News Analysis (19 Dec, 2020)

India-Bangladesh Virtual Summit

Why in News

Recently, **India and Bangladesh** have held a **virtual summit** covering comprehensive discussions on all aspects of bilateral relations and exchanged views on regional and international issues.

> Bangladesh also invited India for the celebration of **50th anniversary of Bangladesh's Independence** in **1971** and **50 years of India-Bangladesh diplomatic relations,** to be held in **March 2021.**

Key Points

- **Signing of Bilateral Documents and Inauguration of Projects:**
    - Sealed **seven agreements** to expand cooperation in **diverse areas** viz. hydrocarbons, elephant conservation, sanitation, and agriculture, and **restored a cross-border rail link** which was in operation till 1965.
    - Inaugurated a **digital exhibition on Mahatma Gandhi and Bangladesh's founder, Sheikh Mujibur Rehman.**
- **Cooperation in Health Sector:**
    - Reiterating the highest priority India attaches to Bangladesh under India's **Neighbourhood First** policy, India assured that **vaccines for Covid-19 would be made available to Bangladesh** as and when produced in India.
    - India also **offered collaboration in therapeutics and partnership in vaccine production.**
    - Bangladesh **appreciated India's conducting capacity building courses** for medical professionals in Bangla language.
- **Cultural Cooperation:**
    - Jointly unveiled a **commemorative postal stamp issued by the Government of India on the occasion of birth centenary of Bangabandhu Sheikh Mujibur Rahman.**
    - India thanked Bangladesh for **issuing a stamp in honour of Mahatma Gandhi** on the occasion of his **150th birth anniversary** celebrations.
    - Bangladesh requested India to consider **Bangladesh's proposal to name** the historic road from Mujib Nagar to Nodia on Bangladesh-India border as ***"Shadhinota Shorok"*** commemorating the historic significance of the road during Bangladesh's Liberation War.

- **Border Management and Security Cooperation:**
    - Agreed to hold an early meeting of the **Joint Boundary Conference** to prepare a new set of strip maps with a view to finalizing the delineation of the boundaries.
    - It was agreed to carry out necessary work to convert the **International Boundary along *Kuhsiyara* river** into a fixed boundary.
        Kuhsiyara river (known as **Barak river in India**) is **one of the transboundary rivers** between India-Bangladesh.
    - Bangladesh reiterated the request for 1.3 km **Innocent Passage through river route along River Padma** (main **channel of Ganga in Bangladesh**) near Rajshahi district (Bangladesh). India assured to consider the request.
    - Stressed on the full implementation of the ongoing **Coordinated Border Management Plan.**
    - Expressed satisfaction on **efforts against smuggling of arms, narcotics and fake currency and to prevent trafficking,** particularly of women and children.
    - Directed officials to expeditiously conclude the Memorandum of Understanding (MoU) in the area of **disaster management cooperation** as both countries are prone to frequent natural disasters.
    - Bangladesh requested for early implementation of **India's commitment to remove remaining restrictions on entry/exit from land ports in India** for Bangladeshis travelling on valid documents in a phased manner.
- **Trade Partnership for Growth:**
    - Bangladesh has appreciated the **Duty-Free and Quota Free access** given to Bangladeshi exports to India under **South Asian Free Trade Area** (SAFTA) since 2011.
    - Emphasized on addressing issues of **non-tariff barriers and trade facilitation** including port restrictions, procedural bottlenecks and quarantine restrictions so that both countries can take full advantage of SAFTA flexibility.
    - Directed the officials to expeditiously conclude the ongoing joint study on the **prospects of entering into a bilateral Comprehensive Economic Partnership Agreement** (CEPA).
    - Welcomed the **first meeting of the India-Bangladesh Textile Industry Forum** and directed the officials to conclude the ongoing negotiations on various MoUs on increased linkages and collaboration in the textile sector.

- **Connectivity for Prosperity:**
    - Jointly inaugurated the **newly restored railway link between Haldibari** (India) and **Chilahati** (Bangladesh) and noted that this rail link will further strengthen trade and people to people ties between the two sides.
    - Welcomed the signing of the second addendum to the **Protocol on Inland Water Transit and Trade** (PIWTT).
    - Agreed to an early operationalization of the **Bangladesh-Bhutan-India-Nepal (BBIN) initiative Motor Vehicles Agreement** through the expeditious signing of the Enabling MoU for Bangladesh, India and Nepal to commence the movement of goods and passengers, with provision for Bhutan to join at a later date.
    - Bangladesh expressed keen interest in the ongoing **India Myanmar Thailand trilateral highway project** and sought the support of India for enabling Bangladesh to connect with this project.
    - Satisfaction on commencement of a temporary **Air Travel Bubble** to facilitate the urgent requirements of travellers on both sides.
- **Cooperation in Water Resources, Power and Energy:**
    - Bangladesh highlighted the need for **early signing of an interim agreement for sharing of the Teesta waters**, as agreed upon by both the governments in 2011.
    - Underscored the need for early conclusion of **Framework of Interim Agreement** on sharing of waters of six joint rivers, namely, Manu, Muhuri, Khowai, Gumti, Dharla and Dudhkumar.
    - Recalled the positive contribution of the **Joint Rivers Commission** (JRC) and looked forward to the next round of Secretarial level JRC meeting at the earliest.
    - Agreed to expedite implementation of projects including **India-Bangladesh Friendship Pipeline, Maitree Super Thermal Power Project** as well as other projects.
    - Welcomed the signing of the **Framework of Understanding on Cooperation in the Hydrocarbon Sector** which would further augment energy linkages by streamlining investments, technology transfer, joint studies, training and promoting **hydrocarbon** connectivity.
    - Agreed to enhance cooperation in energy efficiency and clean energy, including in **biofuels.**
- **Forcibly Displaced Persons from the Rakhine State of Myanmar (Rohingya):**

    India appreciated the generosity of Bangladesh in **sheltering and providing humanitarian assistance to** the 1.1 million forcibly displaced **persons from the Rakhine State of Myanmar,** in the **Rohingya Crisis.**

- **Partners in the Region and the World:**
    - India thanked Bangladesh for supporting India in its election to the **United Nations Security Council.**
    - Both countries agreed to continue working together towards achieving early reforms of the UN Security Council, combating **climate change**, attainment of the **Sustainable Development Goals** (SDGs) and protection of the rights of migrants.
    - Highlighted that regional organisations such as the **South Asian Association for Regional Cooperation** (SAARC) and **the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation** (BIMSTEC) have an important role to play.
    - Bangladesh thanked India for convening the **SAARC leaders Video Conference in March 2020** and for creation of the **SAARC Emergency Response Fund** to counter effects of the global pandemic in the South Asian region.
    - Bangladesh will assume chairmanship of the **Indian Ocean Rim Association** (IORA) in **2021** and requested the support of India for working towards greater maritime safety and security.
    - Bangladesh appreciated the work of the **New Development Bank** and thanked India for inviting Bangladesh to join the institution.

Source: PIB

SC Stays Andhra HC Order to Examine Constitutional Breakdown

Why in News

Recently, the **Supreme Court** (SC) has stayed an **Andhra Pradesh High Court** (HC) order intending to embark on a **judicial enquiry into whether there is a constitutional breakdown in the State machinery,** requiring a declaration of **President's rule (Article 356).**

> A three-judge bench headed by **Chief Justice of India S A Bobde** found the order **disturbing** and will take up the matter later on after vacations.

Key Points

- **Andhra Pradesh High Court's Move:**

  While hearing a clutch of ***habeas corpus*** petitions in **October 2020,** it ***suo motu*** **summoned the State counsel** to assist it in deciding "whether in circumstances prevailing in the State, the **court can record a finding that there is constitutional breakdown or not".**

  - **Habeas Corpus** is a **Latin term** which literally means **'to have the body** of'. Under this the court issues an order to a person who has detained another person, to produce the body of the latter before it.
  - This **writ** is a **bulwark of individual liberty against arbitrary detention** and can be issued **against both public authorities as well as private individuals.**
- **State Government's Appeal:**
  - The HC **framed the question in an unprecedented manner** and **without any basis or pleadings** by any of the parties to that effect.
  - It highlighted that **Article 356,** which deals with **failure of Constitutional machinery in a State,** is a **power exclusively vested in the executive** and **not the judiciary.**
  - Under the Constitutional framework, it is **not for the Courts to decide** as to whether there is a Constitutional breakdown in a State as they **do not have any judicially discoverable and manageable standards to determine** so.
  - The said fact is **essentially an executive function and is necessarily required to be based on a detailed factual analysis.**
  - The HC order is a **serious encroachment on the powers of the executive** as enumerated under the Constitution and is **violative of the doctrine of separation of powers** and thus, **violative of the basic structure of the Constitution.**
    - Separation of powers is the **division of the legislative, executive, and judicial functions** of government.
    - Since the sanction of all three branches is required for the making, executing, and administering of laws, it **minimises the possibility of arbitrary excesses by the government.**
    - The constitutional demarcation **precludes the concentration of excessive power by any branch** of the government.

President's Rule

- It implies the **suspension of a state government** and the **imposition of direct rule of the Centre.** It is also known as **'State Emergency'** or **'Constitutional Emergency'.**

- The SC in ***Bommai case 1994*** **enlisted the situations** where the exercise of power under Article 356 could be used.
    - One such situation is that of **'Hung Assembly'**, i.e. where after general elections to the assembly, no party secures a majority.
- The President's rule is imposed through the invocation of **Article 356** of the Constitution **by the President on the advice of the Union Council of Ministers** (executive).
    - If the President, upon **receipt of the report from the Governor of the State** or otherwise, is satisfied that a situation has arisen in which the government of the State cannot be carried on in accordance with the provisions of the Constitution.
- **Parliamentary Approval and Duration:**
    - A proclamation imposing President's Rule **must be approved by both the Houses of Parliament within two months** from the date of its issue.
    - The approval **takes place through simple majority** in either House, that is, a majority of the members of the House present and voting.
    - **Initially valid for six months**, the President's Rule can be **extended for a maximum period of three years** with the approval of the Parliament, every six months.

Source: TH

World Minorities Rights Day

Why in News

The **National Commission for Minorities** celebrated **World Minorities Rights Day** on **18th December 2020.**

The United Nations on 18th December, 1992 adopted the Statement on the individual's Rights belonging to religious or Linguistic National or Ethnic Minorities.

Key Points

- The **National Commission for Minorities Act, 1992** in Section 2(c) of the Act defines a minority as "a community notified as such by the Central government".
    - In India, this applies to **Muslim, Christians, Sikhs, Buddhist, Parsis (Zoroastrian)** and **Jain religions.**
- As per ***TMA Pai Foundation vs. State of Karnataka case*** (2002) in the Supreme Court, a minority, either linguistic or religious, is determinable only by reference to the demography of the State and not by taking into consideration the population of the country as a whole.

- **Constitutional Provisions Related to Minorities:**
  - The term **"Minority"** is **not defined** in the Indian Constitution. However, the Constitution recognises religious and linguistic minorities.
  - **Article 29:** It provides that any section of the citizens residing in any part of India having a distinct language, script or culture of its own, shall have the right to conserve the same.

    However, the Supreme Court held that the scope of this article is not necessarily restricted to minorities only, as use of the word **'section of citizens'** in the Article **includes minorities as well as the majority.**
  - **Article 30:** All minorities shall have the right to establish and administer educational institutions of their choice.

    The protection under Article 30 is confined **only to minorities** (religious or linguistic) and does not extend to any section of citizens (as under Article 29).
  - **Article 350-B:** Originally, the Constitution of India did not make any provision with respect to the Special Officer for Linguistic Minorities. However, the 7^{th} Constitutional Amendment Act, 1956 inserted Article 350-B in the Constitution.

    It provides for a **Special Officer for Linguistic Minorities** appointed by the President of India.

National Commission for Minorities

- **Genesis:**
  - In 1992, with the enactment of the **NCM Act, 1992,** NCM was formed.
  - In 1993, the first **Statutory National Commission** was set up and five religious communities viz the **Muslims, Christians, Sikhs, Buddhists and Zoroastrians** (Parsis) were notified as minority communities.
  - In 2014, **Jains** were also notified as a **minority community.**
- **Composition:**
  - NCM consists of a **Chairperson, a Vice-Chairperson and five members** and all of them shall be from amongst the **minority communities.**
  - Total of **7 persons to be nominated by the Central Government** should be from amongst persons of eminence, ability and integrity.
  - **Tenure:** Each Member holds office for a **period of three years** from the date of assumption of office.

- **Functions:**
    - **Evaluation of the progress** of the development of minorities under the Union and States.
    - Monitoring of the working of the **safeguards for minorities** provided in the Constitution and in laws enacted by Parliament and the state legislatures.

        Example - **National Commission for Minority Education Institution (NCMEI) Act, 2004**: It gives the minority status to the educational institutions on the basis of six religious communities notified by the government.
    - It ensures that the **Prime Minister's 15-point programme** is implemented and the programmes for minority communities are actually functioning.
    - Looking into **specific complaints regarding deprivation of rights and safeguards of minorities** and taking up such matters with the appropriate authorities.
    - It investigates **matters of communal conflict and riots.**

Source:PIB

Bitcoins

Why in News

Recently, **Bitcoin,** the **cryptocurrency**, has crossed **20,000 US dollars** in value.

- Bitcoin's price has **always been volatile,** and there is **no clear explanation** for its current rise.
- **Cryptocurrency** is a specific type of virtual currency, which is decentralised and protected by cryptographic encryption techniques.

    Bitcoin, Ethereum, Ripple are a few notable examples of cryptocurrencies.

Key Points

- **Introduction:**

    Bitcoin is a type of digital currency that enables instant payments to anyone. Bitcoin was **introduced in 2009.** Bitcoin is based on an open-source protocol and is **not issued by any central authority.**
- **History:**

    The origin of Bitcoin is unclear, as is who founded it. A person, or a group of people, who went by the identity of **Satoshi Nakamoto** are said to have conceptualised an accounting system in the aftermath of the **2008 financial crisis.**

- **Use:**

  Originally, Bitcoin was intended to provide an **alternative to fiat money** and become a universally accepted **medium of exchange directly between two involved parties.**

  Fiat money is a **government-issued currency** that is **not backed by a commodity such as gold.**

  - It gives central banks **greater control over the economy** because they can control how much money is printed.
  - Most modern paper currencies, such as the **US dollar and Indian Rupee are fiat currencies.**

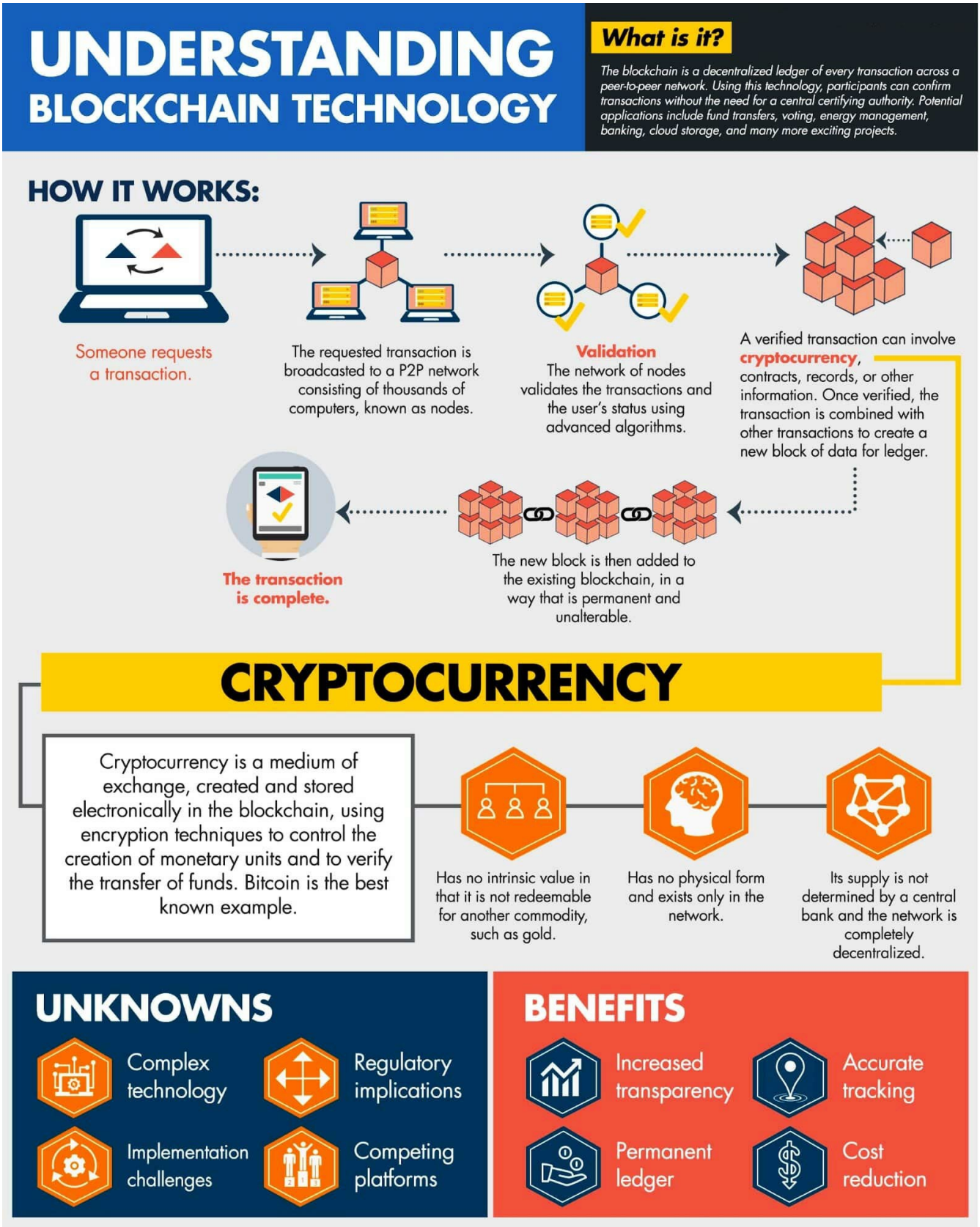
- **Record of Bitcoins (Blockchain):**
  - All the transactions ever made are contained in a **publicly available, open ledger,** although in an anonymous and an encrypted form called a **blockchain.**

    Transactions can be denominated in **sub-units of a Bitcoin.**

    Satoshi is the smallest fraction of a Bitcoin.
  - **Blockchain** is a **shared, immutable ledger** that facilitates the **process of recording transactions and tracking assets in a business network.**

    An asset can be **tangible** (a house, car, cash, land) or **intangible** (intellectual property, patents, copyrights, branding).
  - Virtually **anything of value can be tracked and traded on a blockchain network,** reducing risk and cutting costs for all involved.
    - A simple **analogy for understanding blockchain technology** is a **Google Doc.**
    - When one creates a document and shares it with a group of people, the document is distributed instead of copied or transferred.
    - This creates a **decentralized distribution chain that gives everyone access to the document at the same time.**
  - It needs to be noted that **other usage and applications of Blockchain technology** have emerged in the last few years.
    - The government of Andhra Pradesh and Telangana have **put the land records on the blockchain technology** owing to its easy traceability feature.
    - Election Commission (EC) officials are exploring the **potential of using blockchain technology to enable remote voting.**

- **Acquiring Bitcoins:**
    - One **can either mine a new Bitcoin** if they have the computing capacity, **purchase them via exchanges,** or **acquire them in over-the-counter, person-to-person transactions.**
    - **Miners** are the people who validate a Bitcoin transaction and secure the network with their hardware.
        - The Bitcoin protocol is designed in such a way that new Bitcoins are created at a fixed rate.
        - No developer has the power to manipulate the system to increase their profits.
        - One unique aspect of Bitcoin is that only **21 million units** will ever be created.
    - A **Bitcoin exchange** functions like a bank where a person **buys and sells Bitcoins with traditional currency.** Depending on the demand and supply, the **price of a Bitcoin keeps fluctuating.**
- **Bitcoin Regulation:**
    - The supply of bitcoins is **regulated by software and the agreement of users of the system** and cannot be manipulated by any government, bank, organisation or individual.
    - Bitcoin was intended to come across as a **global decentralised currency,** any central authority regulating it would effectively defeat that purpose.
    - It needs to be noted that multiple governments across the world are **investing in developing Central Bank Digital Currencies (CBDCs),** which are digital versions of national currencies.
- **Legitimacy of Bitcoins (or cryptocurrencies) in India:**
    - **In the 2018-19 budget speech,** the Finance Minister announced that the **government does not consider cryptocurrencies as legal tender** and will take all measures to eliminate their use in financing illegitimate activities or as a part of the payment system.
    - **In April 2018, Reserve Bank of India (RBI)** notified that entities regulated by it should not deal in virtual currencies or provide services for facilitating any person or entity in dealing with or settling virtual currencies.
        However, the **Supreme Court struck down the ban** on trading of virtual currencies (VC) in India, which was imposed by the RBI.
    - The **Supreme Court** has held that **cryptocurrencies** are in the nature of commodities and hence they **can not be banned.**
- **Possible Reasons for the Rise in the Value of the Bitcoin:**
    - Increased acceptance during the **pandemic.**
    - Global **legitimacy from large players** like payments firm PayPal, and Indian lenders like State Bank of India, ICICI Bank, HDFC Bank and Yes Bank.
    - Some **pension funds** and **insurance funds** are **investing in Bitcoins.**



Source:IE

E20 Fuel

Why in News

Recently, the Indian government has invited public comments for introducing adoption of **E20 fuel to promote green fuel like ethanol.**

Key Points

- **Composition:** E20 fuel is **a blend of 20% of ethanol with gasoline.**
  The **current permissible level of blending is 10% of ethanol,** though India reached **only 5.6% of blending in 2019.**
- **Significance:**
  - It will help in **reducing emissions of carbon dioxide,** hydrocarbons, etc.
  - It will help **reduce the oil import bill,** thereby saving foreign exchange and boosting energy security.
- **Compatibility of Vehicles:** As per the government, the **compatibility of the vehicle to the percentage of ethanol** in the blend of ethanol and gasoline shall be defined by the vehicle manufacturer and the same shall be **displayed on the vehicle by putting a clearly visible sticker.**

Green Fuel

- **Green fuel, also known as biofuel**, is a type of fuel **distilled from plants and animal materials,** believed by some to be more environmentally friendly than the widely-used fossil fuels that power most of the world.

- **Types:**
  - **Bioethanol**
    - It is **derived from corn and sugarcane** using the fermentation process.
    - A **litre** of **ethanol** contains approximately **two thirds of the energy provided by a litre of petrol.**
    - When mixed with petrol, it **improves the combustion performance** and **lowers the emissions of carbon monoxide and sulphur oxide.**
  - **Biodiesel**
    - It is **derived from vegetable oils** like soybean oil or palm oil, **vegetable waste oils,** and **animal fats** by a biochemical process called **"Transesterification."**
    - It produces very less or no amount of harmful gases as compared to diesel.
  - **Biogas**
    - It is **produced by anaerobic decomposition of organic matter** like sewage from animals and humans.
    - Major proportion of biogas is methane and carbon dioxide, though it also has small proportions of hydrogen sulfide, hydrogen, carbon monoxide and siloxanes.
    - It is commonly **used for heating, electricity and for automobiles.**
  - **Biobutanol**
    - It is produced in the same way as bioethanol i.e. through the fermentation of starch.
    - The **energy content in butanol is the highest among the other gasoline alternatives.** It can be added to diesel to reduce emissions.
    - It **serves as a solvent in the textile industry** and is also used as a base in perfumes.
  - **Biohydrogen**
    - Biohydrogen, like biogas, **can be produced using a number of processes such as pyrolysis, gasification or biological fermentation.**
    - It can be the **perfect alternative for fossil fuel.**

- **Initiatives to Promote Biofuels:**
    - **Ethanol Blended Petrol (EBP) programme**: To extract the fuel from surplus quantities of food grains such as maize, jawar, bajra fruit and vegetable waste.
    - **Pradhan Mantri JI-VAN Yojana, 2019**: The objective of the scheme is to create an ecosystem for setting up commercial projects and to boost research and development in the 2G Ethanol sector.
    - **GOBAR (Galvanizing Organic Bio-Agro Resources) DHAN scheme, 2018:** It focuses on managing and converting cattle dung and solid waste in farms to useful compost,biogas and bio-CNG, thus keeping villages clean and increasing the income of rural households.

        It was launched under Swachh Bharat Mission (Gramin).
    - **Repurpose Used Cooking Oil (RUCO)**: It was launched by the **Food Safety and Standards Authority of India (FSSAI)** and aims for an ecosystem that will enable the collection and conversion of used cooking oil to biodiesel.
    - **National Policy on Biofuels, 2018:**
        - The Policy categorises biofuels as "Basic Biofuels" to enable extension of appropriate financial and fiscal incentives under three categories:
            - **First Generation** (1G) ethanol & biodiesel and "Advanced Biofuels".
            - **Second Generation** (2G) ethanol, Municipal Solid Waste (MSW) to drop-in fuels.
            - **Third Generation** (3G) biofuels, bio-CNG etc.
        - It **expands the scope of raw material for ethanol production** by allowing use of sugarcane juice, sugar containing materials like sugar beet, sweet sorghum, starch containing materials like corn, cassava, damaged food grains like wheat, broken rice, rotten potatoes, unfit for human consumption, for ethanol production.
        - The Policy **allows use of surplus food grains for production of ethanol** for blending with petrol with the approval of National Biofuel Coordination Committee.
        - With a **thrust on Advanced Biofuels,** the Policy indicates a viability gap funding scheme for 2G ethanol Bio refineries of Rs. 5000 crore in 6 years in addition to additional tax incentives, higher purchase price as compared to 1G biofuels.

Way Forward

- India being a large agricultural economy, there is a large amount of agricultural residues available, therefore the scope of producing biofuels is immense in the country. **Biofuels can help in rural and agricultural development in the form of new cash crops.**
- Efforts for producing sustainable biofuels should be made by ensuring use of wastelands and municipal wastes that get generated in cities. **A properly designed and implemented biofuel solution can provide both food and energy.**
- A **community-based biodiesel distribution programme** that benefits local economies, from the farmers growing the feedstock to local businesses producing and distributing the fuel to the end consumer, will be a welcome step.

Source: PIB

ISRO's Satellite Launch: CMS-01

Why in News

Recently, the **Indian Space Research Organisation** (ISRO) has launched a communications satellite, CMS-01, on board its **Polar Satellite Launch Vehicle** (PSLV - C50) from the Satish Dhawan Space Centre, Andhra Pradesh.

> Previously in November 2020, ISRO launched India's **Earth Observation Satellite, EOS-01**, and nine other customer satellites.

Key Points

- **CMS-01** is a **communications satellite** envisaged for providing services in extended **C Band frequency spectrum.**
  > The C band is a designation for a portion of the **electromagnetic spectrum in the microwave range of frequencies ranging from 4.0 to 8.0 gigahertz (GHz).**
- Its **coverage** will include the Indian mainland, and the Andaman & Nicobar and Lakshadweep islands.
- The satellite is expected to have **a life of more than seven years.**
- The satellite was injected precisely into its predefined sub- **Geo-synchronous Transfer Orbit (GTO)**. Eventually, it will be placed into its specified slot in the **Geo-Synchronous Orbit** after a series of manoeuvres.

- CMS-01 will **replace and enhance the services of GSAT-12.**
    GSAT-12, a communication satellite built by ISRO, provides facilities for various communication services like **Tele-education, Tele-medicine** and for **Village Resource Centres (VRC).**
        To provide the space based services **directly to the rural areas,** ISRO has launched the Village Resource Centres (VRCs) programme in association with NGOs/Trusts and state/central agencies.
- **Next Launch of ISRO (PSLV-C51):**
    - **PSLV-C51,** will be the next special mission for ISRO, as it will **be carrying the country's first satellite under the space reforms programme** announced by the Indian government.
        - The government had announced the opening up of the **space sector to private players** with the inception of **Indian National Space Promotion and Authorisation Centre** (IN-SPACe).
        - The IN-SPACe is expected to **hand-hold, promote and guide the private industries** in space activities through encouraging policies and a friendly regulatory environment.
    - **Satellites to be on board PSLV-C51:**
        Pixxel India named **'Anand', 'Satish Sat'** from Space Kidz India, **'Unity Sat'** from a consortium of universities.

Polar Satellite Launch Vehicle

- India's Polar Satellite Launch Vehicle (PSLV) is the **third generation** launch vehicle.
- PSLV is the **first launch vehicle which is equipped with liquid stages.**
- PSLV's first successful launch was in October 1994. PSLV was used for two of the most important missions. These are **Chandrayaan-1** in 2008 and **Mars Orbiter Spacecraft** in 2013.
- **Geosynchronous Satellite Launch Vehicle (GSLV) Mark II** and **GSLV MkIII** are other two launch vehicles.
    - **GSLV Mk II** is the largest launch vehicle developed by India, which is currently in operation. This **fourth generation launch vehicle** is a three stage vehicle with four liquid strap-ons. The **indigenously developed cryogenic Upper Stage (CUS),** which is flight proven, forms the third stage of GSLV Mk II.
    - **GSLV MkIII,** chosen to launch Chandrayaan-2 spacecraft, is a **three-stage heavy lift launch vehicle** developed by ISRO. The vehicle has two solid strap-ons, a core liquid booster and a cryogenic upper stage.
        GSLV Mk III is designed to carry a 4 ton class of satellites into Geosynchronous Transfer Orbit (GTO) or about 10 tons to Low Earth Orbit (LEO), which is about twice the capability of the GSLV Mk II.

Geo-Synchronous Orbit

A **geo-synchronous orbit** is a high Earth orbit that allows satellites to match **Earth's rotation.** Located at 22,236 miles above Earth's equator, this position is a valuable spot for monitoring weather, communications and surveillance.

Geo -synchronous Transfer Orbit

- To attain geosynchronous (and also geostationary) Earth orbits, a spacecraft is first launched into an **elliptical orbit.** This is called a **Geo -synchronous Transfer Orbit** (GTO).
- A GTO is **highly elliptic.** Its perigee (closest point to Earth) is typically as high as **low Earth orbit** (LEO), while its **apogee** (furthest point from Earth) is as high as **geostationary** (or equally, a geosynchronous) orbit.

Source:TH

Systems Handed Over to Defence Services

Why in News

Recently, the **Defence Minister** has handed over the **Indian Maritime Situational Awareness System** (IMSAS), **ASTRA Mk-I** and **Border Surveillance System** (BOSS) to the Navy, Air Force and Army respectively.

- The **Defence Research and Development Organisation** (DRDO) laboratories have **indigenously developed these three systems** which will lead to higher self-reliance in defence technologies.
- The Defence Minister has also given away **awards to DRDO scientists for outstanding contributions** in various categories.

Key Points

- **Indian Maritime Situational Awareness System (IMSAS):**
  - It is a **state-of-the-art and high performance intelligent software system** that provides **Global Maritime Situational Picture, marine planning tools** and **analytical capabilities** to Indian Navy.
  - It also provides **Maritime Operational Picture** from naval headquarters to each individual ship in sea to enable naval command and control.
  - **Centre for Artificial Intelligence and Robotics** (CAIR), Bengaluru and Indian Navy has **jointly conceptualised** and developed the product and **Bharat Electronics Limited** (BEL), Bengaluru has implemented it.

- **ASTRA Mk-I:**
    - It is the indigenously developed **first Beyond Visual Range** (BVR) **Missile,** which can be launched from **Sukhoi-30, Light Combat Aircraft** (LCA), **Mig-29** and **Mig-29K.**
        Globally, very few countries have expertise and capabilities to design and produce this class of weapon system.
    - The missile is **designed to engage and destroy highly manoeuvring supersonic aircraft.** The missile has **all weather day and night capability.**
    - Successful development of ASTRA weapon system by **Defence Research and Development Laboratory** (DRDL) Hyderabad and production by **Bharat Dynamics Limited** (BDL), Hyderabad is a major contribution towards **Atmanirbhar Bharat.**
- **Border Surveillance System (BOSS):**
    - It is an **all-weather electronic surveillance system** successfully designed and developed by **Instruments Research and Development Establishment** (IRDE), Dehradun.
    - The system has been **deployed at Ladakh border** area for day and night surveillance and facilitates monitoring and surveillance by **automatically detecting the intrusions in harsh high-altitude sub-zero temperature areas** with remote operation capability.
- **Awards for Outstanding Contributions:**
    - **DRDO Lifetime Achievement Award, 2018:**
        Awarded to N V Kadam for his contributions for developing control and guidance schemes for missiles.
    - **Excellence awards** were given to **academia and industry** for technology absorption.
    - Besides, individual awards, team awards, technology spin-off awards, techno managerial awards and **awards in other categories were also given.**

Source: PIB
