by political and military means.
- **Article 5 of the Washington Treaty** states that an attack against one Ally is an attack against all — is at the core of the Alliance, a promise of **collective defence**.
- A **"NATO decision"** is the expression of the collective will of all 30 member countries since all decisions are taken by **consensus**.
- At present, NATO has **30 members**. In 1949, there were **12 founding members** of the Alliance: Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom and the United States. The other member countries are: Greece and Turkey (1952), Germany (1955), Spain (1982), the Czech Republic, Hungary and Poland (1999), Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia and Slovenia (2004), Albania and Croatia (2009), Montenegro (2017) and North Macedonia (2020).
- NATO's Headquarters are located in **Brussels, Belgium**.

### Why in News?

- Finland and Sweden have officially applied to join NATO, the world's biggest military alliance, a move driven by security concerns over Russia's war in Ukraine.

- Sweden and Finland were both neutral throughout the Cold War, and their decision to join NATO is one of the most significant changes in Europe's security architecture for decades.
- All 30 NATO members must unanimously support Sweden and Finland for the two historically neutral countries to join the alliance.

## 2) Shanghai Cooperation Organisation

### About SCO

- Shanghai Cooperation Organisation (SCO) is a permanent intergovernmental international organisation established in 2001.
- Prior to the creation of SCO in 2001, **Kazakhstan, China, Kyrgyzstan, Russia and Tajikistan** were members of the **Shanghai Five**.
- Following the accession of **Uzbekistan** to the organisation in 2001, the Shanghai Five was renamed the SCO.
- There are **eight member states** in the SCO at present. **India** and **Pakistan** became members in 2017.
- In 2021, the decision was made to start the accession process of **Iran** to the SCO as a full member.
- The **Heads of State Council** is the supreme decision-making body in the SCO. It meets once a year and adopts decisions and guidelines on all important matters of the organisation.
- The organisation has **two permanent bodies** —
  - the **SCO Secretariat** based in Beijing and



- the Executive Committee of the **Regional Anti-Terrorist Structure (RATS)** based in Tashkent. RATS serves to promote cooperation of member states against the three evils of terrorism, separatism and extremism.

#### Objectives of the SCO

- To **strengthen mutual trust** among the neighbouring member states.
- To **promote effective cooperation** in various fields like economy,

trade, politics, culture and research and technology.

- To **ensure peace, prosperity, security and stability** in the region, and
- To **establish a democratic, fair and rational international eco-political order.**

#### Why in News?

- Shanghai Cooperation Organisation's Regional Anti-Terror Structure (SCO-RATS) meeting was recently hosted by India.

# International Relations

## 1) Indo-Pacific Economic Framework for Prosperity

### What's in the news?

- United States President Joe Biden has launched a new Asia-Pacific trade initiative known as the Indo-Pacific Economic Framework for Prosperity (IPEF) in Tokyo.
- At present the framework includes 14 countries — **Australia, Brunei, India, Indonesia, Japan, the Republic of Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand, Vietnam, Fiji and the United States.**
- Together, the participants account for about 40 percent of global GDP and there are other countries that could join the initiative.

### What would IPEF do?

- IPEF is **neither an agreement nor a trade bloc, but a framework.**
- Unlike traditional trade blocs, there is **no plan for IPEF members to negotiate tariffs and ease market access.**
- Instead, the programme foresees **integrating partners through agreed standards in four key pillars: fair and resilient trade, supply chain resiliency, clean energy decarbonisation, and tax and anti-corruption** - to deepen economic engagement in the region.
- The primary objective of the IPEF is to **ensure a high degree of regulatory coherence** and to make market access contingent upon realisation of regulatory standards.
- The countries touted IPEF as a framework for what will ultimately become a tight-knit group of trading nations.

### Significance

- The IPEF is part of the U.S.'s more than a decade old **"Pivot to Asia" programme**, re-imagining the Indo-Pacific as a geographic construct including America.
- The **Quad**, consisting **India, Australia, Japan and the U.S.**, is part of the same pitch made by the U.S. administration.
- IPEF is intended to offer US allies an alternative to China's growing commercial presence across the Asia-Pacific.
- The IPEF's **non-specific and flexible nature** also suits India, which has held strong views on a range of issues like labour standards, environmental restrictions on fossil fuels, and data localisation.
- India's inclusion also comes from a **geopolitical need to counter China's virtual control over Asian trade.**

## 2) Nagorno-Karabakh Dispute

### Background

- Nagorno-Karabakh is a landlocked, mountainous and forested region located in the **South Caucasus region.**
- Modern-day Armenia and Azerbaijan became part of the **Soviet Union** when it formed in the 1920s.
- As the Soviet Union saw increasing tensions in its constituent republics in the 1980s, Nagorno-Karabakh voted to become part of Armenia, but the Soviets gave control over the area to Azerbaijani authorities. It sparked ethnic clashes that stopped with a **ceasefire in 1994.**
- Since then, Nagorno-Karabakh has remained **part of Muslim-**

majority Azerbaijan but is controlled by separatist ethnic Armenians backed by the Christian Armenian government.

- The ceasefire also established the **Nagorno-Karabakh Line of Contact**, separating Armenian and Azerbaijan forces.



#### Peace talks

- Peace talks have taken place since then, mediated by the **Organization for Security and**

**Co-operation in Europe (OSCE) Minsk Group** - a body set up in 1992 and chaired by France, Russia and the United States.

- However, negotiations have so far failed to produce a permanent peace agreement, and the dispute remains one of post-Soviet Europe's "**frozen conflicts.**"

#### Why in News?

- Armenian Prime Minister Nikol Pashinyan and Azeri President Ilham Aliyev have announced that their respective countries would be setting up border security and delimitation commissions, signalling a step towards resolution of a decades-long conflict over the Nagorno-Karabakh Enclave.

# Science and Technology

## 1) Sagittarius A\*

### What are gravitational waves?

- Gravitational waves are '**ripples**' in **space-time** caused by some of the most violent and energetic processes in the Universe.
- **Albert Einstein predicted** the existence of gravitational waves in 1916 in his **general theory of relativity**. Einstein's mathematics showed that massive accelerating objects (such as neutron stars or black holes orbiting each other) would disrupt space-time in such a way that 'waves' of undulating space-time would propagate in all directions away from the source.
- These cosmic ripples **would travel at the speed of light, carrying with them information about their origins, as well as clues to the nature of gravity itself.**
- The strongest gravitational waves are **produced by** cataclysmic events such as **colliding black holes, supernovae** (massive stars exploding at the end of their lifetimes), and **colliding neutron stars.**
- Other waves are predicted to be caused by the rotation of neutron stars that are not perfect spheres,

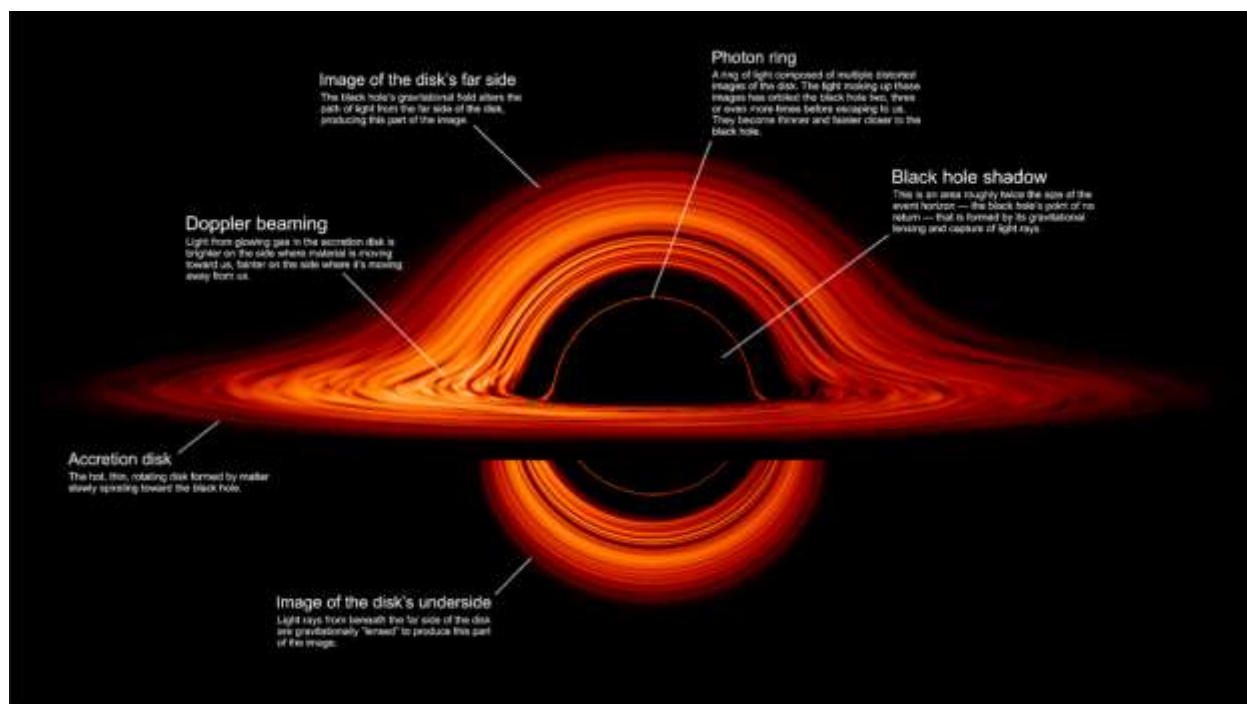
and possibly even the remnants of gravitational radiation created by the Big Bang.

### What is a neutron star?

- Neutron stars are stellar objects with a **mass about 1.4 times that of the sun.** Neutron stars are **formed when a massive star runs out of fuel and collapses.**
- When stars four to eight times as massive as the sun explode in a violent supernova, their outer layers can blow off in an often-spectacular display, leaving behind a small, dense core that continues to collapse.
- Gravity presses the material in on itself so tightly that protons and electrons combine to make neutrons, yielding the name "neutron star."

### Blackhole

- A black hole is a place in **space where gravity pulls so much that even light can not get out.** The gravity is so strong because matter has been squeezed into a tiny space. This can happen **when a star is dying.**
- Because no light can get out, **people can't see black holes.**



- A black hole's "surface," called its **event horizon**, is the **boundary defining the region of space around a black hole from which nothing (not even light) can escape**. In other words, the escape velocity for an object within the event horizon exceeds the speed of light.
- **Albert Einstein** first predicted the existence of black holes in 1916, with his **general theory of relativity**. The term "black hole" was coined many years later in 1967 by American astronomer John Wheeler.
- In 2019, astronomers using the **Event Horizon Telescope (EHT)** — an international collaboration that networked eight ground-based radio telescopes into a single Earth-size dish — captured an image of a black hole for the first time.
- It appears as a dark circle silhouetted by an orbiting disk of hot, glowing matter. The **supermassive black hole** is located at the heart of a galaxy called **M87**, located about 55 million light-years away, and

weighs more than 6 billion solar masses.



### How big are black holes?

- Black holes can be **big or small**. Scientists think the smallest black holes are as small as just one atom. These black holes are very tiny but have the mass of a large mountain. Mass is the amount of matter, or "stuff," in an object.
- Another kind of black hole is called "**stellar**." Its mass can be up to 20 times more than the mass of the sun. There may be many, many stellar mass black holes in Earth's galaxy. Earth's galaxy is called the Milky Way.
- The largest black holes are called "**supermassive**." These black holes have masses that are more than 1 million suns together. Scientists have found proof that every large



galaxy contains a supermassive black hole at its center.

- The supermassive black hole at the center of the Milky Way galaxy is called **Sagittarius A\* (aka Sgr A\*, pronounced Sagittarius A-star)**. It has a mass equal to about 4 million suns and would fit inside a very large ball that could hold a few million Earths.

#### How do black holes form?

- Scientists think the smallest black holes **formed when the universe began**.
- Stellar black holes are made when the center of a very big star falls in upon itself, or collapses. When this happens, it causes a **supernova**. A supernova is an exploding star that blasts part of the star into space.
- Scientists think supermassive black holes were made at the same time as the galaxy they are in.

#### How do we identify blackholes?

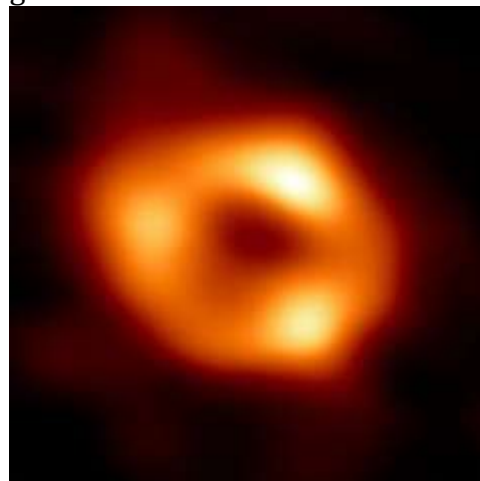
- A way in which the universe showcases a black hole is when the **black hole interacts with its surroundings**.
- When the **dust particles and matter from the surroundings fall onto a supermassive black hole**, it engulfs a part of the surroundings but some of the **matter is converted into energy and emitted as electromagnetic radiation** that makes the black hole appear **very luminous**.
- This **luminosity can be detected** on earth thus, giving more insights into these occurrences.

#### Why in News?

- Scientists from the Event Horizon Telescope facility have revealed the **first image of the Sagittarius A\*, a black hole at the centre of the Milky Way**.
- This image is the first visual confirmation that a black hole indeed exists at the center of our

galaxy. It **strengthens Einstein's general theory of relativity**.

- Although we cannot see the black hole itself, because it is completely dark, glowing gas around it reveals a dark central region (called a "shadow") surrounded by a bright ring-like structure.
- The new view captures **light bent by the powerful gravity of the black hole**, which is four million times more massive than our Sun. The discovery also yields **valuable clues about the workings of black holes**, which are thought to reside at the centre of most galaxies.



- The surprising thing about this image is that it **looks so similar to the image of M87\*** that was published three years ago. The reason for the similarity is that while the M87\* black hole is about **1,000 times bigger**, the Sagittarius black hole is about **100 times closer**.

## 2) Monkeypox

### About

- Monkeypox is caused by the **monkeypox virus** which belongs to the **orthopoxvirus genus** of the **Poxviridae family**.
  - The orthopoxvirus genus of viruses also includes the **variola virus**, which causes

smallpox, and **vaccinia virus**, which was used in the smallpox vaccine.

- Monkeypox causes **symptoms similar to smallpox, although they are less severe.**
- While **vaccination eradicated smallpox worldwide** in 1980, monkeypox continues to occur in a swathe of countries in Central and West Africa, and has on occasion showed up elsewhere.
- Transmission, when it occurs, can be through **contact with bodily fluids, lesions on the skin or on internal mucosal surfaces**, such as in the mouth or throat, **respiratory droplets and contaminated objects.**

#### Zoonotic disease

- Monkeypox is a **zoonosis**, that is, a disease that is transmitted from infected animals to humans.
- According to the WHO, **cases occur close to tropical rainforests inhabited by animals that carry the virus.** Monkeypox virus infection has been detected in squirrels, Gambian pouched rats, dormice, and some species of monkeys.
- **Human-to-human transmission is limited in nature.**

#### Symptoms and treatment

- Monkeypox begins with a fever, headache, muscle aches, back ache, and exhaustion. It also causes the lymph nodes to swell (lymphadenopathy), which smallpox does not.
- The incubation period (time from infection to symptoms) for monkeypox is usually 7-14 days but can range from 5-21 days.
- According to the WHO, the **proportion of patients who die has varied between 0 and 11%** in documented cases, and has been **higher among young children.**

- There is **no safe, proven treatment for monkeypox yet.** The WHO recommends **supportive treatment** depending on the symptoms. Awareness is important for prevention and control of the infection.

#### Why in News?

- Recently, health authorities in the United Kingdom have confirmed a case of monkeypox in an individual who recently travelled to that country from Nigeria.

### 3) INSACOG

#### What is INSACOG?

- The Indian SARS-CoV-2 Genomics Consortium (INSACOG) was established in 2020 as a joint initiative of the Union Health Ministry of Health and Department of Biotechnology (DBT) (under the Ministry of Science and Technology) with the Council for Scientific & Industrial Research (CSIR) and Indian Council of Medical Research (ICMR) to **expand the whole-genome sequencing of SARS-CoV-2**, the coronavirus that causes the Covid-19 disease, across India with the **aim of understanding how the virus spreads and evolves.**
- INSACOG started out with the participation of 10 national research laboratories of the central government, and gradually expanded to a **network of 38 labs**, including private labs, operating on a hub-and-spoke model.
- The pan-India consortium works to monitor genomic variations in SARS-CoV-2 by a **sentinel sequencing effort** (random testing in the community) which is facilitated by the National Centre for Disease Control (NCDC), involving the Central Surveillance Unit (CSU) under the central

government's **Integrated Disease Surveillance Programme (IDSP)**.

#### How does it help?

- The data from the genome sequencing laboratories is analysed as per the field data trends to **study the linkages, if any, between the genomic variants and epidemiological trends**. This helps to understand super spreader events and outbreaks, and strengthen public health interventions across the country to help break chains of transmission.
- Linking this data with IDSP data and the patient's symptoms helps to **better understand viral infection dynamics, and trends of morbidity and mortality**. The data can be linked with host genomics, immunology, clinical outcomes, and risk factors for a more comprehensive outlook.
- INSACOG is working towards establishing a hospital network across the country with the aim to study clinical correlations in mild vs severe cases of Covid-19, and to carry out a longitudinal study to understand long-term post-Covid complications and change in immunity.
- INSACOG is also looking to expand to sewage surveillance as an early detection tool, and to assess the spread of variants in hotspot localities.

#### Why in News?

- The Government of India has announced that INSACOG is looking to expand its network of labs to neighbouring countries.

#### Related Information

#### What is whole genome sequencing (WGS)?

- The genome, or genetic material, of an organism (bacteria, virus, potato, human) is made up of **DNA**. Each organism has a **unique DNA**

**sequence** which is composed of **bases (A, T, C, and G)**.

- If you know the sequence of the bases in an organism, you have identified its unique DNA fingerprint, or pattern. **Determining the order of bases is called sequencing.**
- Whole genome sequencing is a laboratory procedure that **determines the order of bases in the genome of an organism in one process.**

#### Significance

- Genomic information has been instrumental in **identifying inherited disorders, characterizing the mutations that drive cancer progression, and tracking disease outbreaks.**
- While genome sequencing is commonly associated with sequencing human genomes, the scalable, flexible nature of **next-generation sequencing (NGS) technology** makes it equally useful for **sequencing any species**, such as agriculturally important livestock, plants, or disease-related microbes.

#### Integrated Disease Surveillance Program

- Integrated Disease Surveillance Project (IDSP) was launched by the **Union Ministry of Health & Family Welfare with assistance from the World Bank in 2004.**
- The IDSP constitutes State Surveillance Units (SSU) at all state/UT headquarters, District Surveillance Units (DSU) at the districts and Central Surveillance Unit (CSU) in Delhi.
- Its objective is to **strengthen disease surveillance for infectious diseases to detect and respond to outbreaks immediately.**

#### Objective

- To strengthen/maintain decentralized laboratory-based IT enabled disease surveillance systems for epidemic-prone diseases to monitor disease trends.
- To detect and respond to outbreaks in the early rising phase through trained Rapid Response Teams (RRTs).

#### 4) Guidelines for Safety Assessment of Genome Edited Plants, 2022

##### What is GM Crop?

- A genetically modified organism (GMO) or living modified organism (LMO), is **any organism whose genetic material has been modified using laboratory-based transfer of genetic material from another organism.**
- Development of GM crops starts with the identification of genes of interest and isolating it from the host organism. The gene is incorporated into the DNA of crop plants using laboratory based gene gun or agrobacterium approaches.
- GM technology **involves direct manipulation of DNA** instead of using controlled pollination to alter the desired characteristics. Genetic modification is one the approaches to crop improvement, all of which aim at adding desirable genes and removing undesirable ones to produce better varieties.

##### GM Crops Regulations in India

- GM crops are permitted for environmental release and cultivation only after undergoing elaborate food and environmental safety assessment under the **Environment Protection Act, 1986.**
- In India, GM seeds require approval of the **Genetic Engineering Appraisal Committee (GEAC)**, a

**statutory body** under the **Ministry of Environment, Forest and Climate Change (MoEFCC).**

- GEAC is chaired by the Special Secretary/Additional Secretary of MoEF&CC and co-chaired by a representative from the Department of Biotechnology (DBT).
- GEAC approval does not mean commercial cultivation, the **final decision to allow commercial cultivation is taken by the MoEFCC.**
- So far, **commercial release is granted only for Bt cotton. GM Mustard and Bt Brinjal have been recommended by GEAC** for consideration for environmental release and cultivation. But the commercial release has been **stalled by the MoEFCC** because of concerns related to effects of GM foods.
- Legally, sale, storage, transportation and usage of unapproved GM seeds is a punishable offense under the Rules of Environmental Protection Act 1989. Also, sale of unapproved seeds can attract action under the Seed Act of 1966 and the Cotton Act of 1957.

##### Benefits of GM crops

- Better Pest and Disease Resistance;
- Greater tolerance of stress, e.g. drought, low temperatures, salinity etc;
- High yield and faster growth, so that harvesting can be done with shorter growing seasons;
- Can be made more nutritious;
- Can be made resistant to specific herbicides.

##### Drawbacks with GM crops

- Unpredictable side effects;
- May cause ecological damage;
- Poor farmers may not be able buy them;

- Intellectual property rights issues.

### Why in News?

- The Department of Biotechnology (DBT) has issued guidelines exempting researchers who use gene-editing technology to modify the genome of the plant from seeking approvals from the Genetic Engineering Appraisal Committee.

### Changes

- The 'Guidelines for Safety Assessment of Genome Edited Plants, 2022' **exempts Site directed nuclease (SDN) 1 and SDN2 genome edited plants from Rules 7-11 of the Environment Protect Act**, thus allowing to avoid a long process for approval of GM crops through the Genetic Engineering Appraisal Committee.
- SDN 1, SDN 2 and SDN 3 are **three methods of genome editing in crops**. In the first two (SDN 1 and SDN 2), an underlying gene can be suppressed or overexpressed while in the third (SDN3), a foreign gene can be used in a targeted manner which is akin to genetic modification in some respects as both use foreign material.
- The Centre in its order has eased the regulatory process for the first two while keeping it intact for the third. SDN1 and SDN 2 genome editing is being used in Indian labs to **breed crops imparting traits like resistance to diseases, drought and salinity stresses**.

### Significance

- The order will promote and foster higher levels of research and development and ultimately lead to commercial cultivation of crops resistant to biotic and abiotic stresses and with nutritional superiority.
- The conventional breeding technique takes 8-10 years for development of new agricultural

crop varieties, while through genome-editing, the new varieties could be developed in two to three years.

### Genetically Modified vs. Gene Edited Organisms

- With the order, the government has also **tried to differentiate between genetic editing crops and genetically modified ones**.
- A basic and fundamental difference between Genetically Modified Crops and Gene edited ones is that in the former the **final product (which is a crop variety like BT cotton) has foreign genes**, while in gene edited plants, there is **no additional foreign gene**. Genome editing enables modification of plants' owned genes, without insertion of external genes, as with GM crops.
- Several approaches to genome editing have been developed. A well-known one is called **CRISPR-Cas9**, which is short for clustered regularly interspaced short palindromic repeats and CRISPR-associated protein 9.
- Just as foreign genes can be used to add properties to plants, gene editing too can be used to make plants **express properties not native to them**.
- The latest guidelines say that all requirements that researchers must adhere to to develop transgenic seeds will apply to gene-edited seeds except clauses that require permission from the GEAC.

### Concerns

- Environmentalist groups have opposed this exception for gene-edited crops. They claim that Gene editing techniques involve altering the function of genes and can cause large and unintended consequences that can change the toxicity and allergenicity of plants.



- Though Gene editing can address some of the fears around the use of 'foreign genes', it can only be used to express genes already present in a plant's genome that are not manifest.

## 5) Shukrayaan

### India's mission to Venus

- Shukrayaan-1 is a **proposed orbiter to Venus** by the **Indian Space Research Organisation (ISRO)** to **study the surface and atmosphere of Venus using GSLV Mark III**.
- The Shukrayaan orbiter will be the **first mission to Venus** by ISRO.
- The **three broad research areas of interest** for this mission include
  - a) surface/subsurface features and re-surfacing processes;
  - b) study the atmospheric chemistry, dynamics and compositional variations, and
  - c) study the atmospheric interaction with solar radiation and solar wind.
- Shukrayaan-1 could confirm the **presence of active volcanoes on Venus**.
- It is a mission to investigate Venus's surface processes and shallow subsurface stratigraphy, as well as the interaction of solar wind with the Venusian ionosphere and the structure, composition, and dynamics of the atmosphere.

### Why in News?

- ISRO has announced that the Shukrayaan mission is likely to be launched in December 2024.

### Related Information

#### About Venus

- While Venus, which is the second closest planet to the Sun, is called the **Earth's twin** because of their similar sizes, the two planets have

significant differences between them.

- For one, the planet's thick atmosphere traps heat and is the reason that it is the **hottest planet in the solar system**, despite coming after Mercury, the closest planet to the Sun. Surface temperatures on Venus can go up to **471 degrees Celsius**, which is hot enough to melt lead.
- Further, Venus moves forward on its orbit around the Sun but **spins backwards around its axis slowly**. This means on Venus the Sun rises in the west and sets in the East. Venus also **does not have a moon and no rings**.
- Above its forbidding landscape lies a **thick, toxic atmosphere consisting primarily of carbon dioxide, with clouds of sulfuric acid droplets**. The "air" on Venus is so dense and pressurized that it **behaves more like a fluid than a gas** near the surface.

### Significance

- Scientists believe Venus may once have harbored **seas of water potentially suitable for life**, before unknown forces triggered its extreme greenhouse effect, vaporising its oceans.
- Studying Venus can help scientists understand climate change, the evolution of habitability and what happens when a planet loses a long period of surface oceans.
- In 2020, a team of International Astronomers discovered the **presence of phosphine gas** in the atmosphere of Venus. Phosphine acts as a **biosignature** because it is known to be produced mainly through biological processes, and not through any naturally occurring chemical process.

### Previous Missions to Venus

- So far, spacecraft from several nations have visited the planet. The first such spacecraft was the Soviet Union's **Venera series**. The spacecraft, however, could not survive for long because of the planet's harsh conditions.
- NASA's last dedicated mission to Venus, the **Magellan spacecraft**, reached the planet in 1990. After four years in orbit making the **first global map of the Venusian surface and charting its gravity field**, Magellan was sent plunging to the surface to gather atmospheric data before ceasing operations.
- Earlier in 2011, the European Space Agency's mission, **Venus Express**, found **signs of ozone**, a biomarker, in the upper atmosphere of Venus.

- As of now, Japan's **Akatsuki mission** is studying the planet from Orbit.

#### Other Missions

- **NASA** has announced plans to launch a pair of missions (dubbed **DAVINCI+** and **VERITAS**) to Venus between 2028 and 2030, to study the atmosphere and geologic features of Venus and better understand why Earth and Venus emerged so differently.
- **DAVINCI+** will measure the composition of the dense, hothouse atmosphere of Venus to further understand how it evolved, while **VERITAS** will map the planet's surface from orbit to help determine its geologic history.
- The **European Space Agency** has announced that it has selected **EnVision** as its next orbiter that will visit Venus sometime in the 2030s.

# Reports and Indices

## 1) Drought in Numbers Report

### What's in the news?

- The "Drought in Numbers, 2022" report was recently presented by the United Nations Convention to Combat Desertification (UNCCD) at the 15th Conference of Parties (COP15).
- The report is a **collection of data on the effects of droughts on our ecosystem and how they can be mitigated through efficient planning for the future.**

### Highlights of the Report

#### Global Scenario

- The **number and duration of droughts around the world has increased by an alarming 29% since 2000.**
- If **global warming reaches 3 degrees Celsius by 2100**, as has

been predicted, **drought losses could be five times higher** than they are today.

- **Climate change** alone will cause 129 countries to experience an increase in drought exposure in the next few decades.

#### Status in India

- The report reveals that **many parts of India fall under the list of regions that are vulnerable to drought globally.**
- **India's Gross Domestic Product (GDP) reduced by 2 to 5% between 1998 and 2017 due to severe droughts** in the country. Globally, droughts in the same period caused economic losses of approximately \$124 billion.



### Impacts

- Drought conditions can **force up to 216 million people to migrate by 2050.** Other factors at play along with drought could be **water scarcity, declining crop productivity, rise in sea levels, and overpopulation.**

- **More than a billion people around the world were affected by drought in 2000-19**, making it the **second-worst disaster after flooding.** Africa was the worst hit, with 134 droughts.
- Approximately 55 million people globally are directly affected by droughts annually, making it the

**most serious hazards to livestock and crops** in almost every part of the world.

- The impact of drought is, however, not uniform across genders. Research shows that **women and girls** in emerging and developing countries **suffer more in terms of education levels, nutrition, health, sanitation, and safety as a result of droughts**. For instance: The burden of water collection also disproportionately falls on women and girls.

## 2) National Achievement Survey 2021

### What's in the news?

- The **Ministry of Education** has released its National Achievement Survey (NAS) 2021 report, which **assesses the health of the school education system** in the country through a survey of children's learning competencies at **Classes 3, 5, 8 and 10**.

### About the Survey

- The National Achievement Survey is **conducted every three years** to provide a snapshot of learning outcomes in key subjects — essentially “what students know and can do” — at the end of Classes 3, 5, 8 and 10. These classes are generally seen to mark important stages in the development of a child's cognitive abilities.
- Nearly 34 lakh students of 1.18 lakh schools in 720 districts from government, government-aided and private-unaided schools participated in the latest exercise.
- The NAS has been designed by the **Ministry of Education along with the National Council for Educational Research and Training (NCERT)**. This nationwide survey was administered by the **Central Board**

**of Secondary Education** in one single day at the same time.

- The survey was managed through a technology platform designed and developed by the **National Informatics Centre (NIC)**.

### Highlights of the Report

- The survey shows that between 2017 and 2021, the **literacy and numeracy skills of school students in India worsened considerably** across subjects and grades.
- A comparative analysis shows that the national average scores of students across subjects have dropped by up to 47 marks.
- As per NAS-2021, **Punjab** has scored highest in all subjects for classes 3, 5 and 8. **Chandigarh** has outperformed all Union territories (UTs) in the Survey.
- The survey further highlighted that the **average performance of schools in rural areas remained significantly below** those urban areas in same states and union territories (UTs).
- It also shows that across various subjects and classes, **SC, ST and OBC students performed worse than general category students**.
- In gender-wise performance, the **average performance of girls remained better than the boys** in almost all subjects across the classes.
- The report also highlighted the **perception of students about learning at home** during the pandemic when the schools remained closed, and 78% of students termed it as “burdensome” with a lot of assignments. At least 38% students said they faced difficulties in learning at home, while 24% said they did not have digital devices at home.

### Implications of the Findings

- The NAS findings once again highlight the **need for urgent interventions to improve foundational learning levels.**

## 3) State of the World's Birds

### What's the news?

- A team led by the Manchester Metropolitan University, England, has released The State of the World's Birds, an annual review of environmental resources.

### Highlights of the Report

- The study has revealed that the **population of 48% of the 10,994 surviving species of birds is declining.**
- While 4,295 or 39% of the species have stable trends, about 7% or 778 species have increasing population trends. The trend of 37 species was unknown.
- The **degradation and loss of natural habitats** as well as **direct overexploitation** of many species are the key threats to avian biodiversity. The use of 37% of the surviving bird species as common or exotic pets and 14% as food are examples of direct overexploitation.
- The study draws from **BirdLife International's** latest assessment of all birds for the **IUCN's Red List** that shows **1,481 or 13.5% species are currently threatened with global extinction.**
  - *BirdLife International is a global partnership of non-governmental organizations that strives to conserve birds and their habitats.*
  - *The International Union for Conservation of Nature (IUCN) Red List of Threatened Species, founded in 1964, is the world's most comprehensive inventory of*

*the global conservation status of biological species. It uses a set of precise criteria to evaluate the extinction risk of thousands of species and subspecies.*

- The **more threatened bird species (86.4%) are found in tropical climates** than in temperate latitudes (31.7%), with hotspots for threatened species concentrated in the **tropical Andes, southeast Brazil, eastern Himalayas, eastern Madagascar, and Southeast Asian islands.**

### What is the importance of birds to Ecosystems and Culture?

- Birds contribute toward many ecosystem services that either directly or indirectly benefit humanity. These include **provisioning, regulating, cultural, and supporting services.**
- The functional role of birds within ecosystems as **pollinators, seed-dispersers, ecosystem engineers, scavengers and predators** not only facilitate accrual and maintenance of biodiversity but also support human endeavors such as **sustainable agriculture** via pest control besides aiding other animals to multiply.
- Wild birds and products derived from them are also economically important as **food** (meat, eggs).

### What are the threats contributing to avian Biodiversity Loss?

- The study lists eight factors, topped by **land cover and land-use change.**
- The continued **growth of human populations and of per capita rates of consumption** lead directly to conversion and degradation of primary natural habitats and consequent loss of biodiversity.



- The other factors are **habitat fragmentation and degradation**, especially in the tropics; **hunting and trapping**; the **impact of invasive alien species and disease**; **infrastructure, energy demands and pollution**; **agrochemical and pharmaceutical usage**; **global trade teleconnections**; and **climate change**.

### Recommendations

- The study recommended the following measures to deal with bird diversity loss:
  - conducting reliable estimates of population abundance and change;
  - novel and more effective solutions applied at scale for demand reduction for over harvested wild birds;
  - eradication of populations of invasive alien species, and
  - shifting human societies to economically sustainable development pathways.

## 4) India's position on the World Press Freedom Index

### Context

- India's ranking in the **2022 World Press Freedom Index** has fallen to **150 out of 180 countries**, according to the latest report released by the global media watchdog, **Reporters Without Borders (RSF)**. In last year's report, India was ranked 142.
- The top three positions for countries with the highest press freedom were taken by the Nordic trio of **Norway** (a score of 92.65), **Denmark** (90.27) and **Sweden** (88.84).

### What is RSF and what's the objective of this Index?

- Reporters Without Borders is an **international NGO** whose self-

proclaimed aim is to defend and promote media freedom. Headquartered in **Paris**, it has **consultative status with the United Nations**.

- The objective of the World Press Freedom Index, which it **releases every year**, is to compare the level of press freedom enjoyed by journalists and media in 180 countries and territories in the previous calendar year.
- The RSF defines press freedom as the ability of journalists as individuals and collectives to select, produce, and disseminate news in the public interest independent of political, economic, legal, and social interference and in the absence of threats to their physical and mental safety.

### What is the methodology used by RSF to assess and rank countries?

- Countries are ranked after being assigned a score ranging from **0 to 100**, with 100 representing the highest possible level of press freedom and 0 the worst.
- The scoring has two components: a **quantitative one**, that tallies abuses against journalists and media outlets, and a **qualitative analysis** based on the responses of press freedom specialists (journalists, researchers, human rights defenders) to an RSF questionnaire.
- Countries are evaluated on **five contextual indicators**: political context, legal framework, economic context, socio-cultural context, and safety.
- India, which had a global score of 53.44 in the 2021 Index, could muster only **41** this time.

### What are the findings with regard to world press freedom?

- In terms of global trends, the report flags a two-fold increase in



**polarisation amplified by information chaos** — that is, media polarisation fuelling divisions within countries, as well as polarisation between countries at the international level.

#### What does the Index say about India?

- The report states that in India, the violence against journalists, the politically partisan media and the concentration of media ownership all demonstrate that press freedom is in crisis.
- Describing India as **one of the world's most dangerous countries for the media**, the report notes that journalists are exposed to all kinds of physical violence including police violence, ambushes by political activists, and deadly reprisals by criminal groups or corrupt local officials.
- However, the Indian government rejected the report saying it is based on very low sample size, little or no weightage to fundamentals of democracy, and adoption of a methodology that is questionable and non-transparent.

### 5) NFHS-5

#### About NFHS

- The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted in a representative sample of households throughout India.
- The Ministry of Health and Family Welfare designated the **International Institute for Population Sciences (IIPS)** as the nodal agency, responsible for providing coordination and technical guidance for the NFHS.
- Every NFHS has **two specific goals to fulfill**. These goals are:
  - To **provide essential data** needed by the Ministry of

Health and Family Welfare and other agencies for informed decision making and policy and programme intervention purposes.

- To provide **insight regarding important emerging health and family welfare issues**.
- Only the decadal census is considered the official marker of population trends in India and has a wider surveillance programme. The NFHS surveys are smaller but are conducted at the district level and are a **pointer to the future**.

#### About NFHS-5

- The NFHS-5 survey work was conducted in around 6.1 lakh sample households from 707 districts of the country; covering 7,24,115 women and 1,01,839 men to provide disaggregated estimates up to district level.
- The Union health ministry released the complete data of NFHS-5 in November 2021. The data for the previous round, NFHS-4, was released in 2015.
- NFHS-5 includes some **new focal areas**, such as death registration, pre-school education, expanded domains of child immunisation, components of micro-nutrients to children, menstrual hygiene, frequency of alcohol and tobacco use, additional components of non-communicable diseases (NCDs), expanded age ranges for measuring hypertension and diabetes among all aged 15 years and above, which will give requisite input for strengthening existing programmes and evolving new strategies for policy intervention.

#### Why in News?

- An analysis of the National Family Health Survey-5 has revealed that the **Total Fertility Rate (TFR)**, an

average number of children per woman, has further declined to **2.0 at the national level**.

- There are **only five States in India which are above replacement level of fertility of 2.1** — Bihar (2.98), Meghalaya (2.91), Uttar Pradesh (2.35), Jharkhand (2.26) Manipur (2.17).
- **Reasons for decline in fertility:**
  - **Increase in adoption of modern family planning methods.** 62% of current users have received information about the side-effects of contraceptives which is a crucial indicator of the improved quality of family planning services.
  - **Significant improvements in female literacy:** With **41% women having received 10 or more years of schooling** (compared to 36% in 2015-16), fertility decline has taken place alongside notable improvements in access to quality education, especially girls' education.

### Other Highlights

#### Demographic shift

- The fifth edition of NFHS confirmed **signs of a demographic shift in India**. For the first time since the NFHS began in 1992, the **proportion of women exceeded men:** there were **1,020 women for 1,000 men**. In the last edition of the survey in 2015-16, there were 991 women for every 1,000 men.
- However, **sex ratio at birth for children** born in the last five years only improved from 919 per 1,000 males in 2015-16 to **929 per 1,000**, underscoring that boys, on average, continued to have better odds of survival than girls.

#### Use of Contraceptives

- An overall survey of the major differences between the NFHS-5 and NFHS-4 suggests that the **use of contraceptives** has improved from 53.5% to **66.7%** in the latest NFHS-5 and **institutional births** increased from 78.9% to **88.6%**.
- While there is an increase in the use of modern contraceptive methods, an increase in female sterilisation coupled with continued stagnation in male sterilisation uptake shows that the **onus of family planning still lies with women**.
- The **proportion of children (12-23 months) who were fully vaccinated improved** from 62% to **76%** and **children under 6 months who were exclusively breastfed** also showed a sharp improvement from 54.9 to **63.7%**.

#### Child marriage

- Child marriage is a key determinant of high fertility, poor maternal and child health, and lower social status of women. The **share of women aged 20-24 who married before turning 18 has declined from 27% to 23%** in the last five years.
- Although the reduction was spread across rural and urban areas, **wide disparities persist**. While 15% of women aged 20-24 got married before turning 18 in urban areas, the share was 27% in rural areas.
- **West Bengal and Bihar**, with around 41% such women each, had the highest prevalence of girl child marriage, and this has remained unchanged since the last survey held in 2015-16.

#### Improving amenities

- **Access to household amenities has improved.** All states, except Manipur, Meghalaya, Assam and Jharkhand, had over **90% population with access to**

### **improved drinking water sources.**

- Only Uttar Pradesh, Meghalaya, Assam, Jharkhand and Arunachal Pradesh had less than 95% population living in households with **access to electricity**.
- Despite remarkable growth, **only 70% of the population had access to improved sanitation facilities**. Bihar, Jharkhand, Odisha, Madhya Pradesh, Uttar Pradesh and Chhattisgarh almost doubled the access since 2015-16, but most fell below the 75% mark.
- **Access to clean cooking fuel** has improved from 45% to **60%**.
- The proportion of women (aged 15-24 years) who use **menstrual hygiene products** has increased by almost 20% points between 2015-16 and 2019-21 and currently stands at **77.3%**.
- The proportion of **women who have their own bank accounts** has gone up by 25.6% points over the same time period to reach **78.6%**.
- Around **54% of women have their own mobile phones** and **about one in three women have used the Internet**.

### **Areas to focus on**

#### **Rampant anaemia**

- The **prevalence of anaemia has risen across age groups**. As many as **57% women aged 15-49** were anaemic in 2019-21, compared to 53% in 2015-16, while the same for **men** rose from 22.7% to **25%**. The most formidable increase—8.5 percentage points—was observed for **children aged 6-59 months (67.1%)**.
- Those **overweight** (or had a higher body mass index (BMI) than ideal) **increased by around 4 percentage points**. Abnormal BMIs are linked to an increase in

obesity and other non-communicable diseases (NCD).

- An expert said that a **nutritionally deficient diet** likely explained the rise in obesity.

#### **High malnutrition**

- The **share of under-five children who were stunted (too short for age), wasted (low weight for height), or underweight has declined**. However, **every third child still suffers from chronic undernourishment, and every fifth child is acutely malnourished**.
- The NFHS findings are a reminder of the urgent need to address the pathetic nutritional status of women and children.

#### **Maternal Health**

- The survey indicates a worrisome figure of **11% of pregnant women who were still either unreached by a skilled birth attendant or not accessing institutional facilities**.
- **Teenage pregnancy** has declined marginally by 1% point, and **7.9%** of women in the age group of 15-19 years who were already mothers or pregnant at the time of the survey.

#### **Domestic violence and gender discrimination**

- **One in three women continue to face violence from their spouse**.
- **Women's participation in the economy continues to remain low (only 25.6% women engaged in paid work, a meagre increase of 0.8% point)**.
- **Women still bear a disproportionate burden of unpaid domestic and care work, hindering their ability to access gainful employment**.

### **Way Forward**

#### **Region specific approach**

- There is the need for an area-specific approach to improving maternal health services.

#### **Provide Comprehensive sexuality education**

- There is a need to invest in comprehensive sexuality education as a key component of life-skills education for both in school and out-of-school adolescents, and ensuring access to quality sexual and reproductive health services for them.

#### **Expand the basket of reproductive health services**

- A very small segment of the population is currently accessing the full range of sexual and reproductive health services such as screening tests for cervical cancer (1.9%) and breast examinations (0.9%). These services should be included while expanding the basket of reproductive health services.

#### **Ensure gender equality**

- To empower women and ensure gender justice, it is imperative to address harmful practices, such as child marriage and gender-biased sex selection.
- There is a need to enhance the value of women and girls by

working on transforming unequal power relations, structural inequalities and discriminatory norms, attitudes and behaviours.

#### **Promote gender-equal values**

- There is a need for engaging with men and boys, particularly in their formative years, to promote positive masculinities and gender-equal values.

#### **Conclusion**

- The overall evidence from the NFHS-5 is compelling and clear that health ought to be a matter of concern for all political parties and all governments, both at national and State level.
- Hence, an action plan to improve India's health needs to be inclusive, firm in its commitment, and backed by solid resources.
- Besides, challenging discriminatory social norms that drive gender-based violence and harmful practices, and empowering women to exercise agency and autonomy in all spheres of life is need of the hour.

# Polity

## 1) SC suspends sedition law

### Context

- The Supreme Court has stayed all proceedings in sedition cases and directed the Centre and states to not register any fresh FIR invoking sedition charges until the government re-examines the colonial era penal law. It also directed that those already facing sedition charges can approach courts for bail.

### Law on Sedition (Section 124A)

- Section 124A of the Indian Penal Code (IPC)**, deals with sedition. It was drafted by **Thomas Babington Macaulay** and included in the IPC in **1870**.
- It states that 'Whoever, by words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts to bring into **hatred or contempt, or excites or attempts to excite disaffection towards, the Government established by law**, shall be punished with imprisonment which may extend to **three years**, to which fine may be added.'
- Sedition is a **non-bailable offence**. Punishment under the law varies from imprisonment up to three years to a life term and fine.

### Kedar Nath Singh Case

- In **Kedar Nath Singh v. State of Bihar (1962)**, the Supreme Court upheld the constitutional validity of sedition and noted it as being a **reasonable restriction on free speech** as provided in **Article 19(2)** of the Constitution.
- However, the Court attempted to restrict its scope for misuse. The court held that **unless accompanied by an incitement or call for violence, criticism of the**

**government cannot be labelled sedition.**

### Why Does The Law Need Relook?

- The sedition law has been in debate ever since it was brought into force by the colonial British rulers in the 1860s. Several top freedom movement leaders including **Mahatma Gandhi and Jawaharlal Nehru were booked under the sedition law.**
- Mahatma Gandhi** described it as the "prince among the political sections of the Indian Penal Code designed to suppress the liberty of the citizen."
- Despite being cautioned by courts on numerous occasions, law enforcement agencies continue to misuse the provisions on sedition and ignore court directions. The problem therefore lies in the **poor implementation of the law and guidelines.**
- As per the **National Crime Records Bureau (NCRB) report**, in 2020, 73 cases were filed and no one was convicted of sedition.
- When the situation changes, the statute calls for a change as law cannot afford to remain static. **The U.K.** has repealed the offence of sedition in 2010 and India is holding onto a relic of the British Empire.
- Several reports of the Law Commission of India and even the Supreme Court, have underlined the rampant misuse of the sedition law.
- In its consultative paper on sedition, the **Law Commission of India** said **dissent and criticism of the government are essential ingredients of a robust public debate in a vibrant democracy.**



- The Commission suggested **it was time to rethink or even repeal Section 124A.**

## 2) EC clamps down on registered unrecognised parties flouting rules

### Unrecognised political parties

- Either newly registered parties (under the **Representation of Peoples Act, 1951**) or those which have not secured enough percentage of votes in Assembly or General Elections to become a State party or those which have never contested in elections since being registered are considered **registered unrecognised political parties**. Such parties don't enjoy all the benefits extended to the recognised parties.

### Provisions for recognised party status

- A recognised political party shall either be a **National party or a State party** if it meets certain laid down conditions.
- The **Election Symbols (Reservation and Allotment) Order, 1968**, lays down the criteria for declaring any registered political party as a national party or a state party.

### National Party

- As per the Election symbols order, a registered political party needs to **fulfil at least one of the following three conditions** to be recognised as a national party:
  - It needs to win a minimum **two percent** of seats in the Lok Sabha (11 seats) from at least three different states.
  - It needs to get **at least six percent of votes in four states** in Lok Sabha and Assembly elections, in addition to **winning four Lok Sabha seats**.

- It needs to get **recognised as a state party in four or more states.**

### State Party

- In order to be recognised as a state party, a political party needs to **fulfil at least one of the four criteria** laid down by the Election Commission of India.
- A political party will be recognised as a state party:
  - If it wins **three percent of the total seats** in the Legislative Assembly of the state (subject to a minimum of three seats).
  - If it wins one Lok Sabha seat for every 25 Lok Sabha seats allotted for the state.
  - If it gets **at least six percent of votes** in a state during a Lok Sabha or Assembly election. In addition, it also needs to win **at least one Lok Sabha or two Legislative Assembly seats**.
  - If it wins **at least eight percent votes** in a state during the Lok Sabha or Legislative Assembly elections.

### Benefits of being a recognised state party or national party

- If a party is recognised as a 'State Party', it is entitled for exclusive allotment of its **reserved symbol to the candidates set up by it in the State of States in which it is so recognised**, and if a party is recognised as a 'National Party' it is entitled for exclusive allotment of its **reserved symbol to the candidates set up by it throughout India**.
- The registered unrecognised political parties do not have the privilege of contesting elections on affixed symbol of their own. They have to choose from a list of **'free**

**symbols'** issued by the Commission.

- However, the candidates set up by a political party registered with the Election Commission of India will get **preference in the matter of allotment of free symbols** vis-à-vis purely independent candidates.
- Recognised 'State' and 'National' parties **need only one proposer** for filing the nomination and are also entitled for **two sets of electoral rolls** free of cost and **broadcast/telecast facilities** over Akashvani/Doordarshan during general elections.

#### Why in News?

- The Election Commission said it would be initiating graded action against more than 2100 registered unrecognised political parties (RUPP) for flouting various rules, including failure to furnish a contribution report, changing their name, head office, office bearers and even address.
- The EC had last year flagged the presence of inactive, unrecognised political parties that have not contested any election and had **asked the Law Ministry to give them the power to de-register them or allow them to act against them.** While the EC has the power to register parties under the Representation of the People Act, 1951, it does not have the power to deregister parties that are inactive.
- There are 2,796 such political parties as of September 2021, which has increased by over 300 per cent since 2001.
- The Commission noted with serious concern that many of them are neither taking part in the electoral process nor adhering to one or several of the requirements, which is not only violative of

statutory requirements but also defeats the purpose of the clean electoral ecosystem.

- Political parties, to be registered, **must contest an election within five years of its registration.** They are also required to **furnish their election expenditure statement within 75 days in case of Assembly elections, and within 90 days, in case of Lok Sabha elections.**

### 3) Places of Worship (Special Provisions) Act of 1991

#### About the Act

- The Places of Worship (Special Provisions) Act, 1991 says that **no person shall convert any place of worship of any religious denomination into one of a different denomination or section.**
- It contains a declaration that a place of worship shall continue to be as it was on **August 15, 1947.**
- Significantly, it **prohibits any legal proceedings** from being instituted regarding the character of a place of worship, and declares that all suits and appeals pending before any court or authority on the cut-off date regarding the conversion of the character of a place of worship shall abate.
- In other words, all pending cases will come to an end, and no further proceedings can be filed. However, any suit or proceedings relating to any conversion of status that happened after the cut-off date can continue.

#### Exceptions

- The 1991 Act will not apply in some cases. It will not apply to **ancient and historical monuments and archaeological sites and remains** that are covered by the **Ancient**

### **Monuments and Archaeological Sites and Remains Act, 1958.**

- It will also not apply to any suit that has been finally settled or disposed of, any dispute that has been settled by the parties before the 1991 Act came into force, or to the conversion of any place that took place by acquiescence.
- The Act specifically exempted from its purview the place of worship commonly referred to as **Ram Janmabhoomi-Babri Masjid in Ayodhya**. It was done to allow the pending litigation to continue as well as to preserve the scope for a negotiated settlement.
  - The dispute ended after the Supreme Court ruled in 2019 that the land on which the Masjid stood should be handed over to the Hindu community for the construction of a Ram temple.
- Anyone contravening the prohibition on converting the status of a place of worship is liable to be **imprisoned for up to three years, and a fine**. Those abetting or participating in a criminal conspiracy to commit this offence will also get the same punishment.

### **Why in News?**

- A petition has been filed in the Supreme Court challenging the Constitutional validity of certain sections of the Places of Worship (Special Provisions) Act 1991, saying the Act violates the principles of secularism.

### **4) Transgender Persons (Protection of Rights) Act, 2019**

#### **About Transgender Persons (Protection of Rights) Act, 2019**

- **Definition:** The act defines a transgender person as one whose gender does not match the gender

assigned at birth. It includes transmen and trans-women, persons with intersex variations, gender-queers, and persons with socio-cultural identities, such as kinnar and hijra.

- **Certificate of identity:** The Act allows **self perception of gender identity**. But it mandates that each person would have to be recognised as 'transgender' on the basis of a certificate of identity issued by a **District Magistrate**.
- **Welfare measures by the government:** The Act states that the relevant government will take measures to ensure the full inclusion and participation of transgender persons in society. It must also take steps for their rescue and rehabilitation, vocational training and self-employment, create schemes that are transgender sensitive, and promote their participation in cultural activities.
- **Prohibition against discrimination:** The Act prohibits the discrimination against a transgender person, including denial of service or unfair treatment in relation to education, employment, healthcare, access to, or enjoyment of goods, facilities, right to movement, right to reside, rent, or otherwise occupy property, opportunity to hold public or private office and access to a government or private establishment in whose care or custody a transgender person is.
- **Right of residence:** Every transgender person shall have a right to reside and be included in his/her household.
- **Employment:** No government or private entity can discriminate against a transgender person in

employment matters, including recruitment, and promotion.

- **Offences and penalties:** The Act recognizes the following offences against transgender persons: (i) forced or bonded labour (excluding compulsory government service for public purposes), (ii) denial of use of public places, (iii) removal from household, and village, (iv) physical, sexual, verbal, emotional or economic abuse. Penalties for these offences vary between six months and two years, and a fine.
- The Act makes it mandatory to constitute the **National Council for Transgender persons (NCT)** headed by the **Union Minister of Social Justice & Empowerment** to advise the central government as well as monitor the impact of policies, legislation and projects with respect to transgender persons. It also redresses the grievances of transgender persons.

### Major Judgements

- **National Legal Services Authority of India (NALSA) Vs. Union of India Case (2014)** under which the Supreme Court for the very first time **recognised transgendered persons as a "third gender"** and directed the government to safeguard their rights and extend certain reservations for admission into education institutions and public appointments to third gender persons.
- In the **Navtej Singh Johar Vs. Union of India Case (2018)**, Supreme Court decriminalised some part of **Section-377 of Indian Penal Code** that barred even consensual homosexual sex between adults, thereby strengthening transgender rights.
- In this case, the Supreme Court introduced the concept of the

**Doctrine of progressive realisation of rights** which mandates that the laws of a country should be in consonance with its modern ethos, it should be "sensible" and "easy to apply".

- Using this legal doctrine, then Chief Justice of India Dipak Misra held that once a right is recognised and given to the public, it cannot be taken back by the state at a later date. Once a step is taken forward, there is no going back.

### Criticisms of the current Act

- In the **NALSA judgement**, the state and central govts were asked to **extend backward class reservation to transgenders** in education and public employment. But the act fails to address that issue.
- **A transgender commission at the national level is not enough.** There is need for a welfare board for transgender, and a helpline number for those in distress at regional and local levels.
- The act **does not mention any punishments for rape or sexual assault** of transgender persons as according to Section 375 of the Indian Penal Code stands, rape is something that only a man can do to a woman.
- There are **lighter punishments** for several criminal offences, such as "sexual abuse" and "physical abuse" if they are committed against transgender people in comparison to females.

### Why in News?

- The Bombay High Court has raised concern that despite the Transgender Persons (Protection of Rights) Act, 2019, which was brought to end discrimination against transgender persons in accessing education, employment and healthcare, and recognise the

right to self-perceived gender identity, their harassment continues endlessly — from daily living to job scouting.

- Existing structures continuing to categorise people into the binary of male and female has resulted in the need for them to approach the courts or governments repeatedly for the implementation of every single aspect of the law that was passed to protect them.
- The court raised concern that though the Transgender Identity Certificate acknowledges the gender assigned at birth and gender requested, while applying for jobs, they are often compelled to identify themselves as male or female in the absence of a third option.

## 5) NALSA

### About NALSA

- The National Legal Services Authority (NALSA) is a **statutory body** constituted under the **Legal Services Authorities Act, 1987** to provide **free Legal Services** to the weaker sections of the society and to organize **Lok Adalats** for amicable settlement of disputes.
  - *Lok Adalat (people's courts) is a body established by the government to settle disputes through conciliation and compromise.*
- NALSA came into force in 1995. It was enacted by the Parliament to give effect to **Article 39 A of the Constitution of India** which guarantees free and competent legal services to the weaker sections of the society to ensure that they are not denied access to justice by reason of economic or other disability.
- The NALSA is headed by the **Chief Justice of India as its Patron-in-**

**Chief, the second senior most judge of the Supreme Court is the Executive Chairman.**

### Regional Bodies

- In every State, the **State Legal Services Authority** has been constituted to give effect to the policies and directions of the NALSA and to give free legal services to the people and conduct Lok Adalats in the State.
- The State Legal Services Authority is headed by the **Chief Justice of the respective High Court** who is the Patron-in-Chief of the State Legal Services Authority.
- In every District, the **District Legal Services Authority** has been constituted to implement Legal Services Programmes in the District. The District Legal Services Authority is situated in the District Courts Complex in every District and chaired by the **District Judge of the respective district.**

### What are Legal Services?

- Legal Services includes providing **Free Legal Aid** to those weaker sections of the society who fall within the purview of **Section 12** of the Legal Services Authority Act, 1987.
- It also entails **creating legal awareness** by spreading legal literacy through legal awareness camps, print media, digital media and organizing **Lok Adalats** for the amicable settlement of disputes which are either pending or which are yet to be filed, by way of compromise.
- Legal services also encompasses **facilitating the beneficiaries to get their entitlements** under various government schemes, policies and legislations

### Who is Entitled to Free Legal Services?

- The sections of the society as enlisted under Section 12 of the



Legal Services Authorities Act are entitled for free legal services, they are :

- A member of a Scheduled Caste or Scheduled Tribe;
- A victim of trafficking in human beings or begar as referred to in Article 23 of the Constitution;
- A woman or a child;
- A mentally ill or otherwise disabled person;
- A person under circumstances of undeserved want such as being a victim of a mass disaster, ethnic violence, caste atrocity, flood, drought, earthquake or industrial disaster; or
- An industrial workman; or
- a person in receipt of annual income less than the amount prescribed by the State Government, if the case is before a Court other than the Supreme Court, and less than Rs 5 Lakh, if the case is before the Supreme Court.
- Senior citizens' eligibility for free legal aid depends on the Rules framed by the respective State Governments in this regard.

### Why in News?

- Supreme Court Judge Justice D.Y. Chandrachud has said providing legal aid to individuals is the need of the hour now as undertrials languish in prison across the country for lack of effective legal representation.

## 6) Lokpal Context

- Lokpal of India, the apex anti-corruption ombudsman who can investigate complaints against public functionaries, is set to move

into a new permanent office in Delhi.

### About Lokpal

- The **Lokpal and Lokayukta Act, 2013** provided for the establishment of **Lokpal for the Union and Lokayukta for States**.
- These institutions are **statutory bodies** without any constitutional status. They perform the function of an "**ombudsman**" and inquire into **allegations of corruption against certain public functionaries** and for related matters.

### Members

- Lokpal is a multi-member body that consists of **one chairperson and a maximum of 8 members**.
- **Chairperson** of the Lokpal should be either the former Chief Justice of India or the former Judge of Supreme Court or an eminent person with impeccable integrity and outstanding ability, having special knowledge and expertise of minimum 25 years in the matters relating to anti-corruption policy, public administration, vigilance, finance including insurance and banking, law and management.
- Out of the maximum eight members, **half will be judicial members and minimum 50% of the Members will be from SC/ ST/ OBC/ Minorities and women**.
- The judicial member of the Lokpal shall either be a **former Judge of the Supreme Court or a former Chief Justice of a High Court**.
- The term of office for Lokpal Chairman and Members is **5 years or till the age of 70 years**.
- The members are appointed by the **President** on the recommendation of a **Selection Committee**.
  - The five-member Lokpal selection committee includes the Prime Minister,

the Speaker and the Chief Justice of India, along with the Leader of Opposition and an eminent jurist selected by other members.

### Jurisdiction

- The Lokpal has jurisdiction to inquire into allegations of corruption against anyone
  - who is or has been Prime Minister,
  - a Minister in the Union government,
  - a Member of Parliament,
  - officials of the Union government under Groups A, B, C and D,
  - chairpersons, members, officers and directors of any board, corporation, society, trust or autonomous body either established by an Act of Parliament or wholly or partly funded by the Centre,
  - any society or trust or body that receives foreign contribution above ₹10 lakh.
- It should be noted that the Lokpal **cannot inquire into any corruption charge against the Prime Minister if the allegations are related to** international relations, external and internal security, public order, atomic energy and space, unless a **full Bench of the Lokpal**, consisting of its chair and all members, **considers the initiation of a probe, and at least two-thirds of the members approve it.**
- Such a hearing should be held in camera, and if the complaint is dismissed, the records shall not be published or made available to anyone.

### How can a complaint be made and what happens next?

- A complaint under the Lokpal Act should be in the prescribed form and must pertain to an offence under the **Prevention of Corruption Act** against a public servant.
- When a complaint is received, the Lokpal may order a **preliminary inquiry by its Inquiry Wing**, or **refer it for investigation by any agency**, including the CBI, if there is a prima facie case.
- The Lokpal, with respect to Central government servants, may refer the complaints to the **Central Vigilance Commission (CVC)**.
- Lokpal has powers of confiscation of assets, proceeds, receipts and benefits arisen or procured by means of corruption in special circumstances.

### Limitations

- Firstly it is not free from **political influence** as the appointing committee itself consists of parliamentarians.
- Further, the act provides **no concrete immunity to the whistle blowers.**
- The biggest lacuna is the **exclusion of judiciary** from the ambit of the Lokpal.
- The Lokpal is also **not given a constitutional backing.**

### Way Forward

- For the Lokpal to become an independent body, we need to evolve a **select committee that is equally independent.**
- It is necessary to ensure that its recommendations have **tremendous moral force and popular acceptability.** The very objective of an anti-corruption ombudsman is this ethical check.

## Art and Culture

### 1) Devasahayam Pillai

#### Who is he?

- Born into a Hindu family in a deeply caste-ridden society, Devasahayam was named **Nilakandan** by his parents Vasudevan Namputhiri and Devika Amma. This was 1712 in present-day **Kanyakumari**.
- He began his career in the royal palace of **King Marathanda Varma** as a **treasurer** and came in close contact with several Dutch officials at the palace. Being influenced by one Dutch naval commander in particular, he was baptised into Christianity in 1745.
- He was given the name Devasahayam that corresponded to the Biblical name of 'Lazarus', meaning "God is my help".

- While preaching, he particularly insisted on the **equality of all people, despite caste differences**. This aroused the hatred of the higher classes, and he was arrested in 1749. After enduring increasing hardships, he received the crown of martyrdom when he was shot in 1752.
- It is said that local Christians collected his remains after five days of his death and buried it in the present-day **Cathedral of Saint Francis** in Nagercoil, Kanyakumari.

#### Why in News?

- Devasahayam Pillai has become the first Indian layman to be declared a saint by the Vatican.

## Miscellaneous

### 1) ASHA Workers

#### Who are ASHA workers?

- ASHA (Accredited Social Health Activist) workers are **volunteers from within the community** who are trained to provide information and aid people in accessing benefits of various healthcare schemes of the government.
- They act as a **bridge connecting marginalised communities with facilities** such as primary health centres, sub-centres and district hospitals.
- The role of these community health volunteers under the National Rural Health Mission (NRHM) was first established in 2005.
- ASHAs are **primarily married, widowed, or divorced women between the ages of 25 and 45 years from within the community**. They must have **good communication and leadership skills; should be literate with formal education up to Class 8**, as per the programme guidelines.

#### How many ASHAs are there across the country?

- The aim is to have **one ASHA for every 1,000 persons or per habitation** in hilly, tribal or other sparsely populated areas.
- There are around 10.4 lakh ASHA workers across the country, with the largest workforces in states with high populations – Uttar Pradesh (1.63 lakh), Bihar (89,437), and Madhya Pradesh (77,531). **Goa is the only state with no such workers.**

#### What do ASHA workers do?

- They go door-to-door in their designated areas **creating awareness about basic nutrition, hygiene practices, and the health services available.**

- They focus primarily on ensuring that women undergo ante-natal check-up, maintain nutrition during pregnancy, deliver at a healthcare facility, and provide post-birth training on breast-feeding and complementary nutrition of children.
- They also **counsel women about contraceptives and sexually transmitted infections**. ASHA workers are also tasked with **ensuring and motivating children to get immunised**.
- They also **provide basic medicines and therapies** to people under their jurisdiction such as oral rehydration solution, chloroquine for malaria, iron folic acid tablets to prevent anaemia, and contraceptive pills. They are also tasked with **screening for infections** like malaria during the season.
- The health volunteers are also tasked with informing their respective primary health centre about any births or deaths in their designated areas.

#### How much are ASHA workers paid?

- Since they are considered **“volunteers”**, governments are **not obligated to pay them a salary**. And, most states don't.
- Their income depends on **incentives under various schemes** that are provided when they, for example, ensure an institutional delivery or when they get a child immunised.
- ASHA workers have been demanding that they be made permanent employees of the government and provided benefits.

#### Why in News?

- The World Health Organisation has recognised the country's 10.4 lakh

ASHA workers for their efforts in connecting the community to the government's health programmes.

- ASHAs were one of the six recipients of the WHO's **Global Health Leaders Award-2022** that recognises leadership, contributions to advancing global health and commitment to regional health issues.
- ASHA workers were a key part of the government's COVID pandemic response, with most states using the network for screening people in containment zones, getting them tested, and taking them to quarantine centres or help with home quarantine.

## 2) Child rights groups oppose raising marriage age of women

### Background

- The **Prohibition of Child Marriage (Amendment) Bill**, which seeks to increase the legal age of marriage of women from **18 to 21**, is under consideration of the Parliamentary Standing Committee on Education, Women, Children, Youth and Sports.
- The proposed law will apply to all communities in the country and, once enacted, will supersede existing marriage and personal laws.
- Accordingly, the government will bring amendments to seven personal laws — the Indian Christian Marriage Act; the Parsi Marriage and Divorce Act; the Muslim Personal Law (Shariat) Application Act; the Special Marriage Act; the Hindu Marriage Act; and the Foreign Marriage Act.
- The government's decision to raise the legal age of marriage for women is based on the recommendation of a task force led by **Jaya Jaitly**.

- The task force also recommended launching of a **comprehensive public awareness campaign** to encourage social acceptance of the decision to raise the legal marriage age of women.

### The rationale

- The Bill aims to increase the legal age of marriage of women because of its **correlation to health and social indices** such as infant mortality, maternal mortality, and nutrition levels among mothers and children.
- The move is claimed to be based on the **rationale of women's empowerment and gender parity**.
- With a rise in the age at marriage women may be able to **participate in the labour market** before marriage; hence, it will be easier for them to continue to work even after marriage. All this is **expected to reduce the fertility rate**. It also gives them **greater bargaining power** to deal with social evils like dowry.
- Increased participation of women in the labour market has a tremendous **spill over effect on the nutritional status, health and economic wellbeing of the household**.
- Raising the legal age of marriage is an **indirect attempt to address other gender inequalities**, such as girls being pulled out of school for marriage; the health risks from pregnancies, including maternal mortality, that early marriage entails; the unpreparedness of girls in bringing up children if they are themselves children, and so on.

### The opposition

- Experts have been opposing a raised age of marriage on **two broad counts**. First, the **law to prevent child marriage does not**



**work.** While **child marriage has declined, it has been marginal:** from 27% in 2015-16 to **23% in 2019-20**, according to National Family Health Survey (NFHS) 5. The decrease was, however, **dramatic in NFHS 4**, from 47% in NFHS 3.

- The marriage age at 18 was set in 1978, but child marriage started to decline only in the 1990s, when the **government stressed primary education of the girl child and took measures to reduce poverty.**
- Experts said girls being taken out of school to be married off is a reasoning blown out of proportion; often the girl child drops out after primary school simply because **she has no access to higher education, and is then married off.**
- The second objection being raised is the **criminalisation of a large number of marriages** that will take place once the law comes into effect. While 23% of marriages involve brides under age 18, **far more marriages take place under age 21.**
- The **median age at first marriage for women aged 20-49 increased to 19 years** in 2015-16 from 17.2 years in 2005-06, but remained under 21 years.

#### Who will be affected?

- Experts noted that **70% of early marriages take place in deprived communities** such as SCs and STs, and said the law will simply **push these marriages underground instead of preventing them.**
- **Rural women will be affected more than urban women.** According to NFHS-4, the median age at first marriage (age 25-49) for urban women (19.8) is 1.7

years more than that for rural women (18.1).

- A study by the **International Centre for Research on Women** has found that **girls out of school are 3.4 times more likely to be married or have their marriage already fixed** than girls who are still in school.

#### Why in News?

- India Child Protection Forum [ICPF], an umbrella body of child rights organisations set up by Nobel Laureate Kailash Satyarthi, has made its submission before the Parliamentary Standing Committee on Education, Women, Children, Youth and Sports which is studying the Bill on raising the age of marriage for women to 21 from 18 years.
- The forum has opposed the move and emphasised the need to improve access to education to delay marriages.
- The ICPF told the panel that the Prevention of Child Marriages Act, 2005 had **failed to stop child marriages in the country**, which was evident through the National Crime Records Bureau data which show that only 2,530 cases were registered under the Act between 2016 and 2020, while the National Family Health Survey-5 (2019-2021) indicated that 23% of women surveyed were married before attaining the legal age of marriage of 18.
- It has sought that the **government invest in improving access to education** to check school dropouts and demanded that girls be provided free education till 18 years of age.
- Like many child rights organisations, the ICPF has also underlined that raising the age of marriage for women to 21 will

result in **criminalising young adults entering into wedlock, especially those who marry against the consent of their parents.**

#### Way Forward

- It is crucial to **empower disadvantaged women and increase investments in reversing the fundamental structural disadvantages** that women who marry early face.
- To truly empower them while respecting their reproductive rights, the government must **invest far more in addressing issues of**

**equity** — measures that will enable the disadvantaged to complete their education, provide career counselling and encourage skilling and job placement, address safety issues of women in public places including public transportation, and change the perceptions of parents who are ultimately those who make marriage related decisions for a majority of women.

- Delays in the timing of marriage will then occur without the need for legislation.