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# CURRENT AFFAIRS

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## THE HINDU

### GS 2 : Polity, Governance, International Relations

#### 1. ASHA workers losing hope.

Accredited Social Health Activist (ASHA) is a trained female community health activist. Selected from the community itself and accountable to it, the ASHA will be trained to work as an interface between the community and the public health system. At present there are over 9 Lakh ASHAs. The ASHA scheme is presently in place in 33 states (except Goa, Chandigarh & Puducherry).

Selection criteria for ASHAs ASHA must primarily be a woman resident of the village married/ widowed/ divorced, preferably in the age group of 25 to 45 years.

She should be a literate women with due preference in selection to those who are qualified up to 10 standard wherever they are interested and available in good numbers. This may be relaxed only if no suitable person with this qualification is available.

- ASHA will be chosen through a rigorous process of selection involving various community groups, self-help groups, Anganwadi Institutions, the Block Nodal officer, District Nodal officer, the village Health Committee and the Gram Sabha.

#### In urban areas

- ASHA must be a woman resident of the – “slum/vulnerable clusters” and belong to that particular vulnerable group which have been identified by City/District Health Society for selection of ASHA.
- She should be preferably ‘Married/Widow/Divorced/Separated’ and preferably in the age group of 25 to 45 years.
- ASHA should have effective communication skills with language fluency of the area/population she is expected to cover, leadership qualities and be able to reach out to the community.
- She should be a literate woman with formal education of at least Tenth Class. If there are women with Class XII who are interested and willing they should be given preference since they could later gain admission to ANM/GNM schools as a career progression path.
- The educational and age criteria can be relaxed if no suitable woman with this qualification is available in the area and among that particular vulnerable group.

- A balance between representation of marginalized and education should be maintained.
- She should have family and social support to enable her to find the time to carry out her tasks.
- Adequate representation from disadvantaged population groups should be ensured to serve such groups better.
- Existing women Community workers under other schemes like-urban ASHAs or link workers under NRHM or RCH II, JnNURM, SJSRY etc. may be given preference provided they meet the residency, age and educational criteria mentioned above and are able to provide time for their activities.

## **Availability of ASHA's**

### **In rural areas**

There is one Community Health Volunteer i.e. ASHA (Accredited Social Health Activist) for every village with a population of 1000. The States have been given the flexibility to relax the population norms as well as the educational qualifications on a case to case basis, depending on the local conditions as far as her recruitment is concerned.

### **In urban areas**

- Prior to the selection of ASHA it is important that City/ District health Society undertakes mapping of the city/urban areas with vulnerability assessment of the people living in slums or slum like situations and identifies these "slum/vulnerable clusters" for selection of ASHA.
- The general norm for selecting ASHA in urban area will be "One ASHA for every 1000-2500 population". Since houses in urban context are generally located within a very small geographic area an ASHA can cover about 200-500 households depending upon the spatial consideration.
- When the population covered increases to more than 2500 another ASHA can be engaged. In case of geographic dispersion or scattered settlements of socially and economically disadvantaged groups the "slum/vulnerable clusters" selection of ASHA can be done at a smaller population.
- In cases where a particular geographic area has the presence of more than one ethnic/vulnerable group, selecting more than one ASHA below the specified population norm will be desirable. In such a case one ASHA could be selected for and from a particular vulnerable group so that their specific needs are addressed through an appropriate understanding of the socio-cultural practices of that community.
- The selected ASHAs will be preferably co-located at the Anganwadi Centre that are functional at the slum level, for delivery of services at the door step.
- In urban habitations with a population of 50,000 or less, ASHAs will be selected as in rural areas.

- The other community volunteers built under other government schemes can also be utilized for this purpose.

### Roles and responsibilities

The role of ASHA is that of a community level care provider. This includes a mix of tasks: facilitating access to health care services, building awareness about health care entitlements especially amongst the poor and marginalized, promoting healthy behaviours and mobilizing for collective action for better health outcomes and meeting curative care needs as appropriate to the organization of service delivery in that area and compatible with her training and skills.

### Compensation for ASHA

ASHA worker is primarily a honorary volunteer, but is compensated for her time in specific situations (such as training attendance, monthly reviews and other meetings). In addition she is eligible for incentives offered under various national health programmes. She would also have income from social marketing of certain healthcare products like condoms, contraceptive pills, sanitary napkins etc. Her work should be so designed that it is done without impinging on her main livelihood and adequate monetary compensation for the time she spends on these tasks- through performance based payments should be provided.

### ASHA Benefit Package

ASHAs and ASHA Facilitators to be covered under Pradhan Mantri Suraksha Bima Yojana (Life Insurance). The eligibility criteria are 18-70 years. Cover is for one-year period stretching from 1st June to 31st May and benefit is as under:-

1. Rs. 2 Lakh in case of death due to accident
2. Rs. 2 Lakh in case of total and irrecoverable loss of both eyes or loss of use of both hands or feet or loss of sight of one eye and loss of use of one hand or one foot.
3. Rs. 1 Lakh in case of total and irrecoverable loss of sight of one eye or loss of use of one hand or one foot.

The annual Premium of Rs 12 per beneficiary will be paid by Central Government. ASHAs and ASHA Facilitators meeting the age criteria of 18-50 years to be covered under Pradhan Mantri Jeevan Jyoti Bima Yojana (Accident insurance). The annual premium of Rs. 330 (average) will be paid by the Central Government. Cover is for one-year period stretching from 1st June to 31st May and benefit is Rs 2 Lakh in case of death due to any cause.

ASHAs will get a minimum of Rs.2000/- per month from current Rs 1000/- per month as incentives for routine activities. This is effective from October 2018. This is in addition to other task based incentives approved at Central/State level.

## 2. 'Plasmid DNA vaccine ZyCoV-D is safe and effective for adolescents'

ZyCoV-D vaccine is the world's **first plasmid DNA vaccine for human use.**

DNA, or Deoxyribonucleic Acid, contains the genetic code of various components of an organism.

For the vaccine, the part of the COVID-19 virus that helps it enter the cell and causes disease i-e the spike protein, is coded. When the vaccine is injected into the human body, it produces only the spike protein of the virus and stimulates the immune system to generate antibodies and T-cells immunity against the virus.

This DNA is a laboratory-made structure and is unable to interfere with the genetic composition of humans.

This DNA piece is enclosed by a membrane called plasmid to avoid extracellular degradation and to successfully enter the nucleus of target cells to induce a long-term immune response.

DNA vaccine is very stable at higher temperatures.

The initial development of DNA vaccines in larger animals and human studies showed that DNA is well tolerated and has an excellent safety record.

### Comparison of m-RNA and DNA vaccine

The principle of mRNA vaccines and DNA vaccine are same. Both DNA and RNA vaccines deliver the message to the cell to create the desired protein so the immune system creates a response against this protein.

Both just produces a specific portion of the virus - spike protein in case of corona virus.

Both are laboratory-made structures and not obtained from the actual virus.

DNA and RNA vaccines are being touted for their cost effectiveness and ability to be developed more quickly than traditional, protein vaccines. Traditional vaccines often rely on actual viruses or viral proteins grown in eggs or cells, and can take years and years to develop. DNA and RNA vaccines, on the other hand, can

theoretically be made more readily available because they rely on genetic code—not a live virus or bacteria. This also makes them cheaper to produce.

The COVID-19 vaccine from Pfizer-BioNTech and another developed by Moderna are mRNA vaccines.

However there are some differences:

1. DNA is much easy to prepare in laboratory. DNA based vaccine will be around 10 times cheaper.
2. DNA has to enter the nucleus of the cell to produce the spike protein. m-RNA based vaccine uses Ribosome in the cytoplasm to produce the spike protein. So since in case of DNA vaccine, entry into nucleus is required, safety concerns are more.

### 3. 'Ransomware will dominate the cybercrime landscape'

**In News:**

- **Ransomware Evil, REvil or Sodinokibi, a ransomware-as-a-service (RaaS) operation** has emerged as one of the latest ransomware operators of concern

**Ransomware:**

- Ransomware is malware that **employs encryption to hold a victim's information at ransom**. A user or organization's critical data is encrypted so that they cannot access files, databases, or applications. A ransom is then demanded to provide access.
- It uses **asymmetric encryption**. This is cryptography that uses a pair of keys to encrypt and decrypt a file. **The public-private pair of keys** is uniquely generated by the attacker for the victim, with the private key to decrypt the files stored on the attacker's server.

**Details:**

- The operators of the REvil platform provides adaptable encryptors and decryptors, infrastructure and services for negotiation communications, and a leak site for publishing stolen data when victims don't pay the ransom demand.
- REvil and its affiliates have pulled in a payment of \$2.25 million during the first six months of 2021 including from some **high profile targets like JBS USA Holdings and Brazilian medical diagnostics firm, Grupo Fleury**.

**Challenges:**

### Increasing Ransomware attacks:

- Based on previous trends, cyber experts warn that **ransomware is going to be the major cybercrime in the coming days.**
  - At least 16 different ransomware variants are now exploiting victims by encrypting and stealing/threatening to expose data.
  - Ransomware has been generating billions of dollars in payments to cybercriminals and **inflicting significant damage and expenses for businesses and governmental organizations.**

### Increased digitization and the challenges :

- The **quantum of data created and replicated experienced very high growth in 2020** due to a dramatic increase in the number of people working, learning, and entertaining themselves from home. This data is vulnerable to ransomware attacks.

### Vulnerability of critical sectors:

- **Healthcare has been the most targeted and vulnerable sector in 2020** and the sector continues to be under further attacks by RaaS models.

### Increasing sophistication:

- Cyberthreats are evolving rapidly and becoming more sophisticated and complex with the technology being used for ransomware attacks keeping pace with **protection technology.**
- Attackers are leveraging real-world events to deceive individual victims, enterprises and governments all over the globe.

### Recommendations:

#### Use of deep technology to counter cyber threats:

- An **integrated platform using ML (machine learning) and AI (artificial intelligence)** can provide the necessary impetus to cybersecurity against ransomware attacks.
- Using AI, the frequently observed threat data and multiple threat feeds can be automated and left to **ML algorithms that can decipher attack patterns.**
- **Quantum computing** can be employed to hasten the computing speed of the process to help increase the capacity of such platforms.



## GS 3 : Economy, Science and Technology, Environment

### 4. Why are hydropower projects in the Himalayas risky?

- The Environment Ministry, in an affidavit placed in the Supreme Court earlier this month, has disclosed that it has permitted seven hydroelectric power projects, which are reportedly in advanced stages of construction, to go ahead.
- The seven projects are the **Tehri Stage 2, Tapovan Vishnugadh** (which was impacted by the February flood), **Vishnugadh Pipalkoti, Singoli Bhatwari, Phata Bhuyang, Madhyamaheshwar and Kaliganga 2**.
- One of them is the 512 MW Tapovan Vishnugadh project, in Joshimath, Uttarakhand that was damaged by a flood in February.
- Six months after a devastating flood of rock, ice and debris gushed down the Rishiganga river in Uttarakhand and killed at least 200 and severely damaged two hydropower projects, three Central Ministries, which initially had dissenting views on the future of hydroelectric power projects have agreed to a consensus.

### Critical Analysis

- Environmental activists say that the water Ministry's stand and the government's pushing ahead with the project revealed that the floods of February had failed to jolt the government into realising that hydropower development in the fragile Himalayas was "illogical".
- There were two projects, Singoli Bhatwari and Phata Bhuyang, which were specifically linked to the Kedarnath tragedy. Both have been allowed.
- The Vishnugadh project damaged in the February floods too has been allowed to progress even though 200 plus people died due to the criminal negligence of their not being a disaster warning system.
- The affidavit has the government admitting that the floods have damaged the tunnels and topography of the projects. All of this has changed.

### What's the history of hydel projects in the Himalayas?

- In the aftermath of the Kedarnath floods of 2013 that killed at least 5,000 people, the Supreme Court had halted the development of hydroelectric projects in Uttarakhand pending a review by the Environment Ministry on the role such projects had played in amplifying the disaster.



- A 17-member expert committee, led by environmentalist Ravi Chopra, was set up by the Ministry to examine the role of **24 such proposed hydroelectric projects in the Alaknanda and Bhagirathi basin**, which has the Ganga and several tributaries.
- The **Chopra committee** concluded that 23 projects would have an “irreversible impact” on the ecology of the region.
- Following this, six private project developers, whose projects were among those recommended to be axed, impleaded themselves in the case on the ground that since their projects had already been cleared for construction before the Kedarnath tragedy, they should be allowed to continue.
- The SC directed a new committee to be set up to examine their case. This committee, led by Vinod Tare of the Indian Institute of Technology, Kanpur, concluded that these projects could have a significant environmental impact.
- The Environment Ministry in 2015 set up yet another committee, led by **B.P. Das**, who was part of the original committee, but had filed a “dissenting report”. The Das committee recommended all six projects with design modifications to some.
- The Water Resources Ministry, then led by Minister Uma Bharti, has been consistently opposed to hydropower projects in the Ganga.
- In charge of the National Mission for Clean Ganga, the Water Ministry has maintained that the cleanliness of the river was premised on minimum levels of water flow in all seasons and the proposed projects could hinder this. By 2019, however, the renamed Jal Shakti Ministry had changed its stance to accommodate seven out of the 24 projects. Its current position is that barring these, it is “not in favour” of new projects in the Ganga river basin.
- Though hearings in the Supreme Court are ongoing, this is the first time that the government has a formal uniform position on hydropower projects in the Uttarakhand region.

### **What are the challenges such projects face?**

- Following the break in the Raunthi glacier that triggered floods in the Rishiganga river in Uttarakhand on February 7, which washed away at least two hydroelectric power projects – the 13.2 MW Rishiganga hydroelectric power project and the Tapovan project, environmental experts have attributed the glacial melt to global warming.
- Glacier retreat and permafrost thaw are projected to decrease the stability of mountain slopes and increase the number and area of glacier lakes.
- Moreover, with increased instances of cloudbursts, and intense spells of rainfall and avalanches, residents of the region were also placed at increased risk of loss of lives and livelihood.

### **How can these conflicts be resolved?**

- The challenges facing development in the Himalayan region are multi-faceted. The Uttarakhand government has said that it's paying over ₹1,000 crore annually to purchase electricity and therefore, the more such projects are cancelled, the harder for them to meet their development obligations.
- Several environmentalists and residents of the region say that the proposed projects being built by private companies allot only a limited percentage of their produced power for the State of Uttarakhand itself.
- Thus the State, on its own, takes on massive environmental risk without being adequately compensated for it or its unique challenges accounted for.
- Though the Centre is committed to hydropower projects because it's a renewable source of power, the ecological damage combined with the reduced cost of solar power means that it has in recent times said that it is not in favour of greenfield hydropower projects in the region.
- But several environmental activists say that the Centre will continue to prioritise infrastructural development in the region, even if it comes at a heavy environmental cost.

## 5. ONORC (One Nation One Ration Card)

### ONORC

- The One Nation One Ration Card (ONORC) is an ambitious plan and endeavour of the Department to ensure seamless delivery of subsidised food-security entitlements to all beneficiaries covered under the National Food Security Act, 2013 (NFSA), irrespective of their physical location anywhere in the country.
- The **objective** of this programme is to empower all NFSA beneficiaries to be self-reliant for their food security anywhere in the country, through portability of their same existing ration cards to seamlessly lift their subsidized foodgrains (in part or full) from any ePoS (electronic Point of Sale device) enabled Fair Price Shop in the country with biometric/Aadhaar authentication at the time of lifting the foodgrains through portability. Further, their family members back home can also lift balance/their requirement of foodgrains on the same ration card.
- Further, due to the potential of ONORC to empower migrants, this plan has now also become a part of the "Prime Minister's Technology Driven System Reforms under the AtmaNirbhar Bharat Abhiyan".
- While taking the PDS reforms under End-to-End Computerization of TPDS Operations in the country to a next level, the Department of Food and Public Distribution had started the implementation of a technology driven reform for the nation-wide portability of ration cards under NFSA as an integral part

of a Central Sector Scheme, namely, 'Integrated Management of Public Distribution System (IM-PDS)' from April 2018. This scheme is being implemented with a total outlay of Rs. 127.30 Crore and presently, the validity of this scheme has been extended by the Standing Finance Committee (SFC) up to 31.03.2022 without escalation in the total project cost.

- Although the facility of ONORC shall equally benefit about all 80 Crore NFSA beneficiaries in the country to lift their foodgrains from any FPS of choice, **but it primarily aims to enable migratory NFSA beneficiaries** (mostly labourers, daily-wagers, urban poor like rag-pickers, street-dwellers, temporary workers in organised and unorganised sectors, domestic workers, etc.) who frequently migrate across the country in search of better opportunities or for any other reasons, to access the Public Distribution System (PDS) and if desire, may lift their entitled foodgrains from any ePoS enabled FPS in the country through portability.
- Thus, installation of ePoS devices at the FPSs and Aadhaar seeding of beneficiaries with their digitised ration card data are the two main enablers of this technology driven initiative.
- With respect to publicity and awareness of this high impact programme, the responsibility has been entrusted to the respective State/UT Government, as under TPDS the responsibilities of identification of beneficiaries and distribution of foodgrains to them rests with the States/UTs.
- Besides above, the Department is also making efforts for the promotion, beneficiary outreach and awareness generation of ONORC from time to time. The Department is regularly coordinating with other relevant Ministries/Departments such as MoIB, MoLE, MoHUA, Railways and some other agencies for strategic outreach to beneficiaries and publicity campaigning of the initiative.
- Various Information, Education and Communication (IEC) material in different languages have been developed by the Department with the support of MyGov (MeitY) and other relevant agencies and have shared with States/UTs for use on outdoor/physical and digital publicity mediums, social media, and Government websites/portals/etc.
- The ONORC is also a part of the PM-SVANidhi program of the MoHUA.

### **Mera Ration App**

- From its launch on March 12th 2021, 'Mera Ration' app has recorded over 15 lakh downloads on Google Play Store. The app was launched under One Nation One Ration Card (ONORC) plan to benefit National Food Security Act (NFSA) beneficiaries, particularly migrant beneficiaries to avail maximum benefit of ration cards portability.

- The App has been developed by the Department in technical association with Central NIC Unit - providing a host of useful TPDS/ONORC information and features.
- To facilitate better access and maximum benefit, the app is available in 12 languages viz. English, Hindi, Oriya, Punjabi, Tamil, Telugu, Malayalam, Kannada, Urdu, Gujarati, Marathi and Bangla.
- The App provides the following main features/services to the beneficiaries
- Beside promoting the app from the central level, all States/UTs have also been requested to undertake wide-spread publicity and awareness of this Mobile App- which is envisaged to give a boost to the portability transactions under ONORC, as this application is very useful for the migrant NFSA beneficiaries to easily know their entitlement details, recent transactions details, check Aadhaar seeding status and eligibility for national portability besides doing a voluntary registration for ONORC as well.
- Through the feature of locate nearby Fair Price Shop, the migrant beneficiary can easily find shops in new area and follow the map to reach the closest fair price shop to avail foodgrain benefits.

## 6. Hydroelectric power in India

### What is Hydroelectric power?

- Hydroelectric power is electricity produced from generators driven by turbines that **convert the potential energy of falling water into mechanical energy.**
- **India overtook Japan in 2019 as the fifth largest world hydropower producer by capacity which currently is 50 GW.** Only China, Brazil, the US and Canada have a greater hydropower capacity globally.
- **The country has 197 hydropower plants** capable of producing more than 25 megawatts (MW), according to the International Hydropower Association (IHA), plus nine pumped storage stations accounting for 4,786MW capacity.
- As of 31 March 2020, India's installed utility-scale hydroelectric capacity was 46,000 MW, or 12.3% of its total utility power generation capacity. The public sector accounts for 92.5% of India's hydroelectric power production.
- Additional smaller hydroelectric power units with a total capacity of 4,683 MW (1.3% of its total utility power generation capacity) have been installed.
- **India also imports surplus hydroelectric power from Bhutan.**
- Indian companies have also constructed hydropower projects in Bhutan, Nepal, Afghanistan, and other countries.
- **India is the world's third largest producer and third largest consumer of electricity.** The national electric grid in India has an installed capacity of

383.37 GW as of 31 May 2021. **Renewable power plants, which also include large hydroelectric plants, constitute 37% of India's total installed capacity.**

- Companies engaged in the development of hydroelectric power in India include the National Hydroelectric Power Corporation (NHPC), Northeast Electric Power Company (NEEPCO), Satluj Jal Vidyut Nigam (SJVNL), Tehri Hydro Development Corporation, and NTPC-Hydro.
- With a population of well over a billion people and a fast growing economy, **India's electricity demand is expected to double over the next decade.**

### Advantage of Hydro power

- A renewable source of energy - saves scarce fuel reserves.
- **Non-polluting** and hence environment friendly.
- **Long life** - The first hydro project completed in 1897 is still in operation at Darjeeling is still in operation.
- **Cost of generation, operation and maintenance** is lower than the other sources of energy.
- Hydropower is clean and cheap in long run. It has features like quick ramping, black start and reactive absorption – required for ideal peaking power or spinning reserve.
- Ability to start and stop quickly and instantaneous load acceptance/rejection makes it suitable to meet peak demand and for enhancing system reliability and stability.
- Has **higher efficiency** (over 90%) compared to thermal (35%) and gas (around 50%).
- Cost of generation is **free from inflationary effects** after the initial installation.
- Storage based hydro schemes often provide **attendant benefits** of irrigation, flood control, drinking water supply, navigation, recreation, tourism, pisciculture etc.
- Being located in remote regions leads to **development of interior backward areas** (education, medical, road communication, telecommunication etc.)

### Classification of Hydro power projects:

- Hydro power projects are **classified as large and small hydro projects** based on their sizes.

#### 1) Large Hydropower - Ministry of Power

- India has an estimated **hydropower potential of 1,45,320 MW, excluding small hydro projects (SHPs) which has 20 GW potential.**



- Several hydroelectric projects (HEPs) in India are languishing due to contractual conflicts, environmental litigations, local disturbances, financial stress and unwilling purchasers.
- Only about 10,000 MW of hydropower could be added over the last 10 years.
- **India has close to 100 hydropower plants above 25 MW**, plus nine pumped storage stations. In 2019, it surpassed Japan to become fifth largest in the world for potential hydropower capacity, surpassing 50 GW.

## 2) Small Hydropower - Ministry of New and renewable energy (MNRE)

- India has a history of about 120 years of hydropower.
- In India, hydro power plants of **25MW or below** capacity are classified as small hydro and comes under purview of **Ministry of New and renewable energy (MNRE)**.
- The **first small hydro project of 130 kW commissioned in the hills of Darjeeling in 1897** mark the development of hydropower in India.
- The **Sivasamudram project of 4500 kW** was the next to come up in Mysore district of Karnataka in 1902, for supply of power to the **Kolar gold mines**.
- Following this, there were number of small hydro projects set up in various hilly areas of the country.
- Till the Independence (1947), the country had an installed capacity of 1362 MW, which included 508 MW hydropower projects, mainly small and medium. As per MNRE, **the estimated potential of small hydro power plant is 20 GW** across the country.
- Depending upon the capacity of the project, a Small hydro Project can be classified as below:

1. Micro (up to 100 kW)
2. Mini (101 kW to 2 MW)
3. Small Hydro (2 MW to 25 MW)

- **Hydro Power was being looked after by Ministry of Power prior to 1989** mainly with the help of State Electricity Boards.
- In 1989, plant capacity up to 3MW and below was transferred to the Ministry of New and Renewable Energy (MNRE) and as such 63 MW aggregate installed capacity of 3MW and below hydro projects came within the jurisdiction of MNRE.
- **Subsequently plant capacity up to 25MW and below was entrusted with the MNRE in November 1999.**

### Small Hydro Power Programme

- It is an ongoing programme, however continuation of scheme w.e.f 1st April



2017 onwards is under consideration of the Government.

- The **objective** of the SHP scheme is to encourage the State Government entities and Independent Private Producers (IPPs) to set-up new Small Hydro projects so as to realise the entire 21000 MW potential in phased manner.
- The immediate objective is to encourage IPPs to start work on new projects of aggregate capacity of 1000 MW, in addition to completing the ongoing projects, so as to reach a cumulative capacity of 6000 MW by the year 2022.
- The scheme also envisages support to set-up watermills for electrical and mechanical applications in remote and far-flung areas.

## Hydroelectric Potential in India

- Hydropower potential is located mainly in northern and north-eastern regions.
- **Arunachal Pradesh has the largest unexploited hydropower potential of 47 GW, followed by Uttarakhand with 12 GW.**
- Unexploited potential is mainly along three river systems – the Indus, Ganges and Brahmaputra (see Chart). India has several international issues across these river systems. Like electricity, hydropower should also be brought on the concurrent list to formulate uniform policy and process for faster development.
- **India has over 90 GW of pumped storage potential**, with 63 sites identified and recognised in national energy policies for their valuable grid services.
- India has an estimated **hydropower potential of 1,45,320 MW, excluding small hydro projects (SHPs) which has 20 GW potential.**
- The **estimated potential of Small Hydropower** of 21135.37 MW from 7135 sites for power generation in the country from small / mini hydel projects is assessed by the Alternate Hydro Energy Centre (AHEC) of IIT Roorkee in its Small Hydro Database of July 2016.
- The **hilly States of India** mainly Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir and Uttarakhand, and **constitute around half of this potential.** Other potential States are **Maharashtra, Chhattisgarh, Karnataka and Kerala.**
- **India ranks as the fourth country in the world by undeveloped hydropower potential**, after Russia, China and Canada, and fifth by total potential, surpassed also by Brazil.
- The basin wise assessed potential is as under :-

## Issues in Hydropower generation

- In central India, the hydroelectric power potential from the Godavari, Mahanadi, Nagavali, Vamsadhara and Narmada river basins has not been

developed on a major scale due to potential opposition from the tribal population.

- Hydropower's share in the electricity mix has, however, been decreasing over the years, accounting for around 10 per cent of generation, with the majority (80 per cent) coming from thermal generation.
- Many current hydropower projects have been slow going with delays due to complex planning procedures, prolonged land acquisition and resettlement, a lack of enabling infrastructure including transmission, insufficient market scope and long-term financing.
- Several hydroelectric projects (HEPs) in India are languishing due to contractual conflicts, environmental litigations, local disturbances, financial stress and unwilling purchasers.
- Only about 10,000 MW of hydropower could be added over the last 10 years.
- As **water and water power are State subjects**, the construction of HEPs is often delayed due to conflicts among riparian States – the Subansiri HEP is a prime example of this.

### Solutions for Hydropower

- India is committed to have 40 per cent of its installed capacity from non-fossil fuel sources by 2030, and is pursuing a renewable target of 175 GW by 2022 and 450 GW by 2030. Therefore, hydropower is highly relevant for grid integration of renewable energy and for balancing infirmities.
- Significant reforms made in recent years include the **2008 Hydro Power Policy encouraging private sector participation** and the **2016 National Tariff Policy** on frequency response markets and extended certainty of power purchase agreements.
- The Central Electricity Authority (CEA) and Ministry of Power have also been actively monitoring and fast-tracking priority schemes, notably the 50,000 MW Hydro Electric Initiative.
- The government formally recognised **large hydropower as renewable in 2019**. This means that these **projects built after March that year will be able to benefit from the renewable purchase obligation**. Previously only projects up to 25 MW were considered renewable.
- Policy proposals mooted by observers include **new ancillary service markets**, attributing hydropower full renewable status along with separate purchase obligation benefits, and more integrated planning.
- Draft policies under preparation are expected to support stalled hydropower projects and private sector uptake and could include measures to make hydropower tariffs more competitive.
- In 2020, the country's hydropower sector was heralded for restoring electricity to tens of millions following a huge plunge in demand.

- In 2019, the Teesta-V hydropower station in Sikkim was rated as an example of international good practice in hydropower sustainability, following an independent assessment.
- Courtesy the Draft Electricity (Amendment) Bill 2020, hydropower purchase obligation (HPO) may appear to become a reality soon.

### Way Forward

However, a better option is re-engineering of the power market to treat hydropower as a peaking and grid-balancing power, and also to distribute its higher tariff over the entire energy consumption on a prorata basis.

### Tehri Hydropower Project

- Topping the list of hydroelectric power plants in India is the Tehri Dam in Uttarakhand, the highest hydroelectric power project in the country. It is also the eighth-tallest dam in the world and the second-tallest in Asia.
- Commissioned in 2006, first construction began in 1978 helped by technical collaboration from the former USSR.
- Located at the confluence of the Bhagirathi and the Bhilangana rivers.

### Sardar Sarovar Dam

- This dam counts as the world's second largest concrete dam – after Grand Coulee which sits across River Columbia in the US – in terms of the volume of concrete used in its construction.

## 6. Why is there a push for asset monetisation?

### Context:

- Announcement of the **National Monetisation Pipeline (NMP)**.

### Details:

- In a bid to monetise public assets, the government has released a list of projects and facilities to be offered to private investors over the next four years through **structured leasing and securitisation transactions** under the NMP.

### Challenges and concerns:

### Opportunity costs:

- Experts have warned that the expected boost to economic activity due to higher government spending as envisaged under the NMP may need to be weighed against the opportunity costs.
- Notably 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.**

### Failure to address structural problems in the sector:

- The NMP also does not address the various structural problems in the Indian economy such as **legal uncertainty around such programmes and the absence of a deep bond market that hold back private investment in infrastructure**

### Doubts over private sector involvement:

- The success of the NMP will depend on the demand for brown-field government assets among private investors.
- **Higher valuations and stringent contract conditions may put off private sector interest in the NMP.**

### Impact on the end consumers:

- There are concerns that the leasing of public assets like airports, railways, roads and other public utilities to private investors **could lead to higher prices for end consumers.**
- Also merely ceding control of public utilities to private companies without taking steps to foster greater competition among the bidders will only lead to **poor outcomes for consumers.**

### Scope for political influence:

- The allocation of assets owned by governments to private investors is often subject to political influence, which **can give rise to corruption.**
  - In the past too, doubts have been raised about the allocation of airports and other assets to certain private business groups.

### Conclusion:

- The NMP is no doubt a step in the right direction given that **it offers a good model for infrastructure development in India.** The government would be better able to tackle the ground-level challenges in building infrastructure like

acquisition of land, obtaining of requisite clearances, while the private sector can operate and offer indirect finance to such projects through the NMP.

- However the **implementation will hold the key** in ensuring the success of NMP in boosting economic activity.
  - There should be an **open, competitive auction of assets**.
  - The **assets should be competitively priced** to be able to attract private investors.
  - The contract should be clearly defined with enough **provisions available for dispute resolution**
  - Though the prices of services offered by the private sector would be best determined by market forces, necessary **provisions to ensure that the consumers are not exorbitantly charged** should be involved in the NMP provisions.

#### **7. ISKP has been trying to recruit Indian citizens for past few years**

- Operatives of the Islamic State in Khorasan Province (ISKP) have been making **attempts to radicalize and recruit Indians** for the past few years through social media platforms and messaging applications like Hoop and Telegram
- Notably of concern for India is the fact that **ISKP comprises mainly former cadres of the Pakistan-based anti-India terror organization Lashkar-e-Taiba (LeT)**.
- The United Nations Security Council in one of its latest reports had stated that the ISKP poses a threat to Afghanistan and the wider region.

## GS 2 : Polity, Governance, International Relations

### 1. Chikungunya Vaccine

**In news** International Vaccine Institute (IVI) has announced that Bharat Biotech's Chikungunya vaccine candidate (BBV87) has entered into Phase II and III clinical trials. Currently, there is no commercial chikungunya vaccine.

#### About the Vaccine:

- BBV87 is an **inactivated virus vaccine**, similar to Covaxin.
- Inactivated vaccines contain viruses whose genetic material has been destroyed by heat, chemicals or radiation so they cannot infect cells and replicate, but can still trigger an immune response.
- Bharat Biotech's Chikungunya vaccine candidate was developed in partnership with the International Vaccine Institute (IVI).
- Development of Chikungunya Vaccine is an initiative of the United Nations Development Programme (UNDP), as part of the Global Chikungunya Vaccine Clinical Development Program (GCCDP).
- It was funded by the Coalition for Epidemic Preparedness Innovations (CEPI) with support from the Ind-CEPI mission of the Department of Biotechnology, Government of India.

#### About Chikungunya

- Chikungunya is a **mosquito-borne viral disease** first described during an outbreak in southern Tanzania in 1952.
- The name is derived from the local Kimakonde language and means "to become contorted", evoking the stooped appearance of patients suffering acute joint pain.
- **Transmission:** It is transmitted to people through the bite of an infected mosquito.
  - It is most often spread to people by *Aedes aegypti* and *Aedes albopictus* mosquitoes. These are the same mosquitoes that transmit dengue virus.
  - Mosquitoes acquire the infection by biting infected humans or animals.
  - Weather conditions also affect their breeding and survival.
- **Symptoms:** Include severe joint pain, muscle pain, headache, nausea, fatigue and rashes.



- **Treatment:** Currently, there are no vaccines or antiviral drugs available to cure Chikungunya, and the treatment is only focused on relieving the symptoms associated with the infection.
- **Reasons Behind the Spurt in Cases:** There has been an increasing incidence of vector borne diseases in urban, peri-urban and rural areas because of:
  - Haphazard urbanisation.
  - Deficient water and solid waste management leading to proliferation of mosquito breeding sites.
  - Absence of specific antiviral drug or vaccine.

### **Government Initiatives to Control Chikungunya:**

- National Vector Borne Disease Control Programme (NVBDCP) is a comprehensive programme for prevention and control of vector borne diseases namely Malaria, Filaria, Kala-azar, Japanese Encephalitis (JE), Dengue and Chikungunya.
- It works under the Ministry of Health and Family Welfare.

## **2. Havana Syndrome**

**In news** Nearly four years ago a mysterious neurological illness, referred to as “Havana syndrome”, started to afflict American diplomats and intelligence operatives in Cuba, China, and other countries.

- Now, a report by the National Academies of Sciences (NAS) has found “directed” microwave radiation to be its “plausible” cause.

### **Havana syndrome’**

- In late 2016, US diplomats and other employees stationed in Havana reported feeling ill after hearing strange sounds and experiencing odd physical sensations in their hotel rooms or homes.
- The symptoms included nausea, severe headaches, fatigue, dizziness, sleep problems, and hearing loss, which have since come to be known as “Havana Syndrome”.

### **What causes the ‘Havana syndrome’?**

- Directed pulsed RF energy appears to be the most plausible mechanism in explaining these cases among those that the committee considered.

- The immediate symptoms that patients reported including sensations of pain and buzzing sound apparently emanated from a particular direction, or occurred in a specific spot in a room.

## GS 3 : Economy, Science and Technology, Environment

### 3. QSim Toolkit

**In news:** Quantum Computer Simulator (QSim) Toolkit was launched by the Ministry of Electronics & Information Technology (MeitY).

#### About

- QSim is a first-of-its-kind indigenously developed toolkit that helps in learning and understanding the practical aspects of programming using Quantum Computers.
- QSim provides a platform to acquire the skills of '**programming**' (Quantum Code) as well as '**designing**' real Quantum Hardware.
- It enables the researchers and students to carryout research in Quantum computing in a cost effective manner.
- **Developed** collaboratively by IISc Bangalore, IIT Roorkee and C-DAC with the support of MeitY under the 'Design and Development of Quantum Computer Toolkit (Simulator, Workbench) & Capacity Building' project.
- **Features** - QSim offers a QC Simulator integrated with a Graphic User Interface (GUI) based Workbench allowing people to create Quantum programs.
- QSim helps simulate Quantum circuits with and without noise and test how well various algorithms work with imperfect quantum components.
- It has pre-loaded Quantum programs and algorithms providing a head start to the users.
- **QSim - Offering Model**
  - PARAM SHAVAK QSim - Standalone system with Quantum Simulator in a box
  - PARAM QSim Cloud - Available on cloud using HPC infrastructure PARAM SIDDHI AI (developed under NSM program).

#### 4. India's gendered digital divide:

**Context:** As COVID-19 coursed through countries, governments responded with lockdowns that drove people towards digital marketplaces. Globally, digital adoption escalated by five years in merely two months in 2020.

- India has set a target of reaching a US \$1 trillion digital economy by 2025, a five fold growth from the US \$200 million in 2017-18.

#### Progress of digitalization in the wake of COVID-19 Pandemic

- 500 percent increase in tele-health consultations
- A structural shift towards online shopping with e-retail reaching 95 percent of Indian districts
- Digital payments touching the 100 million transactions per day mark.

#### COVID-19 amplified another trend: The gendered digital divide.

- Indian women are 15 percent less likely to **own a mobile phone**, and 33 percent less likely to use **mobile internet services** than men.
- In 2020, 25 percent of the total adult female population owned a smartphone versus 41 percent of adult men.
- Within Asia-pacific, India had the widest gender gap in internet usage in recent years, a gender gap of 40.4 percent with only 15 percent of women accessing the internet versus 25 percent of men.

**This gendered digital divide is often born out of a triple disadvantage for women in India.**

- First, there is a **rural-urban digital divide**, such that rural broadband penetration is only 29 percent against a national average of 51 percent. Across states, women in rural areas are less likely to own mobile phones.
- Second, there is an **income-based digital divide** between households. Given the average price for data is \$0.68/GB in India, estimates show that each GB of data costs low-income households (earning less than \$2/day) 3% of their monthly income versus 0.2% for middle-income households (earning US \$10-\$20 per day).
- Finally, **intra-household discrimination** prevents women from equitably accessing digital devices within the domestic sphere, which in turn widens the gender-based digital divide.

## Social Factors that excludes women from accessing digital economy

- Even when they are permitted to own or use household-level mobile devices, women's online activity is often **governed by male relatives**.
- While mobile phones are viewed as a risk to women's **reputation** pre-marriage; post-marriage, phone-use is viewed as an interruption to **caregiving responsibilities**.
- Women generally refrain from speaking on their phones in public places, preferring to conduct their conversation within the home, owing to prevailing social norms and **fear of judgement**.
- Digital illiteracy and unfamiliarity with digital platforms deterred women entrepreneurs from moving to online marketplaces post COVID-19.

## Way Forward

It is imperative to not only increase women's smartphone ownership as it assists in internet adoption, but also to accelerate digital literacy programmes and work towards ending digital discrimination based on gender norms.

## 5. Government e-Marketplace (GeM)

On the occasion of World Environment Day, a new product category of Green Room Air Conditioners was launched on the Government e-Marketplace (GeM) under the Sustainable Public Procurement (SPP) program.

### Government e-Marketplace (GeM) and its significance:

- Launched in 2016 to bring transparency, speed and efficiency in the government buying process, the GeM is a one-stop National Public Procurement Portal to facilitate online procurement of common use Goods & Services required by various Government Departments / Organizations / PSUs.
- It is a completely paperless, cashless and system driven e-marketplace that enables procurement of common use goods and services with minimal human interface that provides the tools of e-bidding, reverse e-auction and demand aggregation to facilitate the government users to achieve the best value for their money.
- It has been developed by Directorate General of Supplies and Disposals (Ministry of Commerce and Industry) with technical support of National e-governance Division (MEITY).

- Being an open platform, GeM offers no entry barriers to bonafide suppliers who wish to do business with the Government and also eliminates human interface in vendor registration, order placement and payment processing, to a great extent.
- It facilitates a Single window system for aggregating demands and ordering thus enhancing transparency and ease of buying.
- User friendly dash board for buying and monitoring supplies and payments and is useful for low value buying and also for bulk buying at competitive price using Reverse Auction/ e-bidding.

### **GeM SAHAY project and its importance:**

- Presently out of the 20 lakh sellers on GeM, there are around 7 lakhs MSE sellers and repair suppliers onboard contributing over 56 % of the full order value on GeM, which is a testimony to GeM's success in not solely onboarding but additionally participating with the MSEs to assist them take part in public procurement.
- In a bid to address the credit access challenges faced by MSMEs, the Government e Marketplace (GeM) implemented the SAHAY project in collaboration with the Indian Software Product Industry Round Table (iSPIRT), a non-profit tech thinks tank's volunteer team which is a mobile application for proprietorships which will enable them to avail financing opportunities on the GeM.
- The GeM-SAHAY portal can be used to provide frictionless financing for MSMEs on the Government e marketplace, allowing them to obtain a loan at the point of order acceptance on the GeM platform.
- Using the portal, the loan payment will be instant, rather than the traditional principle of approving the loan, which usually does not end with the actual payment.
- The GeM SAHAY platform is 'lender agnostic,' allowing any lender that is duly regulated by the Reserve Bank of India to participate and provide capital and smart collection accounts to GeM sellers.
- Sellers who apply for the loan facility will have a seamless end-to-end digital experience via a mobile application.

## **6. Animal Discoveries 2020:**

### **Context:**

It is a document published recently by **the Zoological Survey of India (ZSI)**.

- It reveals that 557 new species have been added to India's fauna in 2020, which includes 407 new species and 150 new records.
- The number of faunal species in India has climbed to 1,02,718 species.

### Important Species added:

1. **Trimeresurus salazar**, a new species of green pit viper discovered from Arunachal Pradesh;
2. **Lycodon deccanensis**, the Deccan wolf snake discovered from Karnataka;
3. **Sphaerotheca Bengaluru**, a new species of burrowing frog named after the city of Bengaluru.
4. **Xyrias anjaalai**, a new deep water species of snake eel from Kerala;
5. **Glyptothorax giudikyensis**, a new species of catfish from Manipur;
6. **Clyster galateansis**, a new species of scarab beetles from the Great Nicobar Biosphere.
7. **Myotis cf. frater**, a bat species earlier known from China, Taiwan and Russia, has been reported for the first time from Uttarakhand in India;
8. **Zoothera citrina gibsonhilli**, an orange-headed thrush earlier known from southern Myanmar to south Thailand (central Malay peninsula), was reported for the first time from India based on a collection made from the Narcondam island in the Andaman & Nicobar Islands.

### 7. Zoological Survey of India:

- The Zoological Survey of India (ZSI), a subordinate organization of the Ministry of Environment and Forests was established in 1916.
- It is a national centre for faunistic survey and exploration of the resources leading to the advancement of knowledge on the exceptionally rich faunal diversity of the country.
- It has its headquarters at Kolkata and 16 regional stations located in different geographic locations of the country.

### 8. Gati Shakti Master Plan

Prime Minister on August 15, 2021, announced the 'Pradhan Mantri Gati Shakti National Master Plan' worth Rs 100 trillion.



### About Gati Shakti Master Plan:

- Gati, the Hindi word for speed, aims to boost economic growth (Shakti) through infrastructure building.
- The holistic **infrastructure development programme** known as '**Gatishakti**', plans to improve the productivity of industries and employment opportunities.
- The **Rs 100 trillion project** is aimed at **easier inter-connectivity** between road, rail, air and waterways to reduce travel time and enhance industrial productivity.
- It is considered to be the government's integrated approach to developing **modern railways, roadways, waterways and airways**.

### Significance:

- The production-linked incentive is **likely to generate demand for several other sectors**, including cement, metal, and power, and more importantly, generate employment.
- It would also make manufacturing **globally competitive**.
- Gati Shakti will create opportunities for **new future economic zones**.
- This investment initiative will **boost the post-pandemic economy** and improve the country's indigenous production of technologies to **reduce dependency** on other nations.
- The boost for infrastructure is in line with the government's initiatives to **scale up capital expenditure in infrastructure building** to promote economic growth.
- The plan will become the **basis of India's rejuvenation to manufacture world-class products** using new-age technology and cutting-edge innovation.

### Prelims Practice Questions

**1. Enhanced Access and Service Excellence (EASE), a common reform agenda unveiled by the government is related which of the following sectors?**

- a. Railways
- b. Banking
- c. Micro, Small and Medium Enterprises
- d. Start-up

Answer : b

#### EASE 4.0

- Enhanced Access and Service Excellence (EASE) is a common reform agenda for Public Sector Banks (PSBs), recently unveiled by the Ministry of Finance.
- It is aimed at institutionalizing clean and smart banking.
- The first edition was launched in January, 2018 which aimed at enhancing the ease of banking in all customer experiences, using technology, alternate data, as well as analytics.

**2. With reference to Balance of Payments, which of the following constitutes/constitute the Current Account?**

1. Balance of trade
2. Foreign assets
3. Balance of invisibles
4. Special Drawing Rights

**Select the correct answer using the code given below.**

- a. 1 only
- b. 2 and 3
- c. 1 and 3
- d. 1, 2 and 4

**Answer: c**

**Explanation:**

- The nation's current account is its imports, exports, net income, asset income, and direct transfers.
- It consists of Balance of Trade and Balance of Invisibles.

**3. The Battle of Jamrud was fought between**

- a. British Empire against the Konbaung Dynasty
- b. Timurids under Babur and the Afghans under Ibrahim Lodi
- c. Gorkhali army of the Kingdom of Nepal and the British forces of the East India Company
- d. Emirate of Afghanistan and the Sikh Empire

**Answer: d**

**Explanation:**

The Battle of Jamrud was fought between the Emirate of Afghanistan and the Sikh Empire in 1837. It was the last effort made by Emir Dost Mohammad Khan to recapture the former Afghan winter capital of Peshawar.

**4. Which of the following is the objective of Mission Karmayogi?**

- a. Civil Services Capacity Building
- b. Elimination of manual scavenging
- c. Sustaining agricultural productivity
- d. Pro-Active Governance and Timely Implementation

**Answer : a**

**National Programme for Civil Services Capacity Building (NPCSCB) (Mission Karmayogi)**

- It was approved by the Government on 2nd September, 2020 with the objective of enhancing governance through Civil Services Capacity Building.

- Mission Karmayogi aims to prepare the Indian Civil Servant for the future by making him more creative, constructive, imaginative, innovative, proactive, professional, progressive, energetic, enabling, transparent and technology-enabled.
- NPCSCB has been carefully designed to lay the foundations for capacity building for Civil Servants so that they remain entrenched in Indian Culture and sensibilities and remain connected, with their roots, while they learn from the best institutions and practices across the world.
- The training of Civil Servants at various Academies is being restructured to include optimum use of the digital learning platform of Integrated Government Online Training (iGOT).

**5. Veligonda Project, sometimes seen in the news recently, aims to irrigate drought-affected areas in which of the following states?**

- a. Telangana
- b. Karnataka
- c. Maharashtra
- d. Andhra Pradesh

Answer : d

- The Telangana government had recently wrote to the Union water resources ministry opposing the Centre's funding for Andhra Pradesh's Veligonda project.
- They claimed that the project supposedly diverts water from the Krishna river outside its basin.
- The Veligonda project in Andhra will be undertaken in the Prakasam district with the hope to irrigate drought-affected areas in the districts of Prakasam, Nellore, and Kadapa by diverting floodwater from the Krishna river to the Srisailem reservoir.

**6. A 'black hole' is a body in space which does not allow any radiation to come out. This is due to its**

- a. Large Size
- b. Small Size
- c. Low Density

d. High Density

**Answer: d**

**Explanation:**

A black hole is a celestial body of extreme density and high gravitational pull that does not reflect or emit radiation. It is a body in space that does not allow any radiation to come out. This is due to its High Density.

### **Mains Practice Questions**

**1Q. What are “orphan crops”? How are they significant for ensuring food security globally? (150 words)**

**Approach**

- Define Orphan Crops
- Mention the significance of Orphan Crops in ensuring global food security.
- Give conclusion

**2Q. What is international ethics? Explain its significance with the help of examples. (250 words)**

**Approach**

- Define international ethics.
- Explain its significance with the help of examples.
- Give conclusion.

