

# Current Affairs MONTHLY



MAY 2022

By  
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<b>GEOGRAPHY</b>	0	Nutrient Based Subsidy Scheme	47
No El Nino expected, it will be a 'normal' monsoon- Skymet	0	Semicon India Programme	49
<b>INDIAN RELATIONS</b>	3	<b>ENVIRONMENT</b>	51
Is India's position on Russia affecting its relationship with the U.S.?	3	Great Indian Bustard	51
Weapons of Mass Destruction	6	Ethanol Blended Petrol Programme	52
United Nations Security Council	7	Microplastics	54
<b>POLITY AND GOVERNANCE</b>	9	WHO says 99% of World's Population breathes Poor-quality Air	56
National Commission for Women	9	Earth Day	57
Falling credibility of CBI	10	Energy independence through Hydrogen	58
Electoral Bond scheme	12	Heatwaves linked to man-made climate change	60
Citizenship Amendment Act, 2019 (CAA)	15	<b>SCIENCE AND TECHNOLOGY</b>	64
Atal Innovation Mission	16	NFC technology for instant payments	64
I&B Ministry's powers to regulate content on TV, other platforms	17	The complete human genome and what it is about	66
Rashtriya Gram Swaraj Abhiyan	19	Indian Navy Indigenisation Plan	67
National Food Security Act	20	Reusable Launch Vehicle-Technology Demonstration (RLV-TD) programme	68
Ayushman Bharat	22	GPS Aided GEO Augmented Navigation (GAGAN)	69
The functioning of the Enforcement Directorate	23		
One Nation One Ration Card	24		
SVAMITVA scheme	25		
Soil Health Card scheme	26		
<b>ECONOMY</b>	28		
The India-Australia trade agreement	28		
Technology in Agriculture	29		
What is fortified rice, and how is it prepared?	32		
Hits and misses: India's solar power energy targets	33		
National Monetisation Pipeline	36		
Why is India looking to boost wheat exports?	37		
E-sanjeevni	39		
Prime Minister's Employment Generation Programme	40		
One District One Product Scheme	41		
Payments banks	42		
Agricultural and Processed Food Products Export Development Authority	44		
MSME Innovation scheme	45		
National Land Monetisation Corporation	46		

# GENERAL STUDIES 1.

## GEOGRAPHY

### NO EL NINO EXPECTED, IT WILL BE A 'NORMAL' MONSOON- SKYMET

#### Context

- **El Nino**, which is characterised by a warming of temperatures in the Central Pacific and is connected with low rainfall over India, is not likely to appear this year.
- Its polar opposite, or **La Nina**, contributed to two years of above-average rainfall in 2019 and 2020, as well as "normal" rainfall in 2021.
  - The previous two monsoon seasons have been driven by the southwest monsoon, and rainfall in August, the second rainiest month, is projected to be muted in 2022.
  - The north-eastern states have a high baseline amount of precipitation. However, the major kharif agricultural districts of Punjab, Haryana, and Uttar Pradesh, as well as the rain-fed provinces of Maharashtra and Madhya Pradesh, have seen back-to-back La Nina episodes. The development of El Nino, which generally corrupts the monsoon, is ruled out.

#### About El Nino

- El Nino is a climatic trend characterised by unusually warm surface waters in the eastern tropical Pacific Ocean.
- El Nino is the "warm phase" of the **El Nino-Southern Oscillation**, which is a broader phenomenon (**ENSO**).
- El Nino and La Nina are the ocean components of ENSO, whereas the Southern Oscillation is the atmospheric component.
- El Nino affects ocean temperatures, ocean current speed and intensity, coastal fisheries health, and local weather from Australia to South America and beyond.
- El Nino episodes occur at sporadic intervals of two to seven years. El Nino, on the other hand, is not a regular cycle or predictable in the same way that ocean tides are.
- Because of the Pacific basin's breadth (it covers one-third of the earth), fluctuations in wind and humidity are carried throughout the world, affecting circulation patterns such as jet streams (strong upper-level winds).

#### Impacts on global climate

- **Tropical cyclones-** During El Nino and La Nina occurrences, equatorial heating anomalies cause abnormal tropical and extratropical atmospheric wave trains, altering circulation, vertical shear, and steering flow. During El Nino (La Nina) episodes, shear shifts lead tropical cyclones to develop further south and east (north and west) than usual.



- **Asia's regional consequences-** Warm water moves from the west Pacific and Indian Ocean to the east Pacific, bringing rain with it, producing widespread dryness in the western Pacific and rainfall in the generally dry eastern Pacific.
- **Economic Implications-** Extensive Ocean warming and a decrease in easterly trade winds impede upwelling of cold nutrient-rich deep water, which can have major economic consequences for local fishing for an international market.
- El Nino, in general, can have an impact on commodities prices and the macroeconomics of many nations.
- **It** has the potential to limit the availability of rain-driven agricultural commodities, diminish agricultural production, construction, and service activities, cause food-price and generalised inflation, and cause social unrest in commodity-dependent impoverished nations that rely mostly on imported food.
- **Health and social consequences-** Extreme weather events associated with the El Nino cycle are associated with fluctuations in the occurrence of pandemic illnesses. For example, the El Nino cycle has been linked to elevated risks of mosquito-borne illnesses such as malaria, dengue fever, and Rift Valley fever.
- **El Nino has now been connected to malaria cycles in India, Venezuela, Brazil, and Colombia. Outbreaks of** another mosquito-borne illness, Australian encephalitis (Murray Valley encephalitis—MVE), occur in temperate south-east Australia following significant rainfall and floods caused by La Nina episodes. ENSO conditions have also been linked to the **occurrence of Kawasaki illness in Japan** and along the west coast of the United States, owing to the relationship to tropospheric winds over the north Pacific Ocean.
- **Environmental ramifications-** Insect populations declined with El Nino 2015–16's catastrophic drought and devastating fires. In Amazonian burnt forests, declines in habitat-specialist and disturbance-sensitive bird species, as well as large-frugivorous animals, were also noted. Most notably, worldwide mass bleaching episodes occurred in 1997–98 and 2015–16, resulting in 75–99 percent losses of living coral throughout the world.

#### About La Nina:

- La Nina is distinguished by exceptionally cold Equatorial Pacific water temperatures, as opposed to El Nino, which is distinguished by abnormally warm Equatorial Pacific Ocean temperatures.
- La Nina, like El Nino, is a weather trend that occurs every few years in the Pacific Ocean. Winds around the equator drive warm water westward in a typical year. Warm water at the ocean's surface blows from South America to Indonesia. Cold water from the deep comes to the surface while warm water travels west.
- This frigid water eventually reaches the shore of South America. These winds are substantially stronger than typical during the winter of a La Nina year. As a result, the water in the Pacific Ocean near the equator is a few degrees cooler than typical. Even a little shift in ocean temperature may have a global impact on weather.
- It is created by a collision between the Pacific Ocean and the upper atmosphere. However, it has the potential to affect weather patterns all across the planet. Furthermore, the climatic circumstances during La Nina can contribute to the formation of additional **tropical cyclones, including hurricanes, in the deep tropics** (near the islands in the Caribbean, for example).
- **Implications on Asia-** During La Nina years, the development of tropical cyclones, as well as the position of the subtropical ridge, shifts westward over the western Pacific Ocean, increasing the risk of landfall in China.
- -La Nina caused a 2°C (3.6°F) dip in sea surface temperatures over Southeast Asia in March 2008. It also brought severe rain to Malaysia, the Philippines, and Indonesia.

- **Weather Conditions-** La Nina is also distinguished by above-normal pressure throughout the central and eastern Pacific. As a result, cloud formation and rainfall in that area are reduced. Drier-than-normal conditions have been reported along tropical South America's west coast, the Gulf Coast of the United States, and the pampas area of southern South America.
- **Economic Viability-** La Nina is often beneficial to the fishing sector in western South America. Cold, nutrient-rich waters rise to the top as a result of upwelling.
- **Marine Life-** Plankton, which is consumed by fish and crabs, contains nutrients. Crustaceans are preyed upon by higher-level predators such as high-value fish species such as sea bass.
- La Nina events can continue anywhere from one to three years, as opposed to El Nino, which normally lasts little more than a year. Both phenomena tend to peak during the winter months in the Northern Hemisphere.

**The Hindu link**

<https://www.thehindu.com/news/national/private-agency-skymet-forecasts-normal-monsoon/article65313940.ece#:~:text=The%20southwest%20monsoon%202022%20will,month%20stretch%20from%20June%2DSeptember.>

**Question-** Differentiate between El Nino and La Nina. How does it impact the Indian monsoon?

## GENERAL STUDIES 2.

### INDIAN RELATIONS

#### IS INDIA'S POSITION ON RUSSIA AFFECTING ITS RELATIONSHIP WITH THE U.S.?

##### Context

- The United States, India's key partner, has warned of dire consequences for any nation, including India, that conducts local currency transactions through Russia's central bank or builds a payment mechanism that subverts or circumvents US sanctions against Russia.
- Many nations, including the United States, have been irritated by India's constant neutral stance on Russia's invasion of Ukraine, which has been shaped by its decisions. It is necessary to determine India's non-aligned stance on the conflict.

##### Neutralising Geo Political Equations

- India has solid connections with both Russia and the United States, and siding with one might jeopardise India's relationship with the other.
- However, this has not been the case thus far, since India appears to have adopted a neutral stance. India has frequently stated that it considers its relations with Russia and the United States as distinct and would not allow either to dictate its foreign policy.
- Russia has undoubtedly been India's most trustworthy partner for more than five decades, but due to deteriorating ties with the US, Moscow has increased its connection with China in recent years.
- India, which has been strengthening ties with the US since the turn of the century, is now speeding up its multifaceted collaboration with the US, mostly to counterbalance a confrontational China.
- These shifting geopolitical dynamics have also raised concerns about an Indo-Russian drift and India's capacity to manage its relations with other major powers.
- Despite the prospect of American penalties under CAATSA, India not only opted to go with the 2018 sale for S-400 missile defence systems, but also completed a new agreement for INR 5,000 crores for the manufacturing of 7.5 lakh AK 203 Russian assault rifles.
- Similarly, India has been collaborating closely with the US in the Indo-Pacific, which Russia has slammed as a US-led plot to undermine India's long-standing alliance with Russia.
- Despite Russia's vehement opposition, India has continued to pursue its Indo-Pacific Strategy through frequent contacts inside and beyond the QUAD, demonstrating that it will act exclusively in its own interests.
- India's defence and energy partnerships with Russia are critical.

- Russia is India's most seasoned strategic partner, with the two having worked together on political, security, and other strategic issues for a long time and continuing to do so.
- Finally, as two of the main members of the QUAD, India and the United States both perceive China as the greatest threat and are committed to working together in the Indo-Pacific to control China's ascent.

### In terms of politics

- Both the United States and Russia, as veto-wielding countries in the UN, support India's ambition for a permanent membership on the UN Security Council, as well as India's admission to the Nuclear Suppliers Group.
- Since a permanent seat on the UN Security Council and NSG membership were considered as critical to India's ambitions to represent itself as a significant global power, the strategic relationship with the United States and Russia became even more important.

### An Overview of Indo-US Ties

- Bilateral ties between India and the United States have evolved into a "global strategic partnership" based on shared democratic ideals and increasing convergence of interests on bilateral, regional, and global concerns.
- The emphasis placed by the Indian government on development and good governance has created an opportunity to reinvigorate bilateral ties and enhance cooperation under the mottos — "**Chalein Saath Saath: Forward Together We Go**" and "**Sanjha Prayas, Sab ka Vikas**" (Shared Effort, Progress for All) adopted during Prime Minister Modi and President Obama's first two summits in September 2014 and January 2015, respectively.
- In a summit-level joint declaration made in June 2016, India and the United States were referred to as "Enduring Global Partners in the Twenty-First Century."
- The regular exchange of high-level political visits has kept bilateral cooperation on track, while the broad and ever-expanding dialogue architecture has set a long-term foundation for India-US engagement.
- Today, India-US bilateral cooperation spans commerce and investment, defence and security, education, science and technology, cyber security, high-technology, civil nuclear energy, space technology and applications, clean energy, environment, agriculture, and health.
- Our bilateral relationship is nourished by vibrant people-to-people connection and support throughout the political spectrum in both nations.

### How may US sanctions affect India?

- Sanctions may jeopardise India's exports of S-400 missiles, leasing of Akula class submarines, production of A-203 rifles, and exports of the BrahMos missile.
- Sanctions will have an impact on current connections. In penalising India under the Countering America's Adversaries Through Sanctions Act (CAATSA), the United States would have to evaluate geostrategic factors, particularly with regard to China.
- Given that US defence shipments to India are expanding, restrictions may be lifted. It increased from little to nothing in 2008 to US\$ 15 billion in 2019. Between 2017 and 2021, the United States will be India's third largest defence supplier, accounting for 12% of the market.
- Furthermore, harsh sanctions enforcement will enhance Russia's reliance on China, eroding the US's ties with Russia and India. The Russians are a member of our counter-balance coalition against China.

### India's View on Relations with Russia

- India and Russia have a "**special and privileged strategic alliance**" that includes political collaboration, robust defence cooperation, a space partnership, and energy links.



- The two countries' tight ties trace back to the Cold War era, particularly in the 1970s, when India signed a 20-year Treaty of Friendship with the Soviet Union (despite India being a founding member of the Non-Aligned Movement).
- Russia has provided India with submarines, tanks, fighter planes, and even aid in developing its nuclear programme over the years.
- Furthermore, the rising coordination between China and Russia in recent years has brought the "**Eurasian Order**" architecture to the forefront.
- Putin's "**pivot to the East**" strategy advocated for a "Greater Eurasian Partnership" with China, not only as a counter-balance to the West, but also to match China's expanding influence in the Eurasian area through the Belt and Road Initiative.
- Russia's expanding engagement with Pakistan, such as the \$2.5 billion natural gas pipeline project agreed in 2021 and scheduled to begin next year, together with China-Russia ties and India's developing alliance with the US to oppose China in the Indo-Pacific, are key points of departure.
- Against this tumultuous backdrop, India's hesitation to condemn Russia or support Western sanctions is not unusual.

### **Obstacles to retaining a position with Russia**

- Despite India's strong historical and defence relations with Russia, the two countries disagree on many matters, particularly the Indo-Pacific structure and the Quad, which Russia perceives as US constructs for conducting "anti-China games." Nonetheless, India has urged Russia to "enter the discussion" on the Indo-Pacific as a "Pacific power with interests in the Indian Ocean."
- India's connections with Russia in multilateral fora such as the United Nations (where Russia supported India's bid for the UN Security Council and used its veto to support Indian interests), the Shanghai Cooperation Organization (SCO), the BRICS (Brazil-Russia-India-China-South Africa), and the Russia-India-China (RIC) trilateral are critical foreign policy tools, but they discourage India from being overtly anti-Russia.
- Certainly, New Delhi does not support the Russian invasion in and of itself, primarily because it would provide indirect legitimacy to authoritarian tactics and call into question the viability of security mechanisms such as NATO, thereby indirectly legitimising support for Chinese military adventurism in India's own backyard.
- As a result, showing sympathy with Ukraine, on whose behalf the rest of the world is morally offended, is consistent with India's wider value-based beliefs, as well as its objective of forging closer relationship with Europe (particularly Central and Eastern Europe).
- India has reached out to the world community and the war-torn area through diplomatic channels and humanitarian help, respectively.
- Finally, while speculation abounds that India's defensive posture may lead to a "fraying" of the Quad, no such development has occurred on the ground.
- The Quad statement reiterates that, while the escalating war in Eurasia may have diverted attention away from the Indo-Pacific, the latter remains hazardous.
- The statement emphasises that Russian tactics may be used in the Indo-Pacific as well, and that stakeholders must be prepared in advance. It reaffirms the Quad's commitment to "sovereignty and territorial integrity of all states," as well as countering "military, economic, and political coercion," as well as through the establishment of humanitarian assistance and disaster relief mechanisms for the region.

### **The Hindu link**

<https://www.thehindu.com/opinion/op-ed/is-indias-position-on-russia-affecting-its-relationship-with-the-us/article65299854.ece>



**Question-** How India's position on Russia with respect to Russia-Ukraine war is impacting its relation with USA. Explain.

## WEAPONS OF MASS DESTRUCTION

### Context

- Recently, The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Amendment Bill, 2022 has been unanimously passed in Lok Sabha.
- The Bill seeks to amend The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005, to **provide against the financing of proliferation of weapons of mass destruction and their delivery systems in line with India's international obligations.**
- The 2005 Act prohibited the manufacturing, transport, and transfer of weapons of mass destruction, and their means of delivery.

### Nuclear, Biological and Chemical Weapons

- While there is **no single, authoritative definition of a WMD (Weapons of Mass Destruction)** in international law, the expression is usually understood to **cover nuclear, biological, and chemical (NBC) weapons.**
- India's 2005 WMD Act defines:
  - **"Biological weapons"** as "microbial or other biological agents, or toxins of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes; and weapons, equipment or delivery systems specially designed to use such agents or toxins for hostile purposes or in armed conflict" .
  - **"Chemical weapons"** as "toxic chemicals and their precursors" except where used for peaceful, protective, and certain specified military and law enforcement purposes; "munitions and devices specifically designed to cause death or other harm through the toxic properties of those toxic chemicals".

### Control over use of WMDs

- The use of chemical, biological, and nuclear weapons is regulated by a number of international treaties and agreements.
- Among them are the **Geneva Protocol, 1925**, that banned the use of chemical and biological weapons; and the **Biological Weapons Convention, 1972**, and **Chemical Weapons Convention, 1992**, which put comprehensive bans on the biological and chemical weapons respectively.
- **India has signed and ratified both the 1972 and 1992 treaties.** There are very few non-signatory countries to these treaties, even though several countries have been accused of non-compliance.
- The use and proliferation of nuclear weapons is regulated by treaties such as Nuclear Non-Proliferation Treaty (NPT) and the Comprehensive Test Ban Treaty (CTBT).

### The Indian Express link

<https://indianexpress.com/article/explained/everyday-explainers/explained-weapons-of-mass-destruction-law-amendment-7856169/>

**Question-** Write a short note on conventions to check proliferation of Weapons of Mass Destruction.

## UNITED NATIONS SECURITY COUNCIL

### Context

- India has stressed on the importance of the United Nations Guiding Principles of Humanitarian Assistance and reiterated its call for immediate cessation of violence and hostilities in Ukraine.
- Speaking at the UN Security Council meeting on Ukraine's humanitarian situation, India's Deputy Permanent Representative to the UN, R Ravindra said that humanitarian action must always be guided by the principles of humanitarian assistance that are humanity, neutrality, impartiality, and independence.

### About UNSC

- The United Nations Security Council (UNSC) was established in **1946** as **one of the six principal organs of the UN**. It is generally viewed as the apex of the UN system.
- It is responsible for the **maintenance of international peace and security**.
- Its powers include the establishment of peacekeeping operations, the establishment of international sanctions, and the authorization of military action through Security Council resolutions.
- It is the only UN body with the authority to issue **binding resolutions** to member states.

### Membership

- UNSC consists of 15 Members.
- The council has **five permanent members** (P-5) United States, Russia, China, United Kingdom and France.
- These permanent members can **veto** any substantive Security Council resolutions, including those on the admission of new member states.
- The Security Council also has **10 non-permanent members**, elected on a **regional basis** as follows:
  - Five for African and Asian States;
  - One for Eastern European States;
  - Two for the Latin American and Caribbean States; and
  - Two for Western European and other States.
- Each year the 193-member UN General Assembly (UNGA) elects five non-permanent members for a **two-year term**.
- The body's presidency rotates monthly among its members.

### Vote and Majority Required

- Each member of the Security Council shall have **one vote**.
- Decisions of the Security Council on **procedural matters** shall be made by an **affirmative vote of nine members**.

- Decisions of the Security Council on **all other matters** shall be made by an **affirmative vote of nine members including the concurring votes of the permanent members**.
- However, any member, whether permanent or nonpermanent, must abstain from voting in any decision concerning the peaceful settlement of a dispute to which it is a party.

**Article link**

<https://newsonair.gov.in/News?title=India-at-UNSC-reiterates-call-for-immediate-cessation-of-violence-in-Ukraine&id=439507>

**Question-** Write a short note on membership and functioning of United Nations Security Council.



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## POLITY AND GOVERNANCE

### NATIONAL COMMISSION FOR WOMEN

#### Context

- The National Commission for Women has launched an **Anti-Human Trafficking Cell** to improve effectiveness in tackling cases of human trafficking, raising awareness among women and girls, capacity building and training of Anti Trafficking Units and to increase responsiveness of law enforcement agencies.
- The Cell has been set up with an aim of **increasing awareness among law enforcement officials and to facilitate their capacity building.**
- The Cell will conduct **Gender Sensitization Trainings and Workshops** in combating human trafficking for police officers and for prosecutors at regional, state and district level.
- The complaints related to human trafficking received by the Commission will be addressed by this cell.
- The Cell will also help survivors of trafficking in rebuilding their lives by providing them with need-based training and by organizing capacity building programs for them to prevent re-traumatization of victims.

#### About NCW

- The National Commission for Women (NCW) is a **statutory body** formed in **1992** under the **National Commission Act 1990**. It is the apex national level organisation of India with the mandate of protecting and promoting the interests of women.
- It provides the government with advice to make policies and laws that are more prone to protect and safeguard the rights of women. The commission also has the powers that are vested upon with a **civil court**.

#### Composition

- The commission consists of a **chairperson, a member secretary and five other members.**
- The chairperson of the NCW is **nominated by the Central Government**. The Central Government also nominates the member secretary. The member secretary should be an **expert in the field of management.**
- The five members nominated by the Central Government should be individuals with ability, standing and integrity. They should have experience in law, legislation, management, women voluntary organisation, economic social development and so on.

#### Objectives-The objectives of NCW are as follows:

- To suggest the government regarding policies regarding women,
- A platform to redress the grievances,
- To make recommendations relating to legislation measures,
- To review legal and constitutional safeguards for women.

#### Powers of NCW:

- Provide consultation on all major policy matters that affect women,
- Issuing summons for the examination of documents and the witnesses,
- It has the power to make any public record,



- Receiving evidence on affidavits,
- Discovery and production of documents,
- Summoning and enforcement.

#### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1812766>

**Question-** Write a short note on objectives, composition and working of National Commission for Women.

## FALLING CREDIBILITY OF CBI

### Context

- **Chief Justice of India** said **CBI's credibility** has come under **deep public scrutiny with the passage of time** as its **actions and inactions** have raised questions in some cases.

### About Central Bureau of Investigation (CBI)

- It is the **premier investigating police agency** in India.
- **It has its origin in the Special Police Establishment set up in 1941 to probe bribery and corruption during World War II.**
- It was set up by a resolution of the Ministry of Home Affairs in 1963 after **Santhanam committee recommendation.**
- It functions under the **Department of Personnel, Ministry of Personnel, Pension & Public Grievances, Government of India.**
- It is an **elite force playing a major role** in preservation of values in public life and in ensuring the **health of the national economy.**
- It is also the nodal police agency in India, which coordinates investigations on behalf of **Interpol Member countries.**
- The Supreme Court, the High Courts, the Parliament and the public, holds CBI as an **organisation in high esteem.**

### Power and Functions

- The CBI has to **investigate major crimes** in the country **having interstate and international ramifications.**
- The **legal powers of investigation of CBI** are derived from the **DSPE Act 1946.**
- This Act **confers concurrent and coextensive powers,** duties, privileges and liabilities on the members of **Delhi Special Police Establishment (CBI) with Police Officers of the Union Territories.**
- The **Central Government may extend to any area,** besides Union Territories, the powers and jurisdiction of members of the CBI for investigation subject to the consent of the **Government of the concerned State Govt.**
- While exercising such powers, members of the CBI of or above the rank of Sub Inspector shall be deemed officers in charge of Police Stations of respective jurisdictions.
- The CBI can investigate only such offences as are notified by the Central Government under the DSPE Act.

- CBI investigations have a **major impact on the political and economic life** of the nation. The following broad categories of criminal cases are handled by the CBI:
- **Cases of corruption and fraud committed** by public servants of all Central Govt. Departments, Central Public Sector Undertakings and Central Financial Institutions.
- The Anti-Corruption Division of the CBI has handled cases against Chief Ministers, Ministers, Secretaries to Government, Officers of the All India Services, CMDs of Banks, Financial Institutions, Public Sector Undertakings, etc.
- **Economic crimes, including bank frauds**, financial frauds, Import Export & Foreign Exchange violations, large-scale smuggling of narcotics, antiques, cultural property and smuggling of other contraband items etc.
- **Special Crimes**, such as cases of terrorism, bomb blasts, sensational homicides, kidnapping for ransom and crimes committed by the mafia/the underworld.

#### Jurisdiction of CBI vis-a-vis State Police

- **Law and Order is a State subject** and the basic jurisdiction to investigate crime lies with State Police. Besides, due to limited resources, the CBI would not be able to **investigate crimes of all kinds**. CBI may investigate:
- **Cases which are essentially against** the Central Govt. employees or concerning affairs of the Central Govt.
- **Cases in which the financial interests** of the Central Government are involved.
- **Cases relating to the breaches** of Central Laws with the enforcement of which the Government of India is mainly concerned.
- **Big cases of fraud, cheating, embezzlement** and the like relating to companies in which large funds are involved and similar other cases when committed by organised gangs or professional criminals having ramifications in several States.

#### Issues highlighted by CJI

- The Chief Justice of India listed **several issues** that were **affecting the system**.
- They included **lack of infrastructure, sufficient manpower and modern equipment; in-human conditions**, especially at the **lowest rung; questionable methods of procuring evidence; officers failing** to abide by the **rule book; and lack of accountability** of erring officers.
- The issues leading to **delay in trials were lack of public prosecutors and standing counsels; seeking adjournments**; arraying hundreds of witnesses and filing voluminous documents in pending trials; undue imprisonment of undertrials; change in priorities with the change in the political executive; cherry picking of evidence; and repeated transfers of officers leading to a change in the direction of probe.
- These **issues often lead to the acquittal** of the **guilty and incarceration** of the innocent.
- This **severely affects the public trust in the system**. The courts cannot simply monitor every step.

#### Suggested Reforms /Recommendations

- **Creation of Independent umbrella institution:**
- There was an **immediate need for the creation** of an **independent umbrella** institution, so as to **bring various central agencies** like the **CBI, Enforcement Directorate and the Serious Fraud Investigation Office** under one roof.
- This body is required to be created under a statute, clearly defining its **powers, functions and jurisdictions**.
- **Independency:**

- The organisation **should be headed by an independent and impartial authority**, appointed by a committee akin to the one which appointed the CBI Director.
- Its head could be assisted by deputies having specialisation in different domains.
- **Multiple Proceeding:**
- This umbrella organisation **will end multiplicity of proceedings**.
- A single incident these days gets investigated by multiple agencies, often leading to dilution of evidence, contradiction in depositions, prolonged incarceration of innocents.
- End in multiplicity of proceedings will also save the institution from being blamed as a tool of harassment.
- Once an incident is reported, the organisation should decide as to which specialised wing should take up investigation
- **Check & Balance:**
- A **reasonable check and balance** would be a provision in the proposed law for annual audit of the institution's performance by the appointing committee.
- **Cooperation between the Police and investigative agencies:**
- **Police and the investigative agencies** may have de-facto legitimacy, but yet, as institutions, they still have to gain social legitimacy.
- **Police should work impartially** and focus on crime prevention.
- They **should also work in cooperation** with the **public to ensure law** and order prevails in the society.
- Institutions including the Police and the investigative bodies **should not allow any authoritarian tendencies** to creep in and need to function within the democratic framework as any deviation will hurt them and will weaken our democracy
- The State agencies must be **equipped to deal with increasing challenges** in the field of investigation.
- There should be a **harmonious relationship between the State and Central** agencies and collaboration was the key, given that the goal of all those organisations was to secure justice.
- **Representation of women:** There was a **need for adequate representation of women** in the criminal justice system.
- **Upgradation of knowledge:** There is a need for regular upgradation of knowledge, deployment of state-of-the-art technology, and international exchange programmes to learn the best practices.

#### The Hindu link

<https://www.thehindu.com/news/national/chief-justice-of-india-flags-falling-credibility-of-cbi/article65282123.ece>

**Question-** Significant reforms are needed to restore the credibility of CBI. Explain.

## ELECTORAL BOND SCHEME

### Context

- Chief Justice of India N V Ramana has assured petitioners that the Supreme Court will take up for hearing a pending plea challenging the Electoral Bond Scheme, 2018.
  - Two NGOs — Common Cause and Association for Democratic Reforms (ADR) — have challenged the scheme, **alleging that it is “distorting democracy”**.

## Electoral Bonds Scheme

### • Features:

- Introduced with the Finance Bill, 2017, the Electoral Bond Scheme was notified on January 29, 2018.
- Electoral bonds is an instrument through which **anyone can donate money to political parties**
- It is like a **promissory note** that may be purchased by a person who is a citizen of India or incorporated or established in India.
- A person being **an individual** can buy Electoral Bonds, either **singly or jointly** with other individuals.
- The bonds are like **banknotes** that are payable to the bearer on demand and are **interest-free**
- **There is no limit on the number of bonds an individual or company can purchase.**
- The bonds that are not encashed by a party within 15 days are deposited by the SBI into the Prime Minister's Relief Fund.

### • Conditions :

- Any party that is registered under section 29A of the Representation of the Peoples Act, 1951 (43 of 1951) and has secured at least one per cent of the votes polled in the most recent General elections or Assembly elections is eligible to receive electoral bonds.
- The party will be allotted a verified account by the Election Commission of India (ECI) and the electoral bond transactions can be made only through this account.
- The electoral bonds will not bear the name of the donor. Thus, the political party might not be aware of the donor's identity.

### • Procedure

- The **State Bank of India (SBI)** has been authorised to issue and encash Electoral Bonds through its 29 Authorised Branches.
- The bonds are sold by the **SBI** in denominations of **Rs 1,000, Rs 10,000, Rs 1 lakh, Rs 10 lakh and Rs 1 crore.**
- One can purchase these bonds **only digitally or through cheques.**
- The Electoral Bonds can be encashed by an eligible Political Party **only through a Bank account** with the Authorised Bank.
- The Electoral Bond deposited by an eligible Political Party in its account is **credited on the same day.**
- Electoral Bonds shall be **valid for fifteen calendar days** from the date of issue and no payment is being made to any payee Political Party if the Electoral Bond is deposited after expiry of the validity period.

## Benefits of Electoral Bonds

- **More Transparency:** It helps the **political parties to operate** in a more transparent manner with the election commission, regulatory authorities and the general public at large.
- **Ensures Accountability:** Donations through Electoral Bonds will only be credited in the party bank account disclosed with the ECI. As encashment of all the donations are through banking channels, every political party shall be obliged to explain how the entire sum of money received has been expended.
- **Discouraging Cash:** The Purchase will be possible only through a limited number of notified banks and that too through cheque and digital payments. Cash will not be encouraged.
- **Maintains Anonymity:** The individuals, groups of individuals, NGOs, religious and other trusts are permitted to donate via electoral bonds without disclosing their details. Therefore, the identity of the donor is being preserved.

## Challenges for Electoral Bonds



- **Hindering Right to Know:** Voters will not know which individual, company, or organisation has funded which party, and to what extent. Before the introduction of electoral bonds, political parties had to disclose details of all its donors, who have donated more than Rs 20,000. The change infringes the citizen's 'Right to Know' and makes the political class even more unaccountable.
- **Shallow Anonymity:** Anonymity does not apply to the government of the day, which can always access the donor details by demanding the data from the State Bank of India (SBI). This implies that the only people in the dark about the source of these donations are the taxpayers.
- **Unauthorised Donations:** In a situation where the contribution received through electoral bonds are not reported, on perusal of the contribution report of political parties, it cannot be ascertained whether the political party has taken any donation in violation of provision under Section 29B of the RPA, 1951 which prohibits the political parties from taking donations from government companies and foreign sources.
- **Leading to Crony-Capitalism:** It could become a convenient channel for businesses to round-trip their cash parked in tax havens to political parties for a favour or advantage granted in return for something. Anonymous funding might lead to infusion of black money.
- **Loopholes:** Corporate Entities may not enjoy the benefit of transparency as they might have to disclose the amount donated to the Registrar of Companies; Electoral bonds eliminate the 7.5% cap on company donations which means even loss making companies can make unlimited donations etc.

#### Supreme Court's Stance on Electoral Bonds

- The Supreme Court (SC) agreed that the scheme **protects the identity of purchasers** of electoral bonds in a cloak of anonymity, but highlighted that such purchases happened only through regular banking channels.
- In 2019, the Supreme Court asked all the political parties to **submit details of donations** received through electoral bonds to the ECI. It also asked the Finance Ministry to reduce the window of purchasing electoral bonds from 10 days to five days.
- The Election Commission of India (ECI) also told the Supreme Court of India that while it was not against the Electoral Bonds Scheme, it **did not approve of anonymous donations** made to political parties.

#### Election Commission's stand on electoral bonds

- The Election Commission, in its submission to the Standing Committee on Personnel, Public Grievances, Law and Justice in May 2017, had objected to the amendments in the Representation of the People (RP) Act, which exempt political parties from disclosing donations received through electoral bonds.
- It described the move as a "retrograde step". In a letter written to the Law Ministry the same month, the Commission had even asked the government to "reconsider" and "modify" the above amendment.
- The Election Commission on April 10, 2019 told the Supreme Court of India that while it was not against the Electoral Bonds Scheme, it did not approve of anonymous donations made to political parties.

#### Reserve Bank of India on electoral bonds scheme

- According to an article published by HuffPost India on November 18, 2019, the RBI was critical of the scheme. The central bank had warned the government that the bonds would "undermine the faith in Indian banknotes and encourage money laundering."

#### Way Forward

- The government may **reconsider and modify** certain provisions of the Electoral Bonds Scheme to **ensure full disclosure and transparency**.
- At the same time, the bonds should ensure that the funds being collected by the political parties are **accounted for clean money** from the appropriate channels without any obligation of give and take.

**The Indian Express link**

<https://indianexpress.com/article/explained/explained-how-electoral-bonds-work-why-criticism-7856583/>

**Question-** Describe major concerns involved with Electoral Bond scheme.

## CITIZENSHIP AMENDMENT ACT, 2019 (CAA)

### Context

- The Ministry of Home Affairs (MHA) has asked the parliamentary committee for more time to frame the rules of the Citizenship (Amendment) Act, 2019 (CAA), on the grounds that consultation process is on.
- Besides the consultation process, MHA said that the construction of the rules had been delayed due to the COVID-19 pandemic. Without the rules being framed, the Act cannot be implemented.
- The tribal areas of Assam, Meghalaya, Mizoram or Tripura as included in the Sixth Schedule to the Constitution and States of Arunachal Pradesh, Mizoram, Nagaland and Manipur are exempted from CAA.

### How is citizenship acquired in India?

- In India, citizenship is regulated by the **Citizenship Act, 1955**.
- The Act specifies that citizenship may be acquired in India through **five methods** – by birth in India, by descent, through registration, by naturalisation (extended residence in India), and by incorporation of territory into India.

### Can illegal migrants acquire citizenship?

- An illegal migrant is prohibited from acquiring Indian citizenship.
- An illegal migrant is a foreigner who: (i) enters the country without valid travel documents, like a passport and visa, or (ii) enters with valid documents, but stays beyond the permitted time period.
- Illegal migrants may be imprisoned or deported under the **Foreigners Act, 1946** and the **Passport (Entry into India) Act, 1920**.

### How does the 2019 Act seek to change the criteria for determining citizenship?

- The Citizenship (Amendment) Act 2019 makes it clear that immigrants belonging to **Hindu, Sikh, Christian, Buddhist, Jain and Parsi communities** from the Muslim-majority nations (**Pakistan, Bangladesh and Afghanistan**) will not be treated as illegal.
- They will also be eligible to get naturalised citizenship.
- One of the requirements for citizenship by **naturalization** under the 1955 Act is that the applicant must have resided in India during the last 12 months, and for 11 of the previous 14 years.
- The amendment act **relaxes this 11-year requirement to five years** for persons belonging to these six religions from these three countries.
- They will also no longer be deported or jailed under the Foreigners Act of 1946 and the Passport (Entry into India) Act of 1920.
- The cut-off date for citizenship is **December 31, 2014** which means the applicant should have entered India on or before that date.

### Rationale of the Law

- The Statement of Objects and Reasons in the amendment Act (SoR) states that India has had historic migration of people from Afghanistan, Pakistan and Bangladesh, and these countries have a state religion, which has resulted in **religious persecution** of minority groups.

#### Are the provisions of the Act applicable across the country?

- The Act clarifies that the amendments will not apply to certain areas. These are:
  - The tribal areas of Assam, Meghalaya, Mizoram, and Tripura, as included in the **Sixth Schedule to the Constitution**. These tribal areas include Karbi Anglong (in Assam), Garo Hills (in Meghalaya), Chakma District (in Mizoram), and Tripura Tribal Areas District.
  - The **states regulated by the “Inner Line” permit** under the Bengal Eastern Frontier Regulation 1873.

#### How does the Act change the regulations for Overseas Citizens of India?

- The Act also amends the provisions on registration of Overseas Citizens of India (OCI).
- OCI cardholders are foreigners who are persons of Indian origin.
- The government may cancel a person’s OCI registration on various grounds specified in the 1955 Act.
- The 2019 amendment **adds another ground for cancelling OCI registration** — violation of any law notified by the central government.

#### The Hindu link

<https://www.thehindu.com/news/national/home-ministry-seeks-more-time-to-frame-caa-rules/article38394468.ece>

**Question-** What is the rationale behind provisions of Citizenship Amendment Act, 2019 (CAA) and what objectives it aims to achieve?

## ATAL INNOVATION MISSION

### Context

- The Union Cabinet chaired by the Prime Minister Narendra Modi has approved continuation of Atal Innovation Mission till March 2023.
- The intended targets that will be achieved by AIM are:
  - Establishing 10000 Atal Tinkering Labs (ATLs),
  - Establishing 101 Atal Incubation Centers (AICs),
  - Establishing 50 Atal Community Innovation Centers (ACICs) and
  - Supporting 200 startups via the Atal New India Challenges.

### Atal Innovation Mission

- The Atal Innovation Mission (AIM) is a flagship initiative set up by the **NITI Aayog** to **promote innovation and entrepreneurship** across the length and breadth of the country.
- AIM’s objective is to develop new programmes and policies for fostering innovation in different sectors of the economy, provide platform and collaboration opportunities for different stakeholders, create awareness and create an umbrella structure to oversee the innovation ecosystem of the country.

### Initiatives under Atal Innovation Mission

### Atal Tinkering Labs – at School Level

- AIM has launched the establishment of thousands of Atal Tinkering Labs enabling students from **grade 6 to grade 12** to have access to and tinker with innovative tools and technologies like 3D printers, robotics, miniaturised electronics do-it-yourself kits, thus stimulating a problem solving innovative mindset to solve problems in the community they are in.

### Atal Incubators at Universities, Institutions, Industry Level

- To promote creation of a supporting ecosystem for start-ups and entrepreneurs, AIM has been establishing world-class incubators called Atal Incubation Centres (AICs) in universities, Institutions, corporates, etc. that would foster innovative start-ups and become scalable and sustainable enterprises.

### Atal Community Innovation Centres – Serving Unserved and Under-Served Regions of India

- To promote the benefits of technology led innovation to the unserved/ underserved regions of India including Tier 2, Tier 3 cities, aspirational districts, tribal, hilly and coastal areas, AIM is setting up Atal Community Innovation Centres (ACICs) with a unique partnership driven model wherein AIM would **grant up to Rs. 2.5 crore** to an ACIC subject to a partner proving equal or greater matching funding.

### Atal New India Challenges – Product and Service Innovations with National Impact

- To create product and service innovations having national socio-economic impact, AIM has launched over 24 Atal New India Challenges in partnership with five different ministries and departments of the central government.

### Applied Research and Innovation for Small Enterprises (ARISE)

- To promote innovation in a phased manner in the MSME/Start-up sector AIM will be launching ARISE along with partner Ministries so that great research ideas are converted to viable innovative prototypes followed by product development and commercial deployment.

### Mentorship and Partnerships – with Public, Private sector, NGOs, Academia, Institutions

- To enable all the initiatives to succeed, AIM has launched the “**Mentor India – The Mentors of Change**” programme, in collaboration with the public sector, corporates and institutions, to support all the initiatives of the mission.

#### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1814821>

**Question-** Write a short note on Atal Innovation Mission, its objectives and its initiatives.

## I&B MINISTRY'S POWERS TO REGULATE CONTENT ON TV, OTHER PLATFORMS

### Context

- On January 31 2022, the **Information and Broadcasting Ministry barred the transmission of Malayalam news channel Media One citing 'security reasons'**. Later, the Kerala High Court granted a stay, allowing the channel to continue functioning.
- Recently, the Supreme Court Tuesday stayed the Centre's decision to revoke the security clearance of Malayalam news channel MediaOne
  - In the case of **Media One**, its licences were **revoked because the Home Ministry had denied it security clearance**, which is essential as part of the policy.



### In which sectors can the I&B Ministry regulate content?

- Until 2021, it had the powers to regulate content across all sectors — **TV channels, newspapers and magazines, movies in theatres and on TV, and the radio** — barring the internet.
- In **2021**, the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021**, extended its regulatory powers over internet content too, especially on digital news platforms and OTT platforms such as Netflix, Amazon Prime etc.

### In the case of movies

- Central Board of Film Certification (**CBFC**) has a **mandate** to give any film that will be played in a theatre, a **rating indicating the kind of audience** it is suitable for. For example, a movie with sensitive or sexual content would get an adults-only certificate.
- **In practice, however, the CBFC has often suggested changes or cuts** to a film before giving it a certification. While it isn't the **CBFC's mandate to censor a film, it can withhold giving a rating** unless the filmmaker agrees to its suggestions.

### In the case of television and OTT

- When it comes to TV channels, there is a **three-tier grievance redressal structure for viewers** to raise concerns.
- A viewer can successively approach the **channel, then a self-regulatory body of the industry, and finally the I&B Ministry**, which can issue a showcause notice to the channel, and then refer the issue to an inter-ministerial committee (IMC).
- For **content on OTT platforms too, there is a similar structure.**
- The ministry also has the **Electronic Media Monitoring Cell**, which tracks channels for any violations of the programming and advertising codes mentioned in the Cable TV Network Rules, 1994.
- **Violation can lead to revocation of a channel's uplinking licence** (for sending content to a satellite) or downlinking licence (for broadcasting to viewers through an intermediary).
  - It is these licences of MediaOne that the government revoked.

### In the case of Print Media (Newspapers/magazines)

- In print, **based on the recommendations of the Press Council of India**, the government can suspend its advertising to a publication.

### Other online content (websites/online arenas)

- **Latest IT rules allow the I&B Ministry to issue orders to ban websites based on their content.**
- There is also a new mechanism the I&B Ministry adopts: It has used **emergency powers under the new IT Rules** to block certain YouTube channels and social media accounts **based on inputs from intelligence agencies.**

### What kind of content is not allowed?

- There are **no specific laws on content allowed or prohibited** in print and electronic media, radio, films or OTT platforms.
- The **content on any of these platforms has to follow the free speech rules .**
- **Article 19(1)** of the Constitution, while protecting freedom of speech, also lists certain **"reasonable restrictions"** including content related to the **security of the state, friendly relationship with foreign states, public order, decency and morality** etc.
  - Action can be taken if any of these restrictions is violated.

### Do other agencies play a role?

- There is **no direct involvement**, as the **powers to regulate content rest only with the I&B Ministry**.
- However, the **ministry relies on inputs from other ministries**, as well as **intelligence agencies**.

#### The Indian Express link

<https://indianexpress.com/article/explained/explained-ib-ministrys-powers-to-regulate-content-on-tv-other-platforms-7761547/>

**Question-** Describe the powers of Ministry of Information and Broadcasting in regulating content over various platforms.

## RASHTRIYA GRAM SWARAJ ABHIYAN

### Context

- The Cabinet Committee on Economic Affairs chaired by the Prime Minister Narendra Modi has approved continuation of revamped Centrally Sponsored Scheme of Rashtriya Gram Swaraj Abhiyan (RGSA) for implementation during the period from 01.04.2022 to 31.03.2026 (co-terminus with XV Finance Commission period) to develop governance capabilities of Panchayati Raj Institutions (PRIs).
- The total financial outlay of the scheme is Rs.5911 crore with the Central Share of Rs.3700 crore and that of State Share of Rs.2211 crore.

### Rationale of the Scheme

- **Mahatma Gandhi envisioned villages as mini-republics** and advocated that true democracy should begin with participation from the grass-root level by the people of every village.
- The **73rd Constitutional Amendment** mandated the **three tier Panchayati Raj Institutions (PRIs)** to function as units of local self-government and envisioned a people-led development at the grass roots level.
- Panchayati Raj System was mandated with the **twin objectives of ensuring economic development and social justice for the people living in the rural areas**.

### About RGSA

- The **Union Budget 2016-17** announced the Rashtriya Gram Swaraj Abhiyan (RGSA) as a **Centrally Sponsored Scheme for building capabilities of Panchayati Raj Institutions for achieving Sustainable Development Goals (SDGs)**.
- Key local development challenges faced by the country viz. poverty, public health, nutrition, education, gender, sanitation, drinking water, livelihood generation, etc. are in sync with SDGs and fall within the realm of Panchayats.
- The Panchayats have therefore been designated as a key player for implementation of the United Nations SDGs to be achieved by 2030.
- The scheme **extends to all States and UTs including non-Part IX areas** where Panchayats do not exist.

### Focus of the scheme

- The scheme has a focus on ensuring **basic orientation training for the Elected Representatives (ERs) of Panchayats**, within six months of their election and **refresher training** within 2 years.

- RGSA will have thrust for **PRI-SHG (Self-Help Group) convergence** to ensure effective community mobilisation and greater public ownership of flagship programs of the government.
- **Use of e-governance and technology driven solutions** at Panchayat level will be increased to attain administrative efficiency, improved service delivery, and greater accountability.
- RGSA also aims at **enhancing capabilities of Panchayats to raise their own sources of revenue**.
- **Strengthening Gram Sabhas** to function effectively as the basic forum of people's participation is also a focus area of RGSA.
- It also aims at **promoting devolution of powers and responsibilities to Panchayats** according to the spirit of the Constitution and Provisions of the Panchayats (Extension to Scheduled Areas) Act, 1996.

### Components of the scheme

#### The scheme consists of Central and State Components:

- The Central component comprises
  - National level activities viz. National Plan for Technical Assistance in collaboration with academic institutions/ institutions of excellence for various activities of Capacity Building & Training (CB&T) for PRIs,
  - Mission Mode Project (MMP) on e-Panchayat and
  - Incentivization of Panchayats.
- The State component relates to
  - Activities to be undertaken by State Governments for CB&T
  - Strengthening of Gram Sabhas in PESA areas,
  - Distance Learning Facility,
  - Support for Innovations,
  - Technical support to PRIs,
  - Other activities for strengthening of Panchayats.

#### The PIB link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1816360>

**Question-** Describe the objectives, components and provisions of Rashtriya Gram Swaraj Abhiyan.

## NATIONAL FOOD SECURITY ACT

### Context

- For procurement operations under MSP and seamless distribution of foodgrain under Pradhan Mantri Garib Kalyan Ann Yojana (PMGKAY) and National Food Security Act 2013 (NFSA), during Financial Year 2021-22 Department of Food & Public Distribution released Rs.2,94,718/- Crore towards Food Subsidy to Food Corporation of India and State Governments.

## About NFSA

- The National Food Security Act, 2013 (NFSA) provides for **food and nutritional security** in the human life cycle approach, by ensuring access to adequate quantity of quality food at affordable prices for people to live a life with dignity and for matters connected therewith or incidental thereto.
- The Act is in line with **Goal Two of the Sustainable Development Goals** (which seeks sustainable solutions to end hunger in all its forms by 2030 and to achieve food security) set by the United Nations General Assembly.
- Schemes such as the **Mid-Day Meal Scheme (MDM), the Public Distribution System (PDS), and the Integrated Child Development Services (ICDS)** are included under the Act.
- The implementation of the scheme comes under the ambit of the **Ministry of Consumer Affairs, Food and Public Distribution**.

## Key Features

- The Act legally entitled up to **75% of the rural population and 50% of the urban population** to receive subsidized foodgrains under the **Targeted Public Distribution System (TPDS)**.
- The eligible persons will be **entitled to receive 5 Kgs of foodgrains per person per month at subsidised prices of Rs. 3/2/1 per Kg for rice/wheat/coarse grains**. The existing **Antyodaya Anna Yojana (AAY) households**, which constitute the poorest of the poor, will continue to receive 35 Kgs of foodgrains per household per month.
- About two-thirds of the population, therefore, is covered under the Act to receive highly subsidized foodgrains.
- The Act also has a special focus on the nutritional support to women and children. **Pregnant women and lactating mothers** will be entitled to meals and **maternity benefits of not less than Rs 6000**.
- **Children upto 14 years of age** will be entitled to nutritious meals as per the prescribed nutritional standards. In case of non-supply of entitled foodgrains or meals, the beneficiaries will receive **food security allowance**.
- The Act also contains provisions for setting up of **grievance redressal mechanism** at the District and State levels
- The **eldest women of the household** of age 18 years or above will be the head of the household for the purpose of issuing ration cards.

## Implementation

- It is operated under the **joint responsibility of the Central and the State/Union Territory (UT) Governments**.
- The Central Government is responsible for procurement, allocation and transportation of food grains up to the designated depots of the Food Corporation of India.
- States/UTs hold the operational responsibilities for allocation and distribution of food grains.
- The NFSA currently covers **81 crore people** which was determined on the basis of the **2011 census**, and has not been revised since the law was passed in 2013.

### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1816459>



**Question-** Write a short note on provisions and implementation of National Food Security Act.

## AYUSHMAN BHARAT

### Context

- Union Health Minister, Dr. Mansukh Mandaviya chaired the 4th Anniversary celebrations of Ayushman Bharat -Health and Wellness Centres (AB-HWCs) through a video conference (VC) today with more than 1 lakh AB-HWCs, State Health ministers, senior Officials of all the States and UTs, healthcare workers from various hospitals and development partners.

### About the scheme

- Ayushman Bharat is a flagship scheme of Government of India launched to achieve the vision of **Universal Health Coverage (UHC)**. It aims to undertake path breaking interventions to holistically address the healthcare system at the primary, secondary and tertiary level, by adopting a continuum of care approach.
- Launched in 2018, it is an umbrella of two major health initiatives, namely **Health and Wellness Centres** and **Pradhan Mantri Jan Arogya Yojana (PM-JAY)**.

### Health and Wellness Centres

- Under this **1.5 lakh** existing Sub Health Centres (SHC), Primary Health Centres (PHC) and Urban Primary Health Centres (UPHC) to be transformed as **Health Wellness Centres (HWC)** by 2022.
- These centres will deliver **Comprehensive Primary Health Care** that is **universal and free** to users, with a focus on wellness and the delivery of an expanded range of services closer to the community.
- HWC are envisaged to deliver **expanded range services** that go beyond Maternal and child health care services to include care for non-communicable diseases, palliative and rehabilitative care, Oral, Eye and ENT care, mental health and first level care for emergencies and trauma, including free essential drugs and diagnostic services.

### Pradhan Mantri Jan Arogya Yojana

- It is one significant step towards the achievement of **Universal Health Coverage (UHC)** and **Sustainable Development Goal – 3** (SDG3: “Ensure healthy lives and promote well-being for all at all ages”).
- AB-PMJAY will provide financial protection to **10.74 crore** poor, deprived rural families and identified occupational categories of urban workers’ families as per the latest **Socio-Economic Caste Census (SECC) data** (approx. 50 crore beneficiaries) that form the bottom 40% of the Indian population. It will offer a benefit cover of **Rs. 5,00,000 per family per year**.
- The benefits of Rs. 5,00,000 are on a **family floater basis** which means that it can be used by one or all members of the family.
- This cover will take care of **almost all secondary care and most of tertiary care procedures**.
- To ensure that nobody is left out (especially women, children and elderly) there will be **no cap on family size and age** in the scheme.
- The benefit cover will also include **pre-hospitalization and post-hospitalization expenses** such as diagnostics and medicines.
- A defined **transport allowance** per hospitalization will also be paid to the beneficiary.

- Benefits of the scheme are **portable across the country** and a beneficiary covered under the scheme will be allowed to take cashless benefits from **any public/private empanelled hospitals** across the country.

### Implementation Strategy

- At the national level to manage, a **National Health Authority** has been set up. It will be chaired by the Minister of Health & Family Welfare which will enable the decision making at a faster pace, required for smooth implementation of the scheme.
- States/ UTs are advised to implement the scheme by a dedicated entity called State Health Agency (SHA).

#### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1817275>

**Question-** Write a short note on components of Ayushman Bharat mission.

## THE FUNCTIONING OF THE ENFORCEMENT DIRECTORATE

### Context

- The Enforcement Directorate (ED) is in the news now and often.
- It goes back to May 1, 1956, when an 'Enforcement Unit' was formed in the **Department of Economic Affairs**, for handling Exchange Control Laws violations under the **Foreign Exchange Regulation Act (FERA)**.
- The ED today is a multi-dimensional organisation investigating economic offences under the **Prevention of Money Laundering Act (PMLA), Fugitive Economic Offenders Act, Foreign Exchange Management Act and FERA**.

### Powers of ED

- The PMLA was brought in to **prevent parking of money outside India and to trace out the layering and the trail of money**. The ED got its power to investigate these crimes under Sections 48 and 49 of the Act.
  - Whenever any offence is registered by a local police station, which has generated **proceeds of crime over and above ₹1 crore**, the ED steps in. The ED can also carry out search (property) and seizure (money/documents) if it suspects money has been laundered.
- A person shall be guilty of the offence of money-laundering, if such person is found to have directly or indirectly attempted to indulge or knowingly assist a party involved in one or more of the following activities — concealment; possession; acquisition; use; or projecting as untainted property; or claiming as untainted property in any manner.
- If money has been laundered abroad, the **PMLA court (constituted as per the Act)** has the right to send a letter of rogatory under Section 105 (reciprocal arrangements regarding processes) of the Code of Criminal Procedure. The said government can then share the documents and evidence needed by the agency.

### Can the ED investigate cases of money laundering retrospectively?

- Since the PMLA was enacted only in 2005, **any ill-gotten property acquired before the year 2005 has no case under PMLA**.

**The Hindu link**

<https://www.thehindu.com/news/national/the-functioning-of-the-enforcement-directorate/article65329177.ece>

**Question-** Write a short note on functioning of Enforcement Directorate.

**ONE NATION ONE RATION CARD****Context**

- The Department of Food and Public Distribution (DFPD) received the prestigious Prime Minister's Award for Excellence in Public Administration, 2020 for its scheme 'One Nation One Ration Card' (ONORC). The award was presented under the category Innovation (General)-Central.
- The landmark plan of ONORC is a countrywide innovation that allows all NFSA beneficiaries, particularly migrant beneficiaries, to claim either full or part foodgrains from any Fair Price Shop (FPS) of choice in the country through existing ration card with biometric/Aadhaar authentication in a seamless manner. The system also allows their family members back home, if any, to claim the balance of foodgrains on same the ration card.

**PDS in India**

- Under the **National Food Security Act, 2013**, about 81 crore persons are entitled to buy subsidized foodgrain — rice at Rs 3/kg, wheat at Rs 2/kg, and coarse grains at Re 1/kg — from their designated Fair Price Shops (FPS) of the **Targeted Public Distribution System (TPDS)**.
- PDS is operated under the **joint responsibility** of the Central and the State Governments.
- The Central Government, through **Food Corporation of India (FCI)**, has assumed the responsibility for procurement, storage, transportation and bulk allocation of food grains to the State Governments.
- The **operational responsibilities** including allocation within the State, identification of eligible families, issue of Ration Cards and supervision of the functioning of Fair Price Shops (FPSs) etc., rests with the State Governments.

**What is the one 'One Nation, One Ration Card' system?**

- Earlier, a ration cardholder can buy food grains only from an FPS that has been assigned to her in the locality in which she lives.
- However, under the 'One Nation, One Ration Card' system, the beneficiary will be able to buy subsidised foodgrains from **any FPS across the country**.
- The biggest beneficiaries will be **migrant workers** who move to other states to seek better job opportunities.

**How will the system of ration card portability work?**

- Ration card portability is aimed at providing **intra-state as well as inter-state portability** of ration cards.
- The new system, based on a technological solution, will identify a beneficiary through **biometric authentication** on electronic Point of Sale (ePoS) devices installed at the FPSs, and enable that person to purchase the quantity of foodgrains to which she is entitled under the NFSA.

- While the **Integrated Management of Public Distribution System (IM-PDS) portal** (<http://www.impds.nic.in/>) provides the technological platform for the inter-state portability of ration cards, enabling a migrant worker to buy foodgrains from any FPS across the country, the other portal ([annavitran.nic.in](http://annavitran.nic.in)) hosts the data of distribution of foodgrains through E-PoS devices within a state.
- Once the 'one nation one ration card' system takes effect in a given state, the beneficiary family **can purchase food grains from different locations**. For example, a migrant worker staying in a different state can buy his or her share of the subsidized food grains from any FPS in the state where they work while the remaining family members will be able to buy their quota of the supplies back at home.

#### Since when has the One Nation, One Ration Card System been in the works?

- Work on this ambitious project started about three years back when the government launched a scheme called **Integrated Management of Public Distribution System (IM-PDS)** in April 2018 to reform the public distribution system in the country.
- The PDS system was marred with inefficiency leading to leakages in the system. To plug the leakages and make the system better, the government started the reform process.
- For this purpose, it used a technological solution involving the **use of Aadhaar to identify beneficiaries**. Under the scheme, the **seeding of ration cards with Aadhaar** is being done.
- Simultaneously, **PoS machines** are being installed at all FPSs across the country. Once 100 per cent of Aadhaar seeding and 100 per cent installation of PoS devices is achieved, the national portability of ration cards will become a reality.

#### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1819025>

**Question-** Write a short note on Public Distribution System of India. What is One Nation One Ration Card system and its intended benefits?

## SVAMITVA SCHEME

### Context

- More than 42 lakh property cards have been distributed in nearly 32 thousand villages under the SVAMITVA scheme.

### About the scheme

- SVAMITVA (Survey of villages and mapping with improvised technology in village areas) scheme is a collaborative effort of the **Ministry of Panchayati Raj, State Panchayati Raj Departments, State Revenue Departments and Survey of India**.
- It is a **central sector scheme** that aims to provide rural people with the **right to document their residential properties** so that they can use their property for economic purposes. The scheme is for surveying the land parcels in rural inhabited areas using **Drone technology**.

### Objectives



- The outcome from the scheme would include updating the record of rights in the revenue/property registers and issuance of property cards to the property owners. This would facilitate **monetisation of rural residential assets** for credit and other financial services.
- It will also lead to creation of **accurate land records** for rural planning and determination of **property tax**.
- Through the SVAMITVA scheme, the government hopes that **property disputes and legal cases will be reduced**.
- Other gram panchayats and community assets like village roads, ponds, canals, open spaces, school,anganwadi, health sub-centres etc will also be surveyed and GIS maps will be created. These maps can be used to prepare better quality gram panchayat development plans.

### Coverage

- There are about 6.62 lakh villages in the country which will be eventually covered in this scheme. The entire work is likely to be spread over a period of four years (2020 -2024).
- Presently, the pilot phase is being approved for the year 2020-21. Pilot Phase will extend to **8 states** – Maharashtra, Karnataka, Haryana, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Punjab and Rajasthan.
- The **Ministry of Panchayati Raj (MoPR)** is the Nodal Ministry for implementation of the scheme. **Survey of India** shall work as the technology partner for implementation.

#### Article link

<https://newsonair.gov.in/News?title=Today-is-second-anniversary-of--SVAMITVA-scheme&id=439756>

**Question-** Write a short note on svamitva scheme.

## SOIL HEALTH CARD SCHEME

### Context

- The Ministry of Agriculture & Farmers' Welfare conducted an awareness programme about the Soil Health Management (SHM) scheme.

### About the scheme

- The Soil Health Card (SHC) scheme is promoted by the **Ministry of Agriculture and Farmers' Welfare** to provide information to farmers on **nutrient status of their soil** along with recommendations on appropriate dosage of nutrients to be applied for improving soil health and its fertility.
- Launched in 2015, it is being **implemented through the Department of Agriculture of all the State and Union Territory Governments**.

### Constituents of a Soil Health Card

- SHC is a printed report that a farmer will be handed over for each of his holdings.
- It will contain the status of his soil with respect to **12 parameters**, namely N, P, K (Macronutrients); S (Secondary- nutrient); Zn, Fe, Cu, Mn, Bo (Micronutrients); and pH, EC, OC (Physical parameters).
- SHC will be made available once in a **cycle of 3 years**, which will indicate the status of soil health of a farmer's holding for that particular period.

- The SHC will also **indicate fertilizer recommendations and soil amendment required for the farm.**

### Benefits of Soil Health Card

- Soil Health Card help the farmers in the following ways:
- The report generated through soil health card scheme encourages **judicious and balanced use of fertilizers.**
- The report card also suggests **use of bio fertilizers, micronutrients and organic manures to increase soil fertility.**
- Farmers training and demonstrations on farmers fields, under the scheme creates **awareness among the farmers to increase soil fertility.**
- The SHC will monitor the soil of the farmers well and will give them a formatted report. So, they can **decide well which crops they should cultivate and which ones they should skip.**
- The authorities will **monitor the soil on a regular basis.** So, farmers need not worry if the nature of the soil changes due to certain factors and also they will always have updated data about their soil.
- Apart from listing down measures required to improve the quality of the soil, experts are also employed to help farmers in carrying out the **corrective measures.**

#### Article link

<https://www.soilhealth.dac.gov.in/>

**Question-** Write a short note on Soil Health Card scheme.

## GENERAL STUDIES 3.

### ECONOMY

#### THE INDIA-AUSTRALIA TRADE AGREEMENT

##### Context

- India and Australia have signed an **Economic Cooperation and Trade Agreement (ECTA)**. The landmark bilateral trade pact is the **second trade agreement** India has signed this year after inking a similar deal with the **United Arab Emirates** in February.
- The ECTA is expected to **increase trade between the two sides to \$45-50 billion** over five years, from the current estimate of \$27 billion, and create over **10 lakh additional job opportunities**.
- Under this agreement, **India will give 85% of Australia's exports zero-duty access** to its domestic market. India is expected to get **zero-duty access to Australia for its goods over five years**.
- The negotiations had begun over a decade ago in 2011, but were restarted in September 2021.

##### What are the main features?

- The ECTA is guided by a **Preamble** and is divided into **multiple sections** that will govern what is hoped to be the **most expansive bilateral trade** since the two countries established diplomatic ties before India attained independence.
- It has a section on goods exports, and lays out clearly "**Rules of Origin**" that are aimed at creating anti-dumping measures. There are also sections that are aimed at providing **remedies and mechanisms for resolving trade disputes**.
- The Commerce Ministry underlined that this is the **first trade deal signed by India that has a compulsory review mechanism after 15 years of implementation**.

##### Will Australia get access to India's agriculture market?

- Under this agreement, Australia will get the **opportunity to export certain varieties of agricultural produce** like potatoes, lentils, and meat products with some caveats. However, **bovine meat** is not part of the agreement. Australia may also send **machineries that are required for food processing** under this agreement.
- In a historic first, **India may open up to a wide-range of alcoholic and non-alcoholic drinks** including Australian beer. Australian wines costing over \$5 may face lower import duties in the Indian market.
- The Indian side said **Australia will provide 'preferential access' to all the labour-intensive sectors of export items from India** such as gems and jewellery, textiles, leather, footwear, furniture, food, engineering products, medical devices and automobiles.
- India will also allow Australia to export raw materials under preferential terms like coal and mineral ores.

### What does it say about the services sector?

- The Government of India has said that Australia has offered wide ranging commitments in around 135 sub-sectors and **Most Favoured Nation** in 120 sub-sectors which cover key areas of the Indian services sector like IT, ITES, business services, health, education and audio-visual services.
- Indian chefs and yoga teachers will get **specific entry quotas into Australia**, while Indian students in Australia will be able to secure **work visas** for periods ranging from 18 months to four years on a 'reciprocal' basis.

### What about the pharmaceuticals sector?

- India and Australia have agreed to enable **fast track approval for patented, generic and biosimilar medicines**.
- Therapeutic Goods Regulators of both sides will have a role to play in monitoring and ensuring smooth trade in pharma products between the two sides.
- Both sides have agreed to audits of imports that require sanitary and phytosanitary inspection as per the law of the land. The importing side will ensure that plants and plant products, animal products and other goods, and their packaging are inspected through recognised methodologies. If either party finds examples of non-compliance, remedial measures will be taken by both sides.

### What is the dispute settlement mechanism in place?

- Under Article 13.5, both parties have agreed to hold consultations — and make every effort to find a solution — in case of disputes that may emerge in the course of trade in goods or services.
- They have also recognised that in case they have to resort to international arbitration, they may opt for an organisation (i.e, World Trade Organization) where both are members. They may also use “good offices” and form panels with qualified members drawn from government and business to resolve the disputes.
- The **dispute resolution may range from 45 days to 15 months**.

### What are the rules of origin included in the agreement?

- The rules of origin are based on the principle that they should be **wholly obtained or produced in the territory of one or both of the parties**. This section ensures that waste material will not be exported by either side unless they contribute to the production of any of the items listed in the ECTA.

#### The Hindu link

<https://www.thehindu.com/news/international/the-india-australia-trade-agreement/article65290575.ece>

**Question-** India and Australia have signed an Economic Cooperation and Trade Agreement. Describe the various provisions involved in the agreement and its potential benefits for India.

## TECHNOLOGY IN AGRICULTURE

### Context

- According to the estimates of the FAO, about **60 per cent of the global population** is still dependent, **directly or indirectly, on agriculture**. Yet, its contribution to the **world GDP** is just about **4 per cent** — a dismal figure in comparison to the combined contribution of 90 per cent of the secondary and tertiary sectors of the economy.



- The **Indian scenario** isn't much different, except that the **GDP contribution** of this sector (**12-15 per cent**) to the economy is somewhat higher than the world average. This is a **case of sectoral income inequalities**.

#### The need for imbibing technology into agriculture

- An **Ernst & Young 2020** study pitches **India's agritech market at USD 24 billion by 2025** with the potential for supply chain technology and output markets at the highest. But this ecosystem can sustain at the last mile only when technology interventions are popular and adopted by small and marginal farmers.
- The '**Digital India Initiative**' aims at widespread adoption of technology through digital platforms, analytics, **artificial intelligence, blockchain, machine learning, Software as a Service (SaaS) and Internet of Things (IoT)** in agriculture.
- Experts have opined that the **onset of Covid-19 pandemic** has led to aggressive adoption of automation, machines and technology.

#### How can technology improve Indian Agriculture scenario?

- The areas of 'idea' incubation are as diverse as **farm inputs, precision agriculture, farm management, quality as well as traceability parameters, supply chain/output market linkages and access to financial services** etc.
- Advancements in agriculture technology (agri-tech) **offer precise solutions for sustainable farming** that includes indoor **vertical farming, hydroponic farming, and modern greenhouse practices**. These practices are set to redesign the farming experience with myriad benefits.
- They **produce healthier, fresh, and more nutritious food that has a longer shelf life**. These practices also help in **saving valuable water, land, and labour resources**. Additionally, the controlled growing system enables farmers to produce **food free from harmful chemicals and residue**.
- These measures will **accelerate production, ensure efficient input use, reduce post-harvest losses, intensify value addition, introduce risk mitigation and optimise ancillary activities**.

#### Government measures

- Making farm **mechanisation equipment available** to farmers through aggregated custom hiring, high-tech centers and machinery banks.
- Initiating the **electronic National Agriculture Market (e-NAM)** in 1,000 regulated wholesale spot markets for real time price discovery with quality assaying.
- Launching the scheme for creation of **10,000 Farmer Producer Organisations (FPOs)** to bring economies of scale through aggregation, and allowing existing FPOs to trade online.
- Initiation of the creation of a **federated national database for farm services**.
- Launch of **standard operating procedures for drone technologies**, including financial assistance to farmer collectives for their use.
- The creation of 1-lakh crore **Agri Infrastructure Fund (AIF)**. It provides access to credit, with interest subvention, for agri-entrepreneurs, FPOs and governments to invest in rural community assets and post-harvest infrastructure.
- **NITI Aayog's Atal Innovation Mission (AIM)** is also a plug-in to aggressively push technological innovation with its over 1,000 **Atal Tinkering Labs (ATLs)** that have been set up across districts.
- **Rastriya Krishi Vikas Yojana (RKVY)** has now been innovatively designed to promote agritech.
- **Agri-preneurship and startups**
- International Crops Research Institute for Semi-Arid Tropics (**ICRISAT**) and National Academy of Agricultural Management (**NAARM**).

## Examples of Indian startups using technology

- **Fasal's AI and IoT platform** delivers farm-specific, crop-specific and crop-stage specific actionable advisory for reducing the cost of operation and increasing quality and yield. The startup's **artificial intelligence-driven platform** regularly relays information to smartphone on the **quantum of irrigation needs, risk of pest attack and use of pesticides**. Data collected through readings is converted through 'Internet of Things' (IoT) into precise actionable intelligence. Its operations on 20,000 acres of land across states have led to the saving of up to 3 billion litres of water from irrigation, reduced pesticide costs by 60% and increased yield by up to 40%.
- **Tartan Sense**, operating on the theme of "small robot for small farms" utilises **semi-autonomous rovers named 'BrijBot' to capture farm images**. These are analysed with the help of **AI algorithms to identify weeds**, following which an on-board computer sprays chemical only on the detected weeds. Weeding costs on cotton fields have reduced by 70% due to these rovers.
- **Wingreens Farms** has shifted the processing stage to the farms itself. They have developed packages for over 100 crops while **simultaneously educating farmers** on moving away from water-hungry crops to lucrative and water-efficient crops. Their practices have led to savings of 2.5 lakh litres of water per acre per annum and increased some farmer's income by around 1000%.
- **MyCrop** has developed an '**agriculture platform as a service**' approach which provisions for the utilisation of algorithms and big data to facilitate informed access to markets for farmers. A 'farmer mitra' **delivers analytical insights and expertise** to farmers for increasing profitability by **reducing the cost of cultivation, increasing yield and finding suitable marketplaces**.
- **Aibono** brings forth an **AI-powered aggregator of fresh produce**. Its '**seed to plate platform**' connects **stakeholders** from the growing stage to consumption. It provides insights derived from AI on what and how to produce while enabling retailers and consumers to source farm produce from a traceable aggregated source.
- **Agricx** has developed an **AI-enabled software-as-a-service** stack for entities across **producing, trading, storing, transporting, processing or financing of agricultural commodities**. Their services provide an opportunity to **digitise** the entire procurement process. Further, the portable spectrometer and hyperspectral device ensures lab equivalent results in a matter of seconds making destructive testing redundant.
- There are firms which are also offering **end to end services** across the agriculture value chain. For instance, **WayCool** takes a '**tech-enabled end-to-end supply chain approach**' utilising **robotic process automation, AI and ML**. Their operation has spread across product sourcing, food processing, branding and marketing, last-mile distribution, and farm inputs. Sourcing fruits and vegetables from small and medium farmers, they facilitate access to buyer clientele such as Taj Group of Hotels, Elior, and Sodexo for maximum revenue realisation.
- **Cropin services** are being utilised by 1.6 million farmers for risk mitigation via **live tracking of farms and interpretation of market trends for sale revenue maximisation**. It utilises **satellite imagery to create 'crop-signatures'** to assess crop damage, productivity and farmers' credit-worthiness. Furthermore, its smart farm platform supports farmers in terms of loans, insurance, crop and seeds. They are digitising farms while data-managing the entire ecosystem.
- **AgNext** has been using **AI, data analytics, internet-of-things and spectral analytics for analysing food quality to ensure effective trade, standardisation, production, warehousing and consumption**. AgNext also uses **computer-based vision** for effective **post-harvest quality inspection** of crops to substitute visual inspection.
- Startups such as Ninjacart, Crofarm and KrishiHub are procuring fruits/vegetables **directly from farmers and selling those to retailers**. They use myriad technologies to keep their target farmers abreast of quantum of demand and current prices, coupled with optimised logistics and online payments.

- **Milk Mantra** is working on innovative packaging formats and dairy products. They have introduced a network of Bulk Milk Coolers in villages of Odisha with more than 35,000 dairy farmers benefiting from their services.

#### Challenges faced

- **Small farm size**, coupled with **low digital adoption** by small and marginal farmers.
- But technological innovations are also being triggered by critical factors such as **climate change, reduction in water availability, tolerance of pests, decrease in quality of soils and labour shortages**.
- Lack of **funding**

#### How to overcome these challenges?

- **A hub and spoke model**- More than 700 Krishi Vigyan Kendras (KVKs) or entities such as ITC's e-Choupal 4.0 can be hubs in agro-climatic regions to impart digital literacy as well as to share best practices with aggregated farmers in farms around these hubs.
- One way to achieve scaling is by strengthening their **partnership with FPOs** and, more importantly, **food-processing companies**. This could be further coupled with **extensive cross-country collaborations** to support incubators, accelerators and investors supporting agritech.
- **Funding**, specifically for on-farm management and precision agriculture, they suggest, **has to be increased**.
- **"First Trade Minimum Price" (FTMP)**- Fixation of prices of all the agricultural primary goods on a day-to-day basis or periodically by the local farming community. Once such prices are discovered and fixed, the first trader will have to procure that commodity at a price not below the price so fixed. The subsequent sales or trades can happen depending on the market forces.

#### The Indian Express link

<https://indianexpress.com/article/opinion/columns/industrial-revolution-agriculture-sector-farmers-protests-7188818/>

**Question-** Explain how technological advances in Indian agriculture are both necessary and beneficial.

### WHAT IS FORTIFIED RICE, AND HOW IS IT PREPARED?

#### Context

- Recently, the Union Cabinet approved a scheme to distribute fortified rice under government programmes.
- Earlier the Prime Minister had announced the fortification of rice distributed under various government schemes, including the public distribution system (PDS) and midday meals in schools, by 2024.

#### What is rice fortification?

- The Food Safety and Standards Authority of India (FSSAI) defines fortification as **"deliberately increasing the content of essential micronutrients** in a food so as to improve the nutritional quality of food and to provide public health benefit with minimal risk to health".
- Various technologies are available to add micronutrients to regular rice, such as **coating, dusting, and 'extrusion'**.

- Extrusion involves the production of **fortified rice kernels (FRKs)** from a mixture using an ‘extruder’ machine. It is considered to be the best technology for India. The fortified rice kernels are blended with regular rice to produce fortified rice.

#### Why does rice have to be fortified in the first place?

- India has very high levels of malnutrition among women and children. According to the Food Ministry, **every second woman in the country is anaemic and every third child is stunted.**
- Fortification of food is considered to be one of the most suitable methods to combat malnutrition.
- Rice is one of India’s staple foods, consumed by about two-thirds of the population. Per capita rice consumption in India is 6.8 kg per month.
- Therefore, fortifying rice with micronutrients is an option to supplement the diet of the poor.

#### What are the standards for fortification?

- Under the government’s guidelines, 10 g of FRK must be blended with 1 kg of regular rice.
- According to FSSAI norms, 1 kg of fortified rice will contain the following: **iron** (28 mg-42.5 mg), **folic acid** (75-125 microgram), and **vitamin B-12** (0.75-1.25 microgram).
- Rice may also be fortified with **zinc, vitamin A, vitamin B-1, vitamin B-2, vitamin B-3 and vitamin B-6.**

#### The Indian Express link

<https://indianexpress.com/article/explained/what-is-fortified-rice-how-is-it-prepared-7860432/>

**Question-** Write a short note on rice fortification and its benefits.

## HITS AND MISSES: INDIA’S SOLAR POWER ENERGY TARGETS

### Context

- A report, jointly prepared by two energy-research firms — JMK Research and Analytics and the Institute for Energy Economics and Financial Analysis — says India will likely miss its 2022 target of installing 100 gigawatts (GW) of solar power capacity. This is because of rooftop solar lagging behind.

### About The Jawaharlal Nehru National Solar Mission

- The Jawaharlal Nehru National Solar Mission (JNNSM), or the **National Solar Mission**, is an initiative of the Government of India and State Governments to promote solar power in India.
- Inaugurated in January 2010, the JNNSM has been revised twice and now boasts a target of 100 GW of solar PV by 2022.
- The objective of JNNSM is to establish India as a global leader in solar energy by creating the policy conditions for its deployment across the country.

### Each Phase is supported by differing key policies and targets:

- **Phase I (2010 – 2013):** Target for grid-connected PV (including rooftop) target: 1 000 MW Target for off-grid solar PV applications: 200 MW



- **Phase II (2014 – 2017):** Cumulative target for grid-connected solar PV (including rooftop): 4 000 – 10 000 MW Target for off-grid solar PV applications: 1 000 MW Scheme for at least 25 solar parks (34 approved currently under Government) and the Ultra Mega Solar Power Projects to target 40 GW solar PV 13th Plan
- **Phase III (2017 – 2022):** Cumulative target for grid-connected solar PV (including rooftop): 100 000 MW • Target for off-grid solar PV applications (as share of cumulative): 2 000 MW. Policies and targets related to the 13th Plan are subject to an evaluation of progress and review of capacity and targets based on emerging cost and technology trends on a regular basis.
- The **Capacity Utilization Factor (CUF)** of solar power projects is less than thermal, hydro, nuclear, wind and bio-mass power projects. The Government has launched several schemes for promotion and development of renewable energy including solar energy in the country from time to time. The Government is promoting development of solar energy in the country by providing various fiscal and promotional incentives such as accelerated depreciation, waiver of **Inter State Transmission System (ISTS)** charges and losses, financing solar rooftop systems as part of home loan, and permitting Foreign Direct Investment up to 100 per cent under the automatic route.
- Moreover, the target set for installed solar energy capacity is 100 GW by March 2023 — 40 GW rooftop solar and 60 GW ground-mounted utility scale. The country has managed to install only 43.94 GW till July 31, 2021, the CEA data suggests.
- But India is *likely to miss its 2022 target* of installing 100 gigawatts (GW) of solar power capacity, largely due to inadequate uptake of rooftop solar, according to a report by JMK Research and the Institute for **Energy Economics and Financial Analysis (IEEFA)**.
- The rooftop solar installation has been particularly dismal at 7GW till December 2020, according to Bridge to India, a renewable energy consultancy.
- India has to quadruple its monthly installation rate to achieve its target within the stipulated time.

#### **Factors impeding rooftop solar installation include:**

- Pandemic-induced supply chain disruption to policy restrictions
- Regulatory roadblocks;
- Net metering limits;
- The twin burdens of basic customs duty (BCD) on imported cells and modules and issues with the Approved List of Models and Manufacturers (ALMM);
- Unsigned power supply agreements (PSAs) and Banking restrictions;
- Financing issues plus delays in or rejection of open access approval grants; and the unpredictability of future open access charges.
- The anticipated 27GW shortfall from the 2022 solar target can be attributed to a string of challenges which are slowing overall progress on renewable energy targets.
- To get back on track, the report proposes short and long-term measures-
- These include uniform policies to apply nationally for at least the next five years, consistent regulations for net metering and banking facilities, which should apply nationally, strictly enforcing **renewable purchase obligations (RPO)** of companies. It is also likely that the government, in the short-term, will push aggressively for expediting solar capacity addition to achieve the 100GW target by 2022.

#### **India's Reiteration on the Policy through its efforts**

- **Import Duty:**(1st, April 2022) The Indian government has been taking several measures to promote local manufacturing under its 'Make in India' mission and one of those moves is imposing a 40% duty on the import of solar modules. This will promote domestic manufacturing.
- **PLI Scheme:** With an aim to boost India's manufacturing capabilities and exports, the Production Linked Incentive (PLI) Scheme has been introduced. Under the provisions of this scheme, manufacturers receive support for setting up of integrated manufacturing units of high-efficiency solar PV modules and their sales.
- **BIS Certification:** With solar products mandated to have BIS certification, the benchmarking for domestic manufacturer will help establish higher quality parameters which will also benefit the customers.
- **ALMM:** The MNRE has also introduced the Approved List of Models and Manufacturers (ALMM) of solar PV cells and modules with the objective of ensuring the reliability of the Solar PV manufacturers and protecting the interest of the customers.
- The above actions will help India emerge as a leading global supplier of solar products, along with meeting country's domestic requirements.

### Challenges faced

- Despite a significant push from the government, rooftop solar installation in India has not attained desired momentum India, especially due to the absence of **lucrative ROI** as solar prices are seeing north. Two major impediments are:
- **The overall cost of ownership:** With cost and GST getting increased by 25% and 7% respectively in last one year, there is dampness in residential rooftop segment, and the cumulative installations stand less than 5GW till now.
- **Underdeveloped DISCOM Ecosystem:** Current DISCOM ecosystem in India is built around thermal and by shifting to the solar there is a fear of cost competitiveness dovetailed with T&D losses leading to impact on profit margins.
- Therefore, traditional net metering system in solar installations wasn't seen as a welcome move, however, the concept of 'gross metering is being supported DISCOMs.

### Way Forward:

- With solar panels and solar systems getting more efficient vs their earlier generation, customers are wanting to invest in a technology that is getting them better output per square meter of the space they have. So, there is a constant need to invest in research & development of more efficient solar ecosystem involving energy storage systems.
- Despite all the challenges, Energy Storage trends will gain popularity in India alike countries such as USA, Australia etc. The trend of consuming stored solar energy in lithium battery during the day time and night time is gradually getting popular in India, therefore solutions like deeply integrated solar batteries like CAML battery will become the power holding ground for such customers.
- As India is making strides to fulfil its solar dream, Loom Solar and its smart methodologies shall continue to provide the Indian solar industry with much-needed assistance for '**Mission 2030**'.

### The Hindu link

<https://www.thehindu.com/sci-tech/science/hits-and-misses-indias-solar-power-energy-targets/article65317415.ece>

**Question-** What are the challenges in achieving national solar rooftop targets in India? Enumerate government initiatives to accelerate the uptake of solar energy.

## NATIONAL MONETISATION PIPELINE

### Context

- The government has completed transactions worth ₹96,000 crore under the National Monetisation Pipeline (NMP) in 2021-22, surpassing the year's target of ₹88,000 crore.
- In 2021-22, while roads and highways monetised assets worth ₹23,000 crore, power sector closed the fiscal with overall monetisation of ₹9,500 crore, Mining of coal generated monetisation value of ₹40,000 crore and mining of minerals garnered ₹18,700 crore. For Railways, this amount stood at about ₹800-900 crore.

### About NMP

- Last year, Finance Minister Nirmala Sitharaman unveiled a four-year National Monetisation Pipeline (NMP) worth an estimated **Rs 6 lakh crore**. It **aims to unlock value in brownfield projects** (which are assets that are **already operational**) by engaging the private sector, transferring to them revenue rights in the projects, and using the funds generated for infrastructure creation across the country.
- Following through on the **government's plan to monetise public assets to fund fresh capital expenditure on infrastructure**, the centre released a list of projects and facilities to be offered to private investors over the next four years through structured leasing and securitisation transactions.

### What is the National Monetisation Pipeline?

- The NMP names a **list of public assets that will be leased to private investors. Only brown-field assets** are planned to be leased out under the NMP. So, to give an example, an airport that is already operational may be leased out to an investor.
- Importantly, there **won't be any transfer of ownership** from the government to the private sector when assets are leased out.
- The government only plans to **cede control over its assets for a certain period of time**, after which the assets must be returned to the government unless the lease is extended.

### Will NMP help the economy?

- The government believes that leasing out public assets to private investors will help **free capital that is stuck in these assets**. For example, say the government has invested thousands of crores in a road project. It may take the government decades to recover its investment through the annual toll revenues. Instead, the government can recover a good chunk of its investment by leasing out the right to collect toll for the next 30 years to a private investor.
- The government can use this money, in turn, to **build fresh infrastructure under the National Infrastructure Pipeline (NIP)**. In fact, the proceeds from the NMP are expected to account for **about 14% of the total outlay for infrastructure under the NIP**.
- The government believes all this spending will **boost economic activity**. Analysts also believe that the government has now through the NMP found the right model for infrastructure development.

- The government is best suited to **tackle the ground-level challenges in building infrastructure**, while the private sector can **operate and offer indirect finance to these projects** through the NMP.

#### What are the risks?

- The allocation of assets owned by governments to private investors is often **subject to political influence**, which can lead to **corruption**. In fact, many in the Opposition allege that the NMP will favour a few business corporations that are close to the government.
- The expected boost to economic activity due to higher government spending may also need to be **weighed against the opportunity costs**.
  - Opportunity cost is the loss of other alternatives when one alternative is chosen.
- For one, the money that the government collects by leasing out assets comes from the pockets of the private sector. So **higher government spending will come at the cost of lower private spending**.
- The NMP also **does not address the various structural problems** such as legal uncertainties that hold back private investment in infrastructure.
- However, it is worth noting that economists generally believe that **scarce assets are better managed and allocated by the private sector than by the government**. So to the extent that the NMP frees assets from government control, it can help the economy.
- There are also concerns that the leasing of airports, railways, roads and other public utilities to private investors **could lead to higher prices for consumers**. If the government merely cedes control of public utilities to private companies without taking steps to foster greater competition, it can indeed lead to **poor outcomes for consumers**.

#### What lies ahead?

- The success of the NMP will depend on the **demand for brown-field government assets among private investors**. The government's past disinvestment projects such as the sale of Air India did not catch the fancy of investors owing to the stringent conditions set by the government.
- The **pricing of assets and the terms of sale** will thus determine the level of interest that private investors show for assets leased under the NMP.
- In the past, doubts have been raised about the allocation of airports and other assets to certain private business groups. So the **process that the government adopts** this time to allocate assets may come under scrutiny. There is likely to be the **demand for an open, competitive auction of assets**.

#### The Hindu link

<https://www.thehindu.com/business/Industry/govt-completed-transactions-worth-96000-crore-in-2021-22-under-nmp/article65315561.ece>

**Question-** What is National Monetisation Pipeline? Describe the potential benefits it can entail for the Indian economy.

## WHY IS INDIA LOOKING TO BOOST WHEAT EXPORTS?

### Context



- Russia's invasion of Ukraine and the subsequent western sanctions on Russia have affected wheat exports from the Black Sea region and impacted food security in several countries, especially in Africa and West Asia.
- The disruption to global wheat supplies in turn has thrown open opportunities that India's grain exporters are eyeing, especially given the domestic surplus availability of the cereal.
- Egypt, one of the largest importers of wheat, has recently agreed to source the cereal from India.

#### What is the status of India's wheat exports?

- Globally, Russia is the market leader for wheat exports (almost 15% share) and Ukraine is also a major producer. Exports from these two countries have been hit by the war and sanctions.
- India expects to produce **112 million tonnes of wheat** in the current season. The government requires 24-26 million tonnes a year for its food security programmes. With **surplus wheat production**, opportunities have opened up for exports. Wheat exports in the 2021-2022 financial year were estimated at 7.85 million tonnes, a quadrupling from 2.1 million tonnes in the previous year.
- More countries are turning to India because of the competitive price, acceptable quality, availability of surplus wheat and geopolitical reasons. While the existing importers are buying more, new markets have emerged for Indian wheat. Exports this fiscal are expected to be almost 10 million tonnes worth \$3 billion.

#### Which new markets are expected to buy from India?

- The different grades of wheat produced in India are of the milling quality. So, apart from **Egypt and Jordan, countries in East Africa** are also likely to source the foodgrain from India.
- The Agricultural and Processed Food Products Export Development Authority (APEDA) and Ministry of Agriculture are also sending delegations to several countries to resolve market issues, if any.

#### What is being done to facilitate exports?

- The Commerce Ministry has put in place an **internal mechanism** to facilitate it and get the paperwork ready for the related sanitary and phytosanitary applications to help facilitate shipments.
- Wheat is going in full vessel loads and needs to be transported to the ports from the growing areas. The railways is providing rakes on priority to move the wheat.

#### What norms are buyer countries using to approve Indian wheat?

- Countries that have not previously imported wheat from India insist on the **completion of the Pest Risk Analysis** to provide market access. There are also other different standards that the buyers share with their sellers here. While, at present, Indian suppliers are able to meet these criteria, Indian authorities are working closely to step in and negotiate resolution if any unreasonable standards are stipulated.

#### What is the future outlook?

- The government is optimistic about the long-term export opportunities not only for wheat, but for all cereals including millets and superfoods.
- Trade sources say if Indian wheat prices remain competitive and geopolitical and weather conditions stay favourable, the scope is good for wheat exports.
- India has won the confidence of markets such as Sri Lanka and Bangladesh. It needs to establish itself in the new markets too and the government should facilitate it.

**The Hindu link**

<https://www.thehindu.com/business/Economy/explained-why-is-india-looking-to-boost-wheat-exports/article65326806.ece>

**Question-** How the Russia-Ukraine war has provided impetus to wheat exports from India? Explain.

**E-SANJEEVNI****Context**

- Over three lakh e-Sanjeevani Tele-consultations were provided to the people in a single day (on 16th April 2022) through the Ayushman Bharat Health and Wellness Centres across the country.
- This is the highest number of teleconsultations ever done at Ayushman Bharat Health and Wellness Centres on a single day, surpassing its earlier record of 1.8 lakh teleconsultations per day.
- More than 1.17 lakh Health and Wellness Centres are now operational in the country and the common citizens are taking advice from the top doctors through this facility.

**About 'eSanjeevani'**

- Launched in 2009 by the **Ministry of Health & Family Welfare** 'eSanjeevani' is a **web-based comprehensive telemedicine solution**. It aims to provide healthcare services to patients in their homes.
- Besides enhancing the quality of medical services, addressing issues about uneven distribution and shortage of infrastructural as well as human resources, eSanjeevani also aims to make healthcare services equitable by **bridging the digital divide** that exists between the urban vs. rural, rich vs. poor etc.
- eSanjeevani can also be used to provide **medical education** to interns, people across Various Common Service Centers (CSCs), etc.
- The portal was designed & developed by the **Centre for Development of Advanced Computing (C-DAC)**, a premier R&D organization of the Ministry of Electronics and Information Technology (MeitY).

**Services provided**

- eSanjeevani platform has enabled two types of telemedicine services viz.
  - Doctor-to-Doctor (eSanjeevani) and
  - Patient-to-Doctor (eSanjeevani OPD) Tele-consultations.

**eSanjeevani**

- It is being implemented under the **Ayushman Bharat Health and Wellness Centre (AB-HWC)**. It aims to implement Doctor-to-Doctor teleconsultation in all the 1.5 lakh Health and Wellness Centres in conjunction with identified Medical College hospitals in a 'Hub and Spoke' model.
- States have identified and set up dedicated 'Hubs' in Medical Colleges and District hospitals to provide teleconsultation services to 'Spokes', i.e SHCs, PHCs and HWCs.

**eSanjeevani OPD**

- Owing to the ongoing COVID-19 pandemic, the Health Ministry launched the second tele-consultation service enabling patient-to-doctor telemedicine through 'eSanjeevaniOPD'.

- This service is available as an Android mobile application as well. This has made it convenient for the people to avail of the health services without having to travel.
- This e-health service is offered free of cost and has proved a boon in containing the spread of COVID while simultaneously enabling provisions for non-COVID essential healthcare.

**Article link-**

<https://economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/over-3-lakh-teleconsultations-done-in-a-day-at-ayushman-bharat-health-and-wellness-centres/articleshow/90897579.cms?from=mdr>

**Question-** Write a short note on e-sanjeevni telemedicine solution and services provided by it.

## PRIME MINISTER'S EMPLOYMENT GENERATION PROGRAMME

### Context

- With setting up of an unprecedented 1.03 lakh new manufacturing and service units and creation of over 8.25 lakh jobs, PMEGP has emerged as government's most powerful tool of self-sustainability in the year 2021-22.
- This is for the first time since the launch of the PMEGP Scheme in 2008, that KVIC has established over one lakh new units in a financial year. These 1,03,219 units have been established at a total capital of nearly Rs 12,000 crore out of which KVIC disbursed a margin money subsidy of Rs 2978 crore while the bank credit flow was nearly Rs 9,000 crore.
- The margin money subsidy of Rs 2978 crore given by KVIC in the year 2021-22 is also the highest since 2008. A whopping 8,25,752 new employment were created across the country, which is also the highest so far under PMEGP.

### About PMEGP

- Prime Minister's Employment Generation Programme (PMEGP) is a central **sector** scheme administered by the **Ministry of Micro, Small and Medium Enterprises** since 2008-09.
- It is a major **credit-linked subsidy programme** aimed at **assisting first generation entrepreneurs for setting up micro enterprises** in the **non-farm sector** by helping traditional artisans and unemployed youth.
- At the national level, the Scheme is being implemented by **Khadi and Village Industries Commission (KVIC)**, a statutory organization under the administrative control of the Ministry of MSME, as the single nodal agency.
- At the State level, the Scheme will be implemented through State KVIC Directorates, State Khadi and Village Industries Boards (KVIBs) and District Industries Centres (DICs) and banks.
- Under the scheme, loans are being provided by all Public Sector Banks, selected Private Sector Banks and Co-operative Banks with **margin money subsidy** (refers to the amount that the government contributes to beneficiaries availing PMEGP loan) being given by the Ministry of MSME through KVIC.

### Scope

- The scheme is applicable to all viable projects in **rural as well as urban areas**, under the Micro enterprises sector.

- The maximum cost of the project admissible under the manufacturing sector is **Rs.25 lakhs** and the business/services sector is **Rs.10 lakhs**.
- **Only one person from a family** is eligible for obtaining financial assistance under the scheme.
- Assistance under the Scheme is available **only for new projects**.

#### Eligible Entrepreneurs / Borrowers

- Any individual, above 18 years of age
- The beneficiaries should have passed at least VIII standard, for setting up of project costing above Rs.10 lacs in the Manufacturing Sector and above Rs. 5 lacs in the business /Service Sector,
- Self Help Groups
- Institutions registered under Societies Registration Act, 1860
- Production Co-operative Societies
- Charitable Trusts

#### The PIB link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818004>

**Question-** How does the Prime Minister's Employment Generation Programme is aimed at giving boost to Micro enterprises sector? Explain.

## ONE DISTRICT ONE PRODUCT SCHEME

### Context

- With the vision to promote sustainable trade and create market linkages, a mega buyer-seller meet was recently organized at Jammu and Kashmir under One District One Product initiative of Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.

### About the scheme

- One District One Product One District One Product (ODOP) scheme was launched by the **Ministry of Commerce and Industry**.
- The objective is to **convert each District of the country into an Export Hub** by
  - Identifying products with export potential in the District,
  - Addressing bottlenecks for exporting these products,
  - Supporting local exporters/manufacturers to scale up manufacturing, and
  - Find potential buyers outside India with the aim of promoting exports,
  - Promoting the manufacturing & services industry in the District and generating employment in the District.



- The programme aims to **promote local indigenous specialised products and the crafts of each district** through various development initiatives, including providing loans to local production units, artisans, and farmers; establishing common facility centres; helping market these products at a global level; etc.
- Under the initial phase of the ODOP programme, **106 Products have been identified from 103 districts across 27 States.**
- There may be more than one cluster of ODOP products in one district. There may be a cluster of ODOP products consisting of more than one adjacent district in a State.

### Significance of the initiative

- ODOP is seen as a transformational step forward towards realizing the true potential of a district, fuel economic growth and generate employment and rural entrepreneurship, taking us to the goal of AtmaNirbhar Bharat.
- It will increase income and local employment at the bottom of the value chain and can empower the craftsmen, artisans, and farmers to improve their product quality and attain newer skills to produce better products.

#### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818790>

**Question-** Write a short note on One District One Product Scheme.

## PAYMENTS BANKS

### Context

- On the occasion of the 75th anniversary of Indian Independence & ongoing Azadi ka Amrit Mahotasav, India Post Payments Bank (IPPB), a 100% government owned entity under Department of Posts (DoP) announced the launch of Fincluvation– a joint initiative to collaborate with Fintech Startup community to co-create and innovate solutions for financial inclusion.

### About Payments banks

- Payments banks are the new age banks with limited facilities. These banks mostly operate through the small vendors and shopkeepers. It exists in between the mobile wallet and regular banks.
- Payments banks are permitted to set up their own outlets such as branches, Automated Teller Machines (ATMs), Business Correspondents (BCs), etc. to undertake only certain restricted activities permitted to banks under the Banking Regulation Act, 1949.
- A payments bank provides following services to its customers:
  - Accept demand deposits (restricted upto **Rs.2 lakh**)
  - Remittance services
  - Mobile payments
  - Fund transfers

- Debit card and associated services (**Payments banks, however, cannot issue credit cards**)
- Net Banking services
- Sell third-party financial products like insurance and mutual funds
- However, payments banks cannot undertake the following activities:
  - They **cannot undertake lending activities**
  - They **cannot set up subsidiaries to undertake non-banking financial services activities**
  - They are **not eligible to accept NRI deposits**.

### Objectives

- The main objective of payments banks is to widen the spread of payment and financial services to small business, low-income households, and the migrant labour workforce in a secured technology-driven environment.
- With payments banks, RBI seeks to increase the penetration level of financial services to the remote areas of the country.
- The Reserve Bank expects payments banks to target India's migrant labourers, low-income households and small businesses, offering savings accounts and remittance services with a low transaction cost.

### Eligible promoters

- Existing non-bank Pre-paid Payment Instrument (PPI) issuers authorised under the Payment and Settlement Systems Act, 2007
- Other entities such as individuals / professionals; Non-Banking Finance Companies (NBFCs), corporate Business Correspondents (BCs), mobile telephone companies, supermarket chains, companies, real sector cooperatives; that are owned and controlled by residents; and public sector entities may apply to set up payments banks.

### Regulations

- Payments banks are registered as a **public limited company** under the **Companies Act, 2013**, and licensed under Section 22 of the **Banking Regulation Act, 1949**.
- Deposits mobilised by the payments bank are covered under the **deposit insurance scheme of the Deposit Insurance and Credit Guarantee Corporation of India (DICGC)**.
- Apart from amounts maintained as **Cash Reserve Ratio (CRR)** with RBI on its outside demand and time liabilities, Payments banks are required to invest **minimum 75 per cent of its "demand deposit balances"** in Government securities/Treasury Bills with maturity up to one year that are recognized by RBI as eligible securities for maintenance of Statutory Liquidity Ratio (SLR) and hold **maximum 25 per cent in current and time / fixed deposits** with other scheduled commercial banks for operational purposes and liquidity management.
- The **minimum paid-up equity capital for payments banks shall be Rs. 100 crore**, of which the promoter's contribution would be minimum 40 percent of paid-up equity capital for the first 5 years of commencement of the business.
- The foreign shareholding in the payments bank would be **as per the Foreign Direct Investment (FDI) policy for private sector banks** as amended from time to time. As per the current FDI policy, the

aggregate foreign investment in a private sector bank from all sources will be allowed upto a maximum of 74 per cent of the paid-up capital of the bank.

- Last year, the RBI **doubled the maximum limit of funds account holders of payments banks to Rs 2 lakh** from Rs 1 lakh earlier with immediate effect.
- The decision to double the limit was based on a review of the performance of payments banks and with a view to encourage their efforts for financial inclusion and to expand their ability to cater to the needs of their customers, including MSMEs, small traders and merchants.

#### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818635>

**Question-** What are the objectives of setting up Payment banks? How are these banks different from scheduled commercial banks?

## AGRICULTURAL AND PROCESSED FOOD PRODUCTS EXPORT DEVELOPMENT AUTHORITY

### Context

- Aiming to give a boost to the export value chain, the Agricultural and Processed Food Products Export Development Authority (APEDA) signed a Memorandum of Understanding (MoU) with National Research Development Corporation (NRDC).
- The MoU has been inked for utilizing both the organizations' expertise by working together to synergize the activities in the interest of agriculture and allied sectors for bringing better value to the stakeholders. The MoU has been signed for the implementation of the Agri Export Policy and to strengthen the export value chain.
- The MoU's mandate is to infuse and disseminate technologies jointly with APEDA in the areas of climate-resilient agriculture related to zero carbon emission farming to produce residue/carbon-free food for exports.

### 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**.

#### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818989>

**Question-** What are the objectives and functions of Agricultural and Processed Food Products Export Development Authority? How agriculture exports can help in doubling farmer's income?

## MSME INNOVATION SCHEME

#### Context

- The Ministry of MSME has conducted an awareness programme for the MSME Innovative Scheme.

#### About

- The **Ministry of MSME** has launched the MSME Innovative Scheme (Incubation, Design and IPR) to **promote and support untapped creativity of the MSME sector**.
- It will act as a **hub for innovation activities facilitating and guiding development of ideas into viable business propositions** which benefits society directly.
- The scheme is a holistic approach to unify, synergize and converge **3 sub-components** and interventions with a single purpose.
- MSME Innovative is a new concept for MSMEs with a combination of **innovation in incubation, design intervention and by protecting IPR** in a single mode approach to create awareness amongst MSMEs about India's innovation and motivate them to become MSME Champions.
- Details of the sub-schemes are as under :-



- **Incubation:** The primary objective of the scheme is to promote and support untapped creativity and to promote adoption of latest technologies in MSMEs that seek the validation of their ideas at the proof-of-concept level. **Financial assistance up to Rs. 15 lakh per idea and up to Rs. 1.00 crore for relevant plant and machines** will be provided.
- **Design:** The objective of this component is to bring the Indian manufacturing sector and Design expertise/ Design fraternity on to a common platform. It aims to provide **expert advice and cost-effective solutions** on real time design problems for new product development, its continuous improvement and value addition in existing/new products. **Financial assistance up to Rs. 40 lakh for design project and up to Rs. 2.5 lakh for student project** will be provided.
- **IPR (Intellectual Property Rights):** The objective of the scheme is to **improve the IP culture in India** with a view to enhance the awareness of Intellectual Property Rights (IPRs) amongst the MSMEs and to encourage creative intellectual endeavor in the Indian economy. It also aims to take suitable measures for the protection of ideas, technological innovation and knowledge-driven business strategies developed by the MSMEs for their commercialization and effective utilization of IPR tools through IP Facilitation Centre. **Financial assistance upto Rs. 5 lakh for Foreign Patent, Rs. 1.00 lakh Domestic Patent, Rs. 2.00 lakh for GI Registration, Rs. 15,000/- for Design Registration, Rs.10,000/- for Trademark** in the form of reimbursement will be provided.

**Question-** Write a short note on MSME Innovation scheme.

## NATIONAL LAND MONETISATION CORPORATION

### Context

- Paving the way for big-ticket asset monetisation in the public sector, Niti Aayog has identified over 50 assets that could be put on the block.

### About NLMC

- The Union Cabinet has approved the setting up of a **new government-owned firm for pooling and monetising sovereign and public sector land assets**.
- The **National Land Monetisation Corporation (NLMC)** is being formed with an initial authorised share capital of ₹5,000 crore and paid up capital of ₹150 crore.
- The government will appoint a **chairman** to head the NLMC and hire **private sector professionals** with the expertise required for asset monetisation in areas such as real estate market research, legal due diligence, valuation, master planning, investment banking and land management.

### Objectives

- The NLMC will **undertake monetisation of surplus land and building assets of Central public sector enterprises (CPSEs) as well as government agencies**.
- With **monetisation of non-core assets**, the government would be able to generate substantial revenues by monetising unused and under-used assets.
- The proposal is in pursuance of the **Budget announcements for 2021-22**, which included an ambitious **National Monetisation Pipeline** (*Refer Pulse August 2021 edition*) to garner revenues from public assets.

- The new corporation will also help carry out monetisation of assets belonging to public sector firms that have closed or are lined up for a strategic sale. As per the plan, the surplus land and building assets of such enterprises may be transferred to the NLMC, which will then manage and monetise them.
- Apart from executing the monetisation plan, the NLMC will **advise other government entities** to identify their non-core surplus assets and generate maximum value by monetising them in a professional and efficient manner.
- It is expected that NLMC will act as a repository of best practices in land monetisation, assist and provide technical advice to the government in implementation of asset monetisation programme.

#### What are non-core assets?

- The assets held by the government/public sector entities/statutory bodies broadly include operational/under-construction projects, land, buildings, investment in subsidiaries/joint ventures, etc.
- From amongst these, assets which are central to the business objectives of such entities and are used for delivering infrastructure services to the public/users are considered as **core assets**. The core assets include asset classes such as transport (roads, rail, ports, airports), power generation, transmission networks, pipelines, warehouses etc.
- The other assets, which generally include land parcels and buildings, can be categorised as **non-core assets**.
- For instance, according to the **Economic Survey 2021-2022**, CPSEs have put nearly 3,400 acres of land on the table for potential monetisation. They have referred this land to the **Department of Investment and Public Asset Management (DIPAM)**.
- The NLMC would pool together all the assets in the form of land and buildings owned by the government that can be sold and then implement a plan of either selling these or leasing these out to other parties (primarily to private players).

#### Challenges

- Among the key challenges that NLMC might face include:
  - Lack of identifiable revenue streams in particular land assets,
  - Dispute resolution mechanism,
  - Various litigations and lack of clear titles, and
  - Low interest among investors in remote land parcels.

#### Reference link

<https://psuwatch.com/niti-aayog-readies-the-list-for-psu-asset-monetisation>

**Question-** What are the objectives for setting up National Land Monetisation Corporation? What are possible challenges to achieve these objectives?

## Context

- With urea and fertilizer prices shooting up in the aftermath of the Russia-Ukraine conflict, the Union Cabinet has approved an enhancement in subsidies on non-urea fertilizers for the upcoming Kharif crop, to ₹60,939 crore.
- While the **government fixes the retail price of urea** and subsidises producers based on the difference between costs and the fixed selling price, it pays a subsidy to non-urea fertilizer makers on the basis of nutrient-based rates.
- The subsidy will be ₹2,501 per bag on Di-ammonium phosphate (DAP), instead of the existing subsidy of ₹1,650 per bag, which is a 50% increase over last year's subsidy rates. The increase in the prices of DAP and its raw material is in the range of about 80%.
- Prices of phosphoric acid and rock phosphate, key ingredients in such fertilisers have increased by 92% and 99%, respectively, over the 12-month period till March 2022, rating agency Crisil pointed out recently, warning that the country's fertiliser subsidy bill in 2022-23 could hit a record high of ₹1.65 lakh crore to ₹1.9 lakh crore.

## Background

- Fertilizers are crucial productivity augmenting inputs. To meet the challenge of rising demand for food, feed, and fibre with limited land and water resources, it is imperative to augment land productivity and one way to do this is to make fertilisers easily accessible to farmers.
- With this end in view, the fertiliser sector in the country is subsidised.

## Fertiliser subsidy in India

- In India, the fertiliser subsidy accounts for the **second largest subsidy** after food.
- Currently, **Urea** is the only controlled fertilizer and the government fixes the maximum retail price (MRP). The difference between the production cost and the MRP is reimbursed to manufacturers.
- Retail prices of **non-urea fertilisers** such as Di-ammonium Phosphate (most widely used one after urea), Muriate of Potash (MoP) are **decontrolled** and are **determined by manufacturers**, while the Centre gives a fixed subsidy each year.

## About NBS Scheme

- In order to promote balanced fertilization of soil, Nutrient Based Subsidy (NBS) programme for fertilizer was initiated in the year 2010. Under the scheme, a **fixed amount of subsidy decided on an annual basis** is provided on **each grade of subsidized Phosphatic and Potassic (P&K) fertilizers based on its nutrient content**.
- The scheme aims at ensuring **balanced nutrient application to the soil**.
- It also aims at improving agricultural productivity and promoting the growth of the indigenous fertilizers industry.
- The scheme is being implemented by the **Department of Fertilizers** under the **Ministry of Chemicals and Fertilizers**.

## Issues

- Crops require the right mix of three nutrients viz. **nitrogen, phosphorus, and potassium or NPK** (N helps in plant growth and development, P not only accelerates blooming and the growth of roots but also helps plants to withstand stress and K helps the process of photosynthesis and is essential to plant growth).
- Imbalanced use of N, P and K leads to the loss of fertility of the soil over a period of time, which affects efficiency of fertilizer use and crop productivity.
- In India, **urea** (a nitrogen based fertiliser) is the most commonly used fertiliser because it is highly subsidised. The excessive use of nitrogenous fertilisers has led to a **distortion in the soil nutrient ratio**. Against the ideal NPK (Nitrogen-Phosphorus-Potassium) consumption ratio of **4:2:1**, the actual ratio in 2017-18 was **6.1:2.5:1**.
- Indiscriminate use of nitrogenous fertilizers is **detrimental to the soil and the crop**.
- It also **pollutes the groundwater**. The nitrogen from fertilizers, which is converted to nitrate by the bacteria in the soil, leaches into the groundwater and washes out of the soil surface, entering streams and rivers.

#### The Hindu link

<https://www.thehindu.com/business/Economy/cabinet-clears-higher-subsidy-for-non-urea-fertilisers/article65360479.ece>

**Question-** Write a short note on Nutrient Based Subsidy Scheme and its benefits.

## SEMICON INDIA PROGRAMME

### Context

- The Government of India has announced that it is currently proposals for setting up electronic chip and display manufacturing units with a total investment of ₹1.53 lakh crore.

### About the Programme

- In order to widen and **deepen electronic manufacturing and ensure development of a robust and sustainable Semiconductor and Display ecosystem in the country**, the Union Cabinet had approved the Semicon India Programme in December last year.
- The initiative will position the country as a global hub for electronic system design and manufacturing.
- Through the program's scope, the government hopes to attract large global chip makers to make India their production base. India wants to achieve technological leadership in these areas of strategic importance – also **key to the security of the country's critical information infrastructure**.
- The programme has been approved with an outlay of 76 thousand crore rupees.

### Implementation

- **India Semiconductor Mission (ISM)** has been set up as a dedicated institution for the Semicon India Programme.
- ISM will coordinate with the applicant companies who have also reached out to states to provide access to world class infrastructure.



- It will work closely with the state governments to establish high-tech clusters with 300 to 500 acres of developed land, 100 Kilo Volt Ampere Power, 50 Million Litre Per Day Water, availability of natural gases and common facility centres for testing and certification.

### Significance

- Semiconductors are the building blocks of electronic devices ranging from smartphones and cloud servers to modern cars, industrial automation, critical infrastructure and defence systems. They are at the **core of fourth industrial revolution technologies**.
- India, like other countries across the world, **imports most of its chips from Taiwan, Singapore, Hong Kong, Thailand, and Vietnam**.
- If a country is looking to be self-sufficient or self-reliant, it cannot do without a vibrant semiconductor industry.
- The Semicon India Programme will not only boost semiconductor manufacturing but will also help India achieve **self-sufficiency, improve data security, and gain digital independence**.
- Developing domestic semiconductor manufacturing capabilities will have a **multiplier effect** across different sectors of the economy and will contribute significantly to achieving a **USD 1 trillion digital economy and a USD 5 trillion GDP by 2025**.

#### The Hindu link

<https://www.thehindu.com/business/nod-for-investment-proposals-from-5-6-chipmakers-in-6-8-months-vaishnav/article65367365.ece>

**Question-** What is the need developing indigenous semiconductor industry? How can Semicon India Programme help in developing a robust semiconductor ecosystem?

## ENVIRONMENT

### GREAT INDIAN BUSTARD

#### Context

- The Supreme Court has directed the **Rajasthan and Gujarat governments** to file their status reports on converting overhead electric cables into underground power lines, wherever feasible, within a year to protect the endangered Great Indian Bustard from extinction.
- In April last year, the top court, in a bid to save the GIB, directed the Gujarat and Rajasthan governments to convert overhead electric cables into underground power cables, wherever feasible, within a year to prevent death of the birds due to collision and electrocution.

#### About GIB

- Great Indian Bustard (GIB) is one of the heaviest flying birds **endemic to the Indian subcontinent**.
  - **Protection Status:** IUCN Red List: **Critically Endangered**; CITES: **Appendix I**; Wildlife Protection Act (1972): **Schedule I**.
- Historically, the great Indian bustard was distributed throughout Western India, spanning 11 states, as well as parts of Pakistan. Today, its population is **confined mostly to Rajasthan and Gujarat**. Small populations occur in Maharashtra, Karnataka and Andhra Pradesh.

#### Conservation Issues

- The biggest threat to this species is **hunting**, which is still prevalent in Pakistan. This is followed by **occasional poaching** outside Protected Areas, collisions with high tension electric wires, fast moving vehicles and free-ranging dogs in villages.
- Other threats include **habitat loss and alteration** as a result of widespread agricultural expansion and mechanized farming, infrastructural development such as irrigation, roads, electric poles, as well as mining and industrialization.

#### Conservation strategies

- The only opportunity to potentially recover this species remains in the **Thar landscape of Rajasthan**, where the birds are now limited to two extant populations – one inside **Desert (National Park) Sanctuary** near Jaisalmer, and the second population located in the **grasslands and agricultural lands of Pokhran and Ramdeora**.
- The Great Indian Bustard has also been identified as one of the species for the **recovery programme for critically endangered species** of the Ministry of Environment, Forest and Climate Change (MoEFCC).

#### Recovery programme for critically endangered species

- The programme is a component of the centrally funded scheme, **Integrated Development of Wildlife Habitats (IDWH)**.
- Started in 2008-09, IDWH is meant for providing support to protected areas (national parks, wildlife sanctuaries, conservation reserves and community reserves except tiger reserves), protection of wildlife outside protected areas and recovery programmes for saving critically endangered species and habitats.
- The recovery programme includes **more than 20 wildlife species**.

- It includes Snow Leopard, Bustard, Dolphin, Caracal, Hangul, Nilgiri Tahr, Marine Turtles, Dugongs, Edible Nest Swiftlet, Asian Wild Buffalo, Nicobar Megapode, Manipur Brow-antlered Deer, Vultures, Malabar Civet, Indian Rhinoceros, Asiatic Lion, Swamp Deer, Jerdon's Courser, the Northern River Terrapin, Clouded Leopard, Arabian Sea Humpback Whale and Red Panda.

#### The Indian express link

<https://www.newindianexpress.com/nation/2022/mar/31/great-indian-bustard-sc-seeks-status-reports-from-rajasthan-gujarat-on-laying-of-underground-cable-2436399.html>

**Question-** Write a note on Great Indian Bustard, reasons for its declining population and conservation efforts.

## ETHANOL BLENDED PETROL PROGRAMME

### Context

- The Minister of State for Petroleum and Natural Gas Shri Rameswar Teli in a written reply to a question in the Rajya Sabha informed that the Government is promoting Ethanol Blended Petrol (EBP) Programme with broader objectives of providing boost to domestic agriculture sector, environment benefits, reducing import dependency and savings in foreign exchange.
- Government has also notified the National Policy on Biofuels – 2018 which laid out indicative target of 20% blending of ethanol in petrol and 5% blending of biodiesel in diesel by 2030 in the country.
- Based on the encouraging initiatives on supply side of ethanol, Government has advanced the target of 20% blending of ethanol in petrol from 2030 to 2025-26.

### About Ethanol

- Ethanol, an **anhydrous ethyl alcohol** having chemical formula of **C<sub>2</sub>H<sub>5</sub>OH**, can be produced from **sugarcane, maize, wheat**, etc which are having **high starch content**.
- In India, ethanol is mainly produced from **sugarcane molasses by fermentation process**.
- Ethanol can be mixed with gasoline to form different blends.
- As the ethanol molecule contains **oxygen**, it allows the engine to more **completely combust the fuel**, resulting in fewer emissions and thereby **reducing the occurrence of environmental pollution**.

### Ethanol Blended Petrol Programme

- The Ethanol Blended Petrol (EBP) programme was **launched in January, 2003** by the **Ministry of Petroleum and Natural Gas**.
- The programme sought to promote the **use of alternative and environment friendly fuels** and to reduce import dependency for energy requirements.
- Government of India through **Oil Marketing Companies (OMCs)** is implementing Ethanol Blended Petrol (EBP) Programme, wherein **ethanol is being blended in petrol**.
- The Ministry of Petroleum & Natural Gas in 2019 directed Oil Marketing Companies (OMCs) to **sell 10% ethanol blended petrol** as per Bureau of Indian Standards (BIS) specifications.
- It is being implemented **throughout the country** except Union Territories of Andaman Nicobar and Lakshadweep islands.
- 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**.

## Objectives of EBP

- **Reducing import dependence**
- Promoting **clean fuel**
- Providing **boost to agriculture**
- **Conserving foreign exchange.**

## Government interventions to increase production of ethanol

- To increase indigenous production of ethanol the Government since 2014 took multiple **interventions** like:-
- **Allowing use of sugarcane and food grains** (maize and surplus stocks of rice with Food Corporation of India) for conversion to ethanol
- Re-introduction of **administered price mechanism**
- Opening of alternate route for ethanol production
- Amendment to Industries (Development & Regulation) Act, 1951 which legislates exclusive control of denatured ethanol by the Central Government for smooth movement of ethanol across the country
- **Reduction in Goods & Service Tax (GST)** on ethanol meant for EBP Programme from **18% to 5%**;
- **Differential ethanol price** based on raw material utilized for ethanol production;
- **Extension of EBP Programme** to whole of India except islands of Andaman Nicobar and Lakshadweep wef 01st April, 2019;
- **Interest Subvention Scheme** for enhancement and augmentation of the ethanol production capacity by Department of Food and Public Distribution (DFPD);
- Publication of **Long Term Policy on ethanol procurement.**

## 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**.
- **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.

## Categories of Biofuels:

- **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.
- **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).
- **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.
- **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.

### The PIB link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1813178>



**Question-** Ethanol Blending Programme can have multiple benefits such as boost to domestic agriculture sector, environment benefits, reducing import dependency and savings in foreign exchange. Elucidate.

## MICROPLASTICS

### Context

- Microplastic pollution has been detected in human blood for the first time. The study, published in the journal Environment International, tested 22 anonymous blood samples.

### About microplastics

- **Microplastics** are **tiny bits of various types of plastic found in the environment**. The name is used to differentiate them from “**macroplastics**” such as **bottles and bags** made of plastic. There is **no universal agreement on the size** — the U.S. NOAA (National Oceanic and Atmospheric Administration) and the European Chemical Agency define microplastic as less than 5mm in length.
- The researchers have an upper limit on the size of the particles as 0.0007 millimetre.
- **Microplastics** are **divided into two types: primary and secondary**.
- Primary microplastics are tiny particles designed for commercial use, such as cosmetics, as well as microfibers shed from clothing and other textiles, such as fishing nets. **Microbeads**(used in personal care products), **plastic pellets, and plastic fibres** are some of the **examples**.
- **Secondary microplastics** are **created when bigger plastics, such as water bottles, degrade**. Exposure to external stimuli, namely the sun’s rays and ocean waves, causes this disintegration.

### What the researchers have found?

- The study looked at the **most commonly used plastic polymers**. These were **polyethylene terephthalate (PET), polyethylene (used in making plastic carry bags), polymers of styrene (used in food packaging), poly (methyl methacrylate) and poly propylene**. They found a presence of the first four types.
- The discovery shows the **particles can travel around the body and may lodge in organs**.
- The study found that **77% of tested people** (17 of the 22 persons) carried various amounts of microplastics above the limit of quantification.
- **Half the samples contained PET plastic**, commonly used in drinks bottles. While **third contained polystyrene**, used for packaging food and other products. Some of the blood samples contained two or three types of plastic.
- **Microplastics** were also **observed to cause damage to human cells in the laboratory**.

### Significance of this study

- Making a **human health risk assessment in relation to plastic particles** is not easy, due to the lack of data on exposure of people to plastics. Hence, this studies the first step.
- **Validated methods to detect the tiny amounts** of extremely small-sized (less than 10 micrometre) plastic particles are lacking. Hence **this study**, which **builds up a method** to check the same, is important.

### Negative impact of Microplastics

- It is **not yet clear** if these **microplastics** can cross over from the **bloodstream to deposit in organs and cause diseases**.

- **Air pollution particles** are already known to **enter the body** and cause millions of early **deaths** a year and plastic particles that are of similar size may also cause the same problem.
- The researchers point out that the **human placenta has shown to be permeable to tiny particles of polystyrene.**
- Oral administration of microplastics in rats led to accumulation of these in the liver, kidney and gut.
- Microplastics **cause damage to human cells** in the **laboratory.**
- A recent study found that **microplastics can latch on to the outer membranes of red blood cells and may limit their ability to transport oxygen.**
- Microplastics have been **detected in marine organisms from plankton to whales**, in commercial seafood, and even in drinking water.
- **Standard water treatment facilities cannot remove all traces of microplastics.**
- **Microplastics in the ocean can bind with other harmful chemicals** before being ingested by marine organisms.
- The particles have also been **found in the placentas of pregnant women**, and in pregnant rats they pass rapidly through the lungs into the hearts, brains and other organs of the fetuses.
- **Deep sea hotspots** of biodiversity are also likely to be **microscopic plastic hotspots. Thermohaline driven currents** can cause microplastics in the same regions where underwater flock in the benthic zone (Because currents also supply oxygen and nutrients to the deep sea benthos)
- Deep-ocean currents are driven by differences in the water's density, which is controlled by temperature (thermo) and salinity (haline). This process is known as **thermohaline circulation.**
- **Organisms that live on the seafloor** are called **benthos**. Most of these animals lack a backbone and are called invertebrates. Typical benthic invertebrates include sea anemones, sponges, corals, sea stars, sea urchins, worms, bivalves, crabs, and many more.

#### **Initiatives related to reducing plastic pollution**

- The **Extended Producer Responsibility concept** was introduced by the **Plastic Waste Management (Amendment) Rules 2018.**
- According to the **Plastic Waste Management Rules of 2016**, every **local body** must put up **infrastructure** for the segregation, collection, processing, and disposal of plastic waste
- **Elimination of Single-Use Plastic:** India committed in 2019 to abolish all single-use plastic in the country by 2022.
- **Un-Plastic Collective (UPC)** is a voluntary project sponsored by **UNEP-India, the Confederation of Indian Industry, and the World Wildlife Fund-India.**
- The **1972 London Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter** was signed to regulate the dumping of waste materials into the sea in order to manage all causes of marine contamination and prevent pollution of the sea. The Collective aims to reduce the negative effects of plastics on our planet's ecological and social health.
- **Plastics Pacts** are business-led efforts aimed at transforming the plastics packaging value chain across all forms and products.
- The **Global Partnership on Marine Litter (GPML)** was established in response to a request made in the Manila Declaration at the 2012 Earth Summit.

### The Hindu link

<https://www.thehindu.com/sci-tech/science/scientists-find-microplastics-in-blood-for-first-time/article65261875.ece>

<https://www.thehindu.com/sci-tech/science/detecting-microplastics-in-human-blood/article65267369.ece>

**Question-** What are microplastics? Explain their harmful effects on environment.

## WHO SAYS 99% OF WORLD'S POPULATION BREATHE POOR-QUALITY AIR

### Context

- The World Health Organization (WHO), about six months after tightening its guidelines on air quality, issued an **update to its database on air quality** that draws on information from a growing number of cities, towns and villages across the globe, now totalling over **6,000 municipalities**.
- The database, which has traditionally considered two types of particulate matter known as **PM2.5 and PM10**, for the **first time has included ground measurements of nitrogen dioxide**. The last version of the database was issued in 2018.

### Key Points

- The UN health agency says nearly everybody in the world breathes air that **doesn't meet its standards for air quality**, calling for more action to **reduce use of fossil-fuel**, which generates pollutants that cause respiratory- and blood-flow problems and lead to millions of preventable deaths each year.
- Around **99% of the global population breathes air that exceeds its air-quality limits** and is often rife with particles that can penetrate deep into the lungs, enter the veins and arteries and cause disease.
- Air quality is **poorest in WHO's Eastern Mediterranean and Southeast Asia regions, followed by Africa**.

### Major effects of Pollutants

- Nitrogen dioxide originates mainly from **human-generated burning of fuel**, such as through automobile traffic, and is most common in urban areas. Exposure can bring **respiratory disease** such as asthma and symptoms such as coughing, wheezing and difficulty in breathing, and more hospital and emergency-room admissions.
- The highest concentrations were found in the **eastern Mediterranean region**.
- **Particulate matter** has many sources, such as transportation, power plants, agriculture, the burning of waste and industry – as well as from natural sources such as desert dust.
- The database showed that the **developing world is particularly hard hit**. Eg: **India had high levels of PM10, while China showed high levels of PM2.5**.
- The Council on Energy, Environment and Water, a New Delhi-based think tank, found in a study that more than **60% of India's PM2.5 loads are from households and industries**.

### What needs to be done?

- The Center for Science and Environment emphasized that **India and the world need to brace for major changes** to try to curb air pollution through adopting Electric vehicles, shift away from fossil **fuels**; a **massive scaling-up of green energy**; and **households separating their types of waste**.
- An **action plan for reducing emissions** from industries, automobiles, biomass burning and domestic energy needs to be framed.

- **Prioritizing clean energy access for households** is the need of the hour.

#### The Hindu link

<https://www.thehindu.com/news/international/united-nations-health-agency-who-says-99-of-worlds-population-breathes-poor-quality-air/article65289657.ece>

**Question-** What are the ill effects of major air pollutants? Describe remedial measures needed at policy level to address this issue.

## EARTH DAY

### Context

- Every year, people across the world **celebrate Earth Day on April 22** to show their support for the protection of the earth and the environment.
- Events on the day include plantation drives, protests, awareness sessions, competitions for children, and so on.

### About World Earth Day

- The World Earth Day, also known as the **International Mother Earth Day, is celebrated every year on April 22** under which countries across the globe come together to create more awareness about the dire need to protect our environment.
- The day focuses on the **global climate crisis** that is worsening with each passing day.
- On this day, the emphasis is on the increasing environmental problems, including **overpopulation, loss of biodiversity, depleting ozone layer and rising pollution.**

### History of Earth Day

- Earth Day was first celebrated on **April 22, 1970** when the peace activist **John Mc Connell** proposed to honor Mother Earth and the concept of peace during a UNESCO conference in San Francisco.
- World Earth Day was earlier decided to be celebrated on March 21, 1970 as the day one of spring in the Northern Hemisphere.

### Why is Earth Day Celebrated?

- In 1969, Santa Barbara in California was ravaged by a massive oil spill which served as a motivation for the Senator to work towards the protection of the environment.
- On Earth Day, millions of people connect to discuss environmental issues like **pollution and deforestation.** Many people participate and organize events to hold discussions around topics of **environmental literacy to educate young minds** about various climate issues.

### What was the impact of the first Earth Day

- By the end of 1970, the U.S. had set up the United States Environmental Protection Agency to take care of matters related to environmental protection.
- The country also passed several **environment-related laws** including the National Environmental Education Act, the Occupational Safety and Health Act, and the Clean Air Act.

### What is the theme for the 2022 Earth Day?



- The theme of this year's Earth Day is "invest in our planet". The focus is on activities that promote a **partnership between businesses, governments, and citizens** for urgent action towards environmental protection in order to ensure a sustainable future.
- **In 2020, the world observed the 50th anniversary of Earth Day.**
- In 2021, the theme was to 'Restore our Earth' and in 2020, the theme was 'Climate action'.

#### The Hindu link

<https://www.thehindu.com/sci-tech/energy-and-environment/earth-day-the-history-and-impact-of-the-environmental-movement/article65338361.ece>

**Question-** Write a short note on Earth Day, its history and importance in current scenario of climate change.

## ENERGY INDEPENDENCE THROUGH HYDROGEN

### Context

- The **Green Hydrogen Policy of India**, which was issued on February 17, 2022, addressed various major obstacles such as open access, waiver of interstate transmission charges, banking, timebound clearances, and so on, and is intended to significantly accelerate India's energy transformation.

### Current Situation

- India's per capita energy consumption is around one-third that of the global average and one-twelfth that of the United States. Growing economic prosperity and growth will dramatically raise India's energy demand, increasing import dependency.
- The hydrogen fuel of the future is being hailed as **India's ticket to energy independence**.
- Hydrogen has a varied role to play in the future energy environment, whether it is used for-
  - **Energy storage,**
  - **Long-distance transportation, or**
  - **Industrial decarbonization.**

### Significance of Hydrogen:

- Hydrogen has a significant role to play in decarbonizing India's transportation industry.
- The advantages of fuel cell vehicles over battery electric vehicles include faster fuelling and a longer driving range, making them perfect for long-distance transportation, which is a key limitation with Lilon batteries.
- In the industrial sector, hydrogen has the potential to decarbonize 'hard-to-abate' industries such as iron and steel, aluminium, copper, and so on. Producing fuels such as methanol, synthetic kerosene, and green ammonia is a significant opportunity.
- According to The Energy and Resources Institute (TERI), India will require a total capacity of 192 GW to 224 GW of electrolyzers by 2050, assuming that all of it is green hydrogen. In 2021, the global capacity of electrolyzers will have just surpassed 300 MW. This means that by 2050, India would require an electrolyser capacity that is 640 to 750 times more than the current world capacity.

### A five-step plan

- A five-step demand plan should be developed. A mandate should be provided to established companies like as refining and fertilisers, together with suitable incentives, in order to generate early demand.
- Second, government regulations should incentivize firms producing low-emission hydrogen-based goods such as green steel and green cement.
- Third, mixing hydrogen with natural gas can provide a significant increase, which can be supported by establishing blending requirements, laws, and marketing HCNG stations.
- Furthermore, hydrogen fuel stations may be developed in specialised routes where long-distance transportation is common to encourage FCEVs.
- Finally, carbon pricing should be implemented along the lines of European nations. A five-step supply strategy should also be developed.
- To begin, R&D expenditure should be increased to bring its cost on line with that of fossil fuels.
- Second, by investigating biogas conversion into hydrogen, the Sustainable Alternatives to Affordable Transportation (SATAT) project, which aims to create 15 MMT of compressed biogas, might be leveraged.
- Third, a Viability Gap Funding (VGF) programme for hydrogen-based initiatives may be developed to commercialise and scale up fledgling technology.
- Furthermore, in order to receive inexpensive finance, electrolyser production and hydrogen projects must be included in **Priority Sector Lending (PSL)**.
- Finally, because renewable energy tariffs and electrolyser prices are two major cost issues for green hydrogen, and India has one of the lowest renewable tariffs, the focus should be on lowering the cost of electrolysers through the implementation of the **Production Linked Incentive (PLI) plan**.
- This might help India become a global powerhouse for the production of electrolysers and renewable hydrogen. In terms of transportation, ammonia, which has a high energy density, might be pushed as a means of transportation. A hydrogen transportation system may potentially be developed using the natural gas infrastructure already in place.
- Hydrogen transportation projects may also be included into the **PM Gati Shakti Master Plan**. Over the next several decades, hydrogen might totally revolutionise India's energy economy, transforming it from an energy importer to a dominating exporter. India might sell to prospective import hubs such as Japan, South Korea, and others.
- With hydrogen, India has the potential to lead the world in meeting the **Paris Agreement's** aim of limiting global warming to 2° Cover pre-industrial levels. Hydrogen may build the groundwork for a new India that is energy self-sufficient, a worldwide climate leader, and an international energy power. Prime Minister Narendra Modi issued a clarion appeal of **panchamrit (five objectives) at COP 26**, with an ambitious ambition of achieving **Net Zero by 2070**. Hydrogen will undoubtedly play a critical part in India's Net Zero ambitions and in transforming the country into an "**Aatmanirbhar in energy**."

### Green Hydrogen Policy

- The **Ministry of Power (MoP)** recently launched a **Green Hydrogen Policy (GHP)**. It has been broadly welcomed by industry players since it aligns with the climate-action emphasis of India's budget for 2022-23.
- The programme has set a target of 5 million tonnes per annum (MTPA) of **green hydrogen generation by 2030**, which is more than 80% of the country's current hydrogen demand.

- India has become the 18th country to produce a complete Green Hydrogen Policy as a result. Ammonia and hydrogen are envisioned as future fuels that will replace fossil fuels.

#### What does the Green Hydrogen Policy entail?

- The government is promising to establish up manufacturing zones for production, priority access to the ISTS (Inter-State Transmission System), and free transmission for 25 years if the production facility is completed by June 2025.

#### What is the Policy's Importance?

- Indian Oil Corp (IOC), India's largest oil refiner, expects that GHP methods would cut the cost of green hydrogen generation by 40-50 percent.
- Green Hydrogen and Green Ammonia are critical for any country's ecologically friendly energy security.
- India has already committed to reaching net-zero carbon emissions by 2070, and green hydrogen will play an important role as a disruptive feedstock in the country's shift away from oil and coal.

#### The Hindu link

<https://www.thehindu.com/opinion/op-ed/energy-independence-through-hydrogen/article65359780.ece>

**Question-** Describe the role hydrogen can play in ensuring energy independence for India. How does Green Energy Policy aims to achieve this?

## HEATWAVES LINKED TO MAN-MADE CLIMATE CHANGE

### Context

- India is in the midst of a lengthy period of heatwaves, with overwhelming evidence that a large chunk of it is related to human-caused climate change.
- If carbon emissions continue unabated, half of the world will be under severe drought by the end of the century.
- There has already been a threefold increase in severe precipitation occurrences in India, with rainfall decreasing in North India and increasing in South India.
- Pollution from biomass burning, along with carbon dioxide emissions, resulted in 1.5 million fatalities in India per year. By giving clean cooking fuel to rural households in the Indo-Gangetic plains, India might decrease pollution in half.
- To mitigate climate change, societal transformation, carbon dioxide emission reductions, and adaptation were all required.

### What exactly are Heat Waves?

- A heat wave is defined by the World Meteorological Organization as five or more consecutive days of sustained heat in which the daily maximum temperature is 5 °C (9 °F) or higher than the average maximum temperature. Some countries, however, have developed their own criteria for defining a heat wave.

- Heatwaves occur when high pressure aloft (3,000–7,600 metres) increases and persists over an area for many days to several weeks.
- This is typical in the summer (both in the Northern and Southern Hemispheres) since the jet stream 'follows the sun.'
- The high-pressure region is located on the equator side of the jet stream, in the upper layers of the atmosphere.
- Weather patterns vary more slowly in the summer than in the winter. As a result, this upper-level high pressure is moving slowly as well.
- When there is high pressure, the air lowers (sinks) toward the surface, warming and drying adiabatically, impeding convection and cloud formation.
- Cloud reduction increases the amount of shortwave radiation reaching the surface.
- A low pressure at the surface causes surface wind from lower latitudes to deliver warm air, therefore amplifying warming.
- Alternatively, surface winds may blow from the hot continental heartland to the coastal zone, causing heat waves.

#### **To declare a heatwave, the following conditions are used:**

- To declare a heatwave, at least two stations in a Meteorological subdivision must meet the following conditions for at least two consecutive days, and it will be announced on the second day.
- **On the basis of deviation from the norm**
  - **Heat Wave:** Temperatures range from 4.5°C to 6.4°C above usual.
  - **Severe Heat Wave:** The temperature deviates from normal by more than 6.4°C.
- **Using the Actual Maximum Temperature (for plains only)**
  - **Heat Wave:** When the real maximum temperature exceeds 45°C.
  - **Severe Heat Wave:** When the real maximum temperature exceeds 47°C.

#### **How long does a heatwave last?**

- A heatwave usually lasts for at least four days. It can sometimes last up to seven or 10 days.
- The longest documented hot period in modern years occurred between May 18 and May 31, 2015.

#### **Effects of Heatwaves**

- It may be a natural disaster as well as a risk since heat and sunshine can cause the human body to overheat.
- Severe heatwaves have resulted in catastrophic crop failures, thousands of hyperthermia deaths, and widespread power outages as a result of increased use of air conditioning.
- The ability to adjust to increasing temperatures is critical.
- Heat waves are frequently evaluated based on how frequent or strong they are, but vulnerability entails more than that.
- People's ability to adapt with measures such as cooling technology and the power to run it is a key factor in the amount of harm caused by heat waves.



- While wealthy countries can mitigate their risk by rapidly investing in climate change adaptation measures, the poorest quarter of the world – which is likely to be slower to adapt – will face increasing heat risk.

#### Climate Change Response in India:

- **National Action Plan on Climate Change (NAPCC):** describes current and future climate mitigation and adaptation policies and strategies. *Solar Energy; Enhanced Energy Efficiency; Sustainable Habitat; Water; Sustaining the Himalayan Ecosystem; Green India; Sustainable Agriculture; and Strategic Knowledge for Climate Change* are identified as eight main "national missions" that will operate through 2017. The majority of these missions have severe adaptation requirements.
- **National Clean Energy Fund:** In 2010, the Government of India established the **National Clean Energy Fund (NCEF)** to finance and promote clean energy initiatives, as well as to fund research in the field of clean energy in the country. The fund's corpus is built by levying a cess of INR 50 (subsequently increased to INR 100 in 2014) per tonne of domestic or imported coal.
- **Paris Agreement:** India has made three commitments under the Paris Agreement. By 2030, India's greenhouse gas emission intensity of GDP will be reduced by 33-35 percent compared to 2005 levels. In addition, non-fossil fuels would account for 40% of India's power capacity. Simultaneously, India will create an additional 'carbon sink' of 2.5 to 3 billion tonnes of CO<sub>2</sub> equivalent through increased forest and tree cover by 2030.
- **International Solar Alliance (ISA):** India and France launched the ISA at the United Nations Climate Change Conference in Paris on November 30, 2015.
- **Bharat Stage (BS) Emission Limits:** Vehicle emissions are one of the leading causes of air pollution, prompting the government to implement the BS 2000 (Bharat Stage 1) vehicle emission norms in April 2000, followed by BS-II in 2005. In 2010, BS-III was rolled out across the country. However, in 2016, the government opted to follow worldwide best practises and forgo BS V entirely in order to jump to BS-VI standards.

#### Way Forward:

- **Mitigation and adaptation:** India has a climate change strategy in the shape of the **National Action Plan on Climate Change**, which was established via the merging of comparable objectives at the state level. In addition, India has established the **Coalition for Disaster Resilient Infrastructure (CDRI)**. Climate change, on the other hand, would need international collaborative action to have the greatest impact. This is because climate protection is a global issue, and any policy implemented in silos would have a limited impact.
- **Follow the Bottom-up Approach:** Resilience will be more successful if it is established from the ground up, by understanding the requirements of the community at the local level, rather than from the top down. A climate risk atlas, for example, is required to understand the susceptibility of a specific place at the district level.
- **Data democratisation:** As information is required to make an impact at the local level, there is a need for more robust and simple data transmission to the general population. It also nudges local communities and fosters a competitive atmosphere for improved climate action.
- **Extending the horizon of Indian actions:** While India has received global acclaim for its efforts to alleviate the effects of climate change, there is still room for further growth. They are now concentrating on energy emissions and energy use. However, the same principles must be applied to industries such as agriculture, which have a significant influence on climate change. Similarly, in order to develop a low-

carbon economy, it is critical to protect vulnerable people from catastrophic occurrences and to rationalise the use of fertilisers and subsidies.

- **Access to Finance:** It is critical that the world recognises the need of incentivizing poor nations to use renewable energy. At this stage of development, developing countries must not lose sight of their most essential goal: raising the standard of living for their population. As a result, given their historical responsibilities, Western nations must take the lead in financing the transition of poorer countries from fossil-based electricity to renewable energy.
- From a holistic standpoint, there is a need to comprehend the significance of greener growth in the Indian context. A lower-carbon economy would also benefit the country in the long run, as India is a vulnerable country in terms of climate change. Its lengthy coastline and proximity to the Himalayas render it vulnerable to sea-level rise, storms, and floods. As a result, investing in renewable energy would assist to reduce the likelihood of disasters occurring and protect people's livelihoods.
- **Approach based on consensus:** It is necessary to reintegrate the nations that have strayed from the alliance. For example, the world community must hold the United States accountable for its massive per capita emissions. Similarly, China's overall emissions must be reduced because it is the world's greatest emitter of greenhouse gases.

#### The Hindu link

<https://www.thehindu.com/sci-tech/energy-and-environment/heatwaves-linked-to-man-made-climate-change-tnq-janelia-webinar/article65367764.ece>

**Question-** Describe heatwaves. How does human induced climate change is intensifying heatwaves. Explain.

## SCIENCE AND TECHNOLOGY

### NFC TECHNOLOGY FOR INSTANT PAYMENTS

#### Context

- Near-field communication (NFC) is a wireless connectivity technology that allows NFC capable devices to converse and transmit information with a single touch. Aside just driving payment services, NFC technology offers a wide range of uses. It is utilised in contactless banking cards and to produce contactless public transportation tickets.

#### Background

- Near-field communication technology is based on **Radio-Frequency Identification (RFID)**, which merchants have used for decades to tag and monitor merchandise within stores.
- Near-field communication technology gained traction in 2004 with the formation of the NFC Forum, a non-profit organisation dedicated to extending the ease of NFC technology to many parts of life.
- The Forum publicly detailed the architecture for NFC technology in 2006, and its standards continue to provide a road map for all interested parties to construct strong new consumer-driven products.

#### NFC is required because-

- While contactless or proximity cards are already available, their reach is limited, and adding NFC to mobiles and other comparable platforms would undoubtedly increase usage.
- The essence of NFC is safe and effective short-range wireless communication.
- The maximum distance is around 20cms, ensuring that no unlawful communication occurs.

#### NFC applications beyond payments

- Aside from simplifying and expediting the payment process, near-field communications offer a wide range of applications.
- Hundreds of millions of contactless cards and readers are used globally to secure networks and buildings, manage inventory and sales, prevent auto theft, keep track of library books, and operate unmanned toll booths.
- NFC is the technology underlying the cards that we wave across card readers.
- It can be found in speakers, home appliances, and other electrical items that we can monitor and manage using our smartphones.
- With a single tap, NFC can activate Wi-Fi and Bluetooth gadgets across our houses.
- NFCs Provide Both Short-Term and Long-Term Solutions
- Near-field communications is being used in a variety of sectors and has far-reaching effects.

#### Advantages of NFCs:

##### Healthcare

- **Tracking Patient Vital Signs:** NFC-enabled wristbands may be programmed to track patients' vital signs. NFC-enabled gadgets might allow patients of all ages to assess their health condition independently with a simple "just touch" instruction.
- **Patient Care-Management:** NFC in the hospital environment allows for real-time tracking of a patient's whereabouts, when the nurse last visited, and what therapy a doctor just delivered. NFC-enabled

wristbands can replace standard hospital identification bracelets and can be updated in real time with information such as when a drug was last administered or when a treatment has to be conducted.

### **Airlines**

- Using NFC, a 450-person plane can be boarded in 15 minutes, a task that would ordinarily take 40 minutes without the usage of NFC.

### **Hospitality, travel, and recreation**

- A hotel may deliver access privileges to a guest's room directly to his or her mobile device in advance of their arrival using NFC technology.

### **Workplaces**

- NFC devices allow people to transfer documents without the need of paper.

### **Stores**

- The technology enables consumers to get product information and specs from point-of-sale screens in real time.
- Furthermore, NFC tags distributed to regular consumers may be utilised to collect shopping data and promote purchases.

### **Schools**

- Some higher education institutions have already introduced NFC-based identification systems, allowing students to get building access while also making payments.

### **Reliability on NFCs**

- Because NFC near field communication does not employ physical connections, the connection is more reliable and does not suffer from the problems of contact wear, corrosion, and filth that physical connector systems do.
- NFC uses inductive coupling at a frequency of 13.56 MHz, which is a licence-free allotment in the high-frequency radio spectrum.
- NFC is a kind of RFID, but it has its own set of standards that regulate its functioning, interface, and so on. This implies that NFC equipment and pieces from many vendors can be used in conjunction. The NFC standards govern not only the contactless operation environment, but also data formats and transfer rates.

### **Shortcomings**

- It can only work across small distances of 10-20 cm.
- It has extremely low data transfer rates.
- It is not as beneficial to users because of the extensive procedures compared to alternative simple solutions.
- While it is more secure than a credit/debit card-based system, it is not entirely risk-free. Mobile-based hacking is becoming more frequent as a result of the availability of cutting-edge tools and techniques that provide total access to smart devices.
- Power consumption is higher in NFC-enabled gadgets.
- Due to greater pricing and a lack of promotion from leading handset providers, NFC-enabled handsets are not yet mainstream.
- While NFC may be safe in and of itself, cloud servers may be vulnerable to hacker assault.
- Can be a favoured weapon for terrorists who may go from social networking sites to putting up NFC recruitment posters.



**The Hindu link**

<https://www.thehindu.com/sci-tech/technology/nfc-technology-for-instant-payments/article65286681.ece#:~:text=What%20is%20NFC%20and%20how,coupons%2C%20or%20s hare%20a%20document.>

**Question-** Describe the technology behind Near-field communication (NFC) and its applications.

**THE COMPLETE HUMAN GENOME AND WHAT IT IS ABOUT****Context**

- Nearly two decades ago, when scientists published the map of the human genome for the first time, it was hailed as a breakthrough. That was incomplete, however: about 8% of the human DNA was left unsequenced.
- Now, in a series of papers published in Science, a large team has accounted for that 8%, completing the picture of the human genome for the first time.

**Why does it matter?**

- A complete human genome makes it easier to study genetic variation between individuals or between populations.
- A genome refers to all of the genetic material in an organism, and the human genome is mostly the same in all people, but a very small part of the DNA does vary between one individual and another.
- By constructing a complete human genome, scientists can use it for reference while studying the genome of various individuals, which would help them understand which variations, if any, might be responsible for disease.

**What was missing?**

- The genetic sequence made available in 2003 from the Human Genome Project, an international collaboration between 1990 and 2003, contained information from a region of the human genome known as the **euchromatin**. Here, the chromosome is rich in genes, and the DNA encodes for protein.
- The 8% that was left out was in the area called **heterochromatin**. This is a smaller portion of the genome, and does not produce protein.
- There were at least two key reasons why heterochromatin was given lower priority. This part of the genome was thought to be “junk DNA”, because it had no clear function. Besides, the euchromatin contained more genes that were simpler to sequence with the tools available at the time.
- Now, the fully sequenced genome is the result of the efforts of a global collaboration called the Telomere-2-Telomere (T2T) project.
- The invention of new methods of DNA sequencing and computational analysis helped complete the reading of the remaining 8% of the genome.

**What's in the 8% and its significance?**

- The new reference genome, called T2T-CHM13, includes highly repetitive DNA sequences found in and around the telomeres (structures at the ends of chromosomes) and the centromeres (at the middle section of each chromosome).
- The new sequence also reveals long stretches of DNA that are duplicated in the genome and are known to play important roles in evolution and disease.

- The new T2T reference genome will complement the standard human reference genome, known as Genome Reference Consortium build 38 (GRCh38), which originated from the Human Genome Project and has been updated since.

#### The Indian Express link

<https://indianexpress.com/article/explained/complete-human-genome-explained-7848706/>

**Question-** Write a short note on Human genome and significance of its complete mapping.

## INDIAN NAVY INDIGENISATION PLAN

### Context

- The Navy is looking to procure variants of the indigenous **Advanced Light Helicopter (ALH)** and **Light Utility Helicopters (LUH)** modified for ship-based operations.
- The **Navy** which has taken an early lead towards **indigenisation** decades ago and in 2014 **promulgated the Indian Navy Indigenisation Plan (INIP) 2015-2030** to enable indigenous development of equipment and systems is further ramping up indigenisation efforts especially in weapons and aviation related items.

### What is Indian Navy Indigenisation Plan (INIP)?

- In **pursuance** of the Government of India's vision of '**Make in India**', the Indian Navy has embarked upon an initiative to evolve a **guideline document, the "Indian Naval Indigenisation Plan (INIP) 2015-2030"**, to enunciate the need for developing various advanced systems for its platforms.
- This document supersedes the Indigenisation Plan published in 2008 for the period 2008-2022.
- This document is aimed **to enable indigenous development of equipment and systems over the next 15 years.**
- Some of the focus areas include indigenous design and development and production of **Anti-Submarine Weapons and sensors, Satcom** and electronic warfare equipment, Anti-Ship **Missiles** and Medium Range Surface to Air Missile, combat management system, software defined radios, network encryption devices, Link II communication system, main batteries for submarines, distress sonar system, components of missiles and torpedoes etc.

### Outcomes

- **In-house indigenisation committees** have been formed to handle **indigenisation of spares** with respect to naval aircraft. In addition, the **Naval Liaison Cells (NLCs)** located at various places have been nominated as 'indigenisation cells'.
- The **Naval Innovation and Indigenisation Organisation (NIO)** which was launched to provide a **flexible and accessible interface for academia and industry** with **Indian Navy** capability development apparatus
- **New Intellectual Property Rights** applications have been filed by Navy personnel(36 in the last 2 years).
- **Transfer of Technology to MSMEs** has already been undertaken
- Navy has now forward **deployed user inputs through Naval Project Management Teams at cluster Headquarters of DRDO**

- These have **interfaced** with the **DRDO labs and their Development cum Production Partners (DcPP)** to **provide user inputs at every stage to 15 futuristic Technology** and 100 plus DRDO projects underway for development of Indian Navy's combat capability

#### About ALH Mk-III

- The **indigenously designed and developed Advanced Light Helicopter (ALH-DHRUV)** is a **twin engine**, multi-role, multi-mission new generation helicopter in the 5.5 ton weight class.
- It is a multi-role chopper with the **Shakti engine** manufactured by Hindustan Aeronautics Limited (HAL).
- The helicopters are equipped with state-of-the-art equipment like **Surveillance Radar, Electro-Optic Pod, Medical Intensive Care Unit, High-intensity Search Light, SAR Homer, Loud Hailer, Machine Gun** and can **perform other key roles**.
- Even at night, it will be able to alleviate low visibility during search and rescue operations.
- It possesses a 0.7 mm gun, giving it a significant capability in LIMO (low intensity maritime operations).
- The new autonomous flight control system outperforms the older version.
- These helicopters will usher a paradigm shift in the capability in ship-borne operations and **enhance coastal surveillance**.

#### About Light Utility Helicopter

- LUH is designed and developed as a **replacement for Cheetah & Chetak helicopters** which are being operated by Indian Armed forces.
- LUH is a new generation helicopter in the 3-Ton class incorporating the state of the art technology features like **Glass cockpit with Multi-Function Displays (MFD)** and powered by single Turbo Shaft engine with sufficient power margin to cater to demanding high altitude missions.

#### The Hindu link

<https://www.thehindu.com/news/national/navy-to-acquire-modified-variants-of-indigenous-helicopters-for-its-ships/article65320960.ece>

**Question-** What is Indian Navy Indigenisation Plan (INIP)? What are the benefits of indigenization of defence production?

### REUSABLE LAUNCH VEHICLE-TECHNOLOGY DEMONSTRATION (RLV-TD) PROGRAMME

#### Context

- The Indian Space Research Organisation (**ISRO**) is aiming to carry out a **landing experiment (LEX)**, a critical **component of the Reusable Launch Vehicle-Technology Demonstration (RLV-TD) programme**

#### About the experiment

- **RLV-LEX** involves taking an **unmanned, winged prototype to an altitude** of about 2.3 km to 2.4 km on a helicopter and **releasing it to land**.

- The prototype will be released 3.7 km away from the airstrip and it must travel the distance autonomously, gain velocity, maintain control and come in like any typical aircraft, touching down with the rear wheels first. A parachute will then be deployed for braking.

#### Reusable Launch Vehicle-Technology Demonstration (RLV-TD) programme

- The **cost of access to space is the major deterrent** in space exploration and space utilization. A **reusable launch vehicle is the unanimous solution** to achieve low cost, reliable and on-demand space access.
- **Currently, ISRO employs** expendable rockets such as the Polar Satellite Launch Vehicle (**PSLV**) and the Geosynchronous Satellite Launch Vehicle (**GSLV**) for space missions.
- Reusable Launch Vehicle-Technology Demonstration Program or **RLV-TD** is a series of technology demonstration missions that have been considered as a first step towards realizing a **Two Stage To Orbit (TSTO) fully re-usable vehicle**.
- A Winged Reusable Launch Vehicle technology Demonstrator (RLV-TD) has been configured to act as a flying test bed to evaluate various technologies, namely, hypersonic flight, autonomous landing, powered cruise flight and hypersonic flight using air-breathing propulsion.
- These technologies will be developed in phases through a series of experimental flights. The first in the series of experimental flights is the **hypersonic flight experiment (HEX)** followed by the landing experiment (**LEX**), return flight experiment (**REX**) and scramjet propulsion experiment (**SPEX**).
- Reusable Launch Vehicle Technology Demonstrator Hypersonic Experiment (RLV-TD HEX1) wherein the hypersonic aero-thermo dynamic characterization of winged re-entry body along with autonomous mission management to land at a specified location and characterization of hot structures are planned to be demonstrated.

#### The Hindu link

<https://www.thehindu.com/news/national/kerala/isro-to-conduct-rlv-landing-experiment-soon/article65344990.ece>

<https://www.isro.gov.in/technology-development-programmes/reusable-launch-vehicle-technology-demonstration-program-rlv-td>

**Question-** Write a short note on Reusable Launch Vehicle-Technology Demonstration (RLV-TD) programme.

## GPS AIDED GEO AUGMENTED NAVIGATION (GAGAN)

### Context

- The Airports Authority of India has successfully conducted the light trial using the GAGAN-based Localizer Performance with Vertical Guidance (**LPV**) Approach Procedures at **Rajasthan's Kishangarh Airport**.
- The successful trial is a great achievement and major milestone in the field of Air Navigation Services (ANS) in the history of the Indian Civil Aviation Sector. India is the first country in the Asia Pacific Region to achieve such a landmark.
- The LPV permits aircraft guided approaches that are operationally nearly equivalent to Cat-I/ILS, without the need for ground-based navigational infrastructure. The service relies on the availability of GPS and GAGAN Geo Stationary Satellites, launched by ISRO.



- The tests, at Kishangarh Airport, were performed as part of initial GAGAN LPV flight trials. After the final approval by DGCA, the procedure will be available for the usage of commercial flights.

#### About GAGAN

- GAGAN is an **Indian Satellite Based Augmentation System (SBAS)** launched by the Indian government in 2015. GAGAN stands for **GPS Aided GEO Augmented Navigation**.
- *SBAS is a wide area augmentation system that provides augmented accuracy and integrity to a Global Navigation Satellite Systems (GNSS) navigation signal such as GPS.*
- GAGAN is implemented to provide required accuracy, continuity, availability, and integrity to enable users/aircrafts to rely on GPS for all phases of flight.
- It was developed by the **Airports Authority of India (AAI)** and **Indian Space Research Organization (ISRO)**.
- There are **only four Space-Based augmentation systems available in the world** namely India (GAGAN), the United States (Wide Area Augmentation System- WAAS) Europe (European Geostationary Navigation Overlay Service- EGNOS) and Japan (MTSAT Satellite Augmentation System- MSAS).
- GAGAN is the **first such system developed for India and neighbouring countries in the equatorial region**.

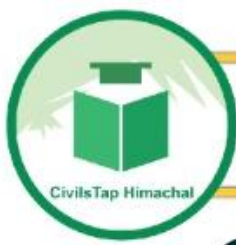
#### Benefits from GAGAN

- GAGAN system is being used for **effective management of wildlife resources and monitoring of forests**.
- It can provide **navigation support** to Indian railways for signalling.
- The **Road Asset Management System (RAMS)** is likely to be developed for all National Highways in the country and a modern management system that will use the GAGAN system.
- GAGAN signals can also be used to **manage traffic** in real time to avoid traffic jams.

#### The PIB Link

<https://pib.gov.in/PressReleasePage.aspx?PRID=1820947>

**Question-** What is GPS Aided GEO Augmented Navigation (GAGAN) and its intended benefits in India?



## Initiatives

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