

**CURRENT EVENTS  
AND  
ANALYSIS  
(December 2020)  
INDIAN ECONOMY**

**Editor**

**R.C. Reddy**

**R.C. REDDY IAS STUDY CIRCLE**

H.No. 3-6-275, Opp. Telangana Tourism Development Corporation,  
Near Telugu Academy, Himayatnagar, Hyderabad - 500 029.

Phone No. : 040-23228513; 040-27668513; 040-27612673;  
9346882593; 9573462587

Email : [rcreddyiasstudycircle1989@gmail.com](mailto:rcreddyiasstudycircle1989@gmail.com)

# **CURRENT EVENTS AND ANALYSIS**

## **CONTENTS**

### **DECEMBER 2020 CURRENT AFFAIRS: Economy section**

<b>Index</b>	<b>PageNo:</b>
Auction of Spectrum for Mobile Services	1
Bhaupur- Khurja Section Eastern Dedicated Freight Corridor Inaugurated	3
Scheme for Setting up Public Wi-Fi Hotspots in the Country Approved	6
Universal Service Obligation Fund to Be used for Providing Mobile Coverage in Arunachal Pradesh and Assam	8
Submarine Optical Fibre Cable Connectivity between Kochi and Lakshadweep Islands	10
Prime Minister's Address at the Indian Mobile Congress	11
Metro Services Will Reach 25 Cities by 2025 : Prime Minister	14
Prime Minister Flags off 100th Kisan Rail	16
Industrial Nodes in Andhra Pradesh, Karnataka, Multi Modal Logistics Hub and Multi Modal Transport Hub at Greater Noida	18
Interest Subvention Scheme for Ethanol Production Plants Expanded to Expand Distillation Capacity and Increase Production	22
India Ranked 131st in Human Development Report 2020	25
Planetary-Pressures Adjusted HDI	28

---

# **ECONOMY**

---

## **Auction of Spectrum for Mobile Services**

- On December 16, 2020, the Union Government approved to conduct auction of spectrum for commercial mobile services.

### **What is Spectrum?**

- Spectrum is the lifeblood of wireless services.
- It refers to the invisible radio frequencies that wireless signals travel over.
- Wide number of everyday services like television, radio broadcasting, mobile phones, wifi communication, Global Positioning System (GPS) depends on spectrum.
- It may be noted here that the radio frequencies we use for wireless communication are only a portion of the electromagnetic spectrum.
- The electromagnetic spectrum includes a variety of other waves including X-ray waves, infrared waves and light waves.

### **How Spectrum is Measured?**

- The electromagnetic spectrum is divided according to the frequency of these waves, which are measured in Hertz (i.e. waves per second).
- Radio waves are typically referred to in terms of:
  - kilohertz (or kHz), a thousand waves per second,
  - megahertz (or MHz), a million waves per second, and
  - gigahertz (or GHz), a billion of waves per second

### **What is Spectrum Auction?**

- Spectrum auction is a transparent process through which mobile service providers bid for the spectrum and get licenses to provide services.

### **Objectives of Auction:**

Auction is conducted to

1. promote competition in bidding,
2. discover fair price for the spectrum, and
3. maximise revenues for the Government.

The Government fixes base price as the basis for bidding.

### **Whether Spectrum is Licensed through Auctions for All Type of Services:**

- A country's radio spectrum is a critical asset, and is therefore carefully managed by the national government.

- 
- Governments decide whether spectrum should be licensed for all types of services or not.
  - Accordingly, spectrum is classified as licensed and unlicensed spectrum.
  - **The vast majority of radio spectrum is licensed.**
  - National regulators control access to this spectrum through a licensing framework.
  - This licensing framework grants a service provider exclusive rights to use a certain frequency band in certain areas and for certain time.

#### **Present Auctions:**

- The Government announced auctions for spectrum in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz frequency bands.
- **Validity Period:** Spectrum license will be valid for 20 years.
- **Total Spectrum Offered at Present:** 2251.25 MHz
- **Reserve Price:** Rs. 3,92,332.70 crore.
- Mobile service providers have to bid for more than this reserve price.
- In case there is inadequate response to this price from bidders, the Government might consider revising the reserve price. In some instances, mobile service providers do not participate in bidding when in their analysis the reserve price is too high and might not be profitable to them.

#### **Revenues to the Government:**

- Government gets two types revenues through spectrum auctions.
  1. Spectrum license charges, and
  2. Percentage of Adjusted Gross Revenue of service providers.

#### **Spectrum License Payment:**

- Successful bidders may pay entire bid amount in one go (upfront) or may exercise an option to pay a certain amount (25% for spectrum won in 700 MHz, 800 MHz, 900 MHz bands or 50% for spectrum won in 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz bands) upfront and remaining amount in a maximum up to 16 equated annual instalments, after a moratorium of two years.

#### **Adjusted Gross Revenue (AGR):**

- In addition to the bid amount, successful bidders will also have to pay **3% of the Adjusted Gross Revenue (AGR)** excluding wireline services as **spectrum usage charges** for the spectrum won through this auction.

#### **Additional Information:**

#### **Licensed and Unlicensed Spectrum Services:**

- Spectrum is regulated in two ways, either through a spectrum licence or it is licence exempt (i.e. unlicensed).

---

### **Licensed Services:**

Generally, licences are given to

- Mobile services,
- Satellite broadcasting (Television channels),
- Terrestrial broadcast of radio and television,
- Satellite communication,
- Aviation system and traffic control,
- Maritime communication and navigation,
- Global Positioning System.

### **License Exemption:**

- The following services are exempt from licenses.
- Wi-Fi communication,
- Bluetooth communication
- X- ray missions,
- Cordless phones,
- TV remote controls

### **How Mobile Communication Works?**

- A mobile phone sends and receives information (voice or data) by radio communication.
- A mobile phone user's voice is converted into digital data, which is transmitted via radio waves to the network operator's nearest base station.
- Base stations are positioned in networks of overlapping cells, to ensure mobile phone users are always within range of a base station.
- There are a number of different digital radio technologies that are used for transmitting signals between mobile phones and base stations - including 2G, 3G and 4G that use increasingly efficient methods of coding signals on to radio waves creating faster data connections.
- These increasingly spectrum efficient technologies mean more data can fit into a specific amount of spectrum.

### **Bhaupur- Khurja Section Eastern Dedicated Freight Corridor Inaugurated**

- On December 29, 2020, Prime Minister Narendra Modi inaugurated the 351-km Bhaupur-Khurja section of Eastern Dedicated Freight Corridor.
- He also inaugurated the Operation Control Centre of Eastern Dedicated Freight Corridor at Prayagraj.

### **What are Dedicated Freight Corridors:**

- These are special tracks laid exclusively for movement freight (goods).
- In 2006, the Union Government approved to construct a total of 3,362 km dedicated freight corridor.

- 
- It consists of two segments.
  - Eastern Dedicated Freight Corridor : 1856 km
  - Western Dedicated Freight Corridor: 1506 km
  - Total cost of Both Corridors: **Rs. 81, 459 crores.**

**Source of Funds:**

- The cost for the project is funded by a combination of debt from bilateral/multilateral agencies, equity from Ministry of Railways and Public Private Partnership.

**Special Purpose Vehicle:**

- Ministry of Railways has set up a Special Purpose Vehicle '**Dedicated Freight Corridor Corporation of India Limited (DFCC)**', for mobilization of financial resources and construction, operation and maintenance of the dedicated freight corridors.

**Eastern Dedicated Freight Corridor :**

- Eastern Dedicated Freight Corridor connects Punjab's industrial city of Ludhiana with Dankuni in West Bengal.
- It passes through **six states:** Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand and West Bengal.
- There are coal mines, thermal power plants and industrial cities in this route. Feeder routes are also being constructed to connect to the corridor.

**Western Dedicated Freight Corridor:**

- Western Dedicated Freight Corridor connects Jawaharlal Nehru Port Trust (JNPT), Mumbai in Maharashtra to Dadri in Uttar Pradesh (via Vadodara-Ahmedabad-Palanpur-Phulera-Rewari).
- This corridor of about 1500 kms. It will have feeder routes for major ports of Mundra, Kandla, Pipavav, Dahej and Hazira in Gujarat.

**Industrial Corridors:**

- The Delhi-Mumbai Industrial Corridor and Amritsar-Kolkata Industrial Corridor are also being developed around these two freight corridors.

**Additional Corridors:**

- In addition to the above two corridors, Ministry of Railways has decided to undertake Detailed Project Reports (DPR) for new Dedicated Freight corridors on the following routes :

1. East Coast corridor- Kharagpur to Vijayawada
2. East-West Sub-corridor (i) - Bhusaval-Wardha-Nagpur-Rajkharswan-Kharagpur-Uluberia-Dankuni
3. East-West Sub-corridor (ii) - Rajkharswan-Kalipahari-Andal
4. North - South sub-corridor - Vijayawada- Nagpur-Itarsi

**Need for Dedicated Freight Corridors:**

- At present, both Passenger trains and Goods trains ply on the same track.

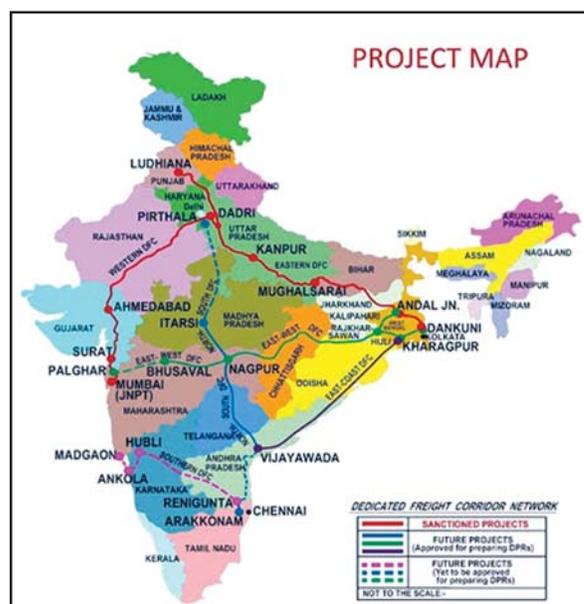
- Due to increase in population and growth of economy, the number of passenger trains and freight trains increased. Hence, existing track has become congested.
- As a result, the speed of the goods trains is slow.
- Passenger trains are also facing delay as they are stopped at stations to give way to goods trains

### Advantages of Dedicated Freight Corridors:

1. **Speedy movement of freight** like coal, cement, iron & steel, fertilizers, Petroleum Oil and Lubricants (POL), etc.
2. **Boost to industrialisation** particularly industrially backward eastern India. 60 percent of the dedicated freight corridor falls in UP.
3. **Significant contribution to reduction of greenhouse gas emissions.** Freight movement is expected to shift from road network to rail network as it is more efficient and facilitates faster movement.
4. The problem of frequent delays of passenger trains will also be addressed.

### Salient Features of Dedicated Freight Corridors:

- **Wider Tracks:** The tracks of dedicated freight corridors have larger width than present tracks. This facilitates carrying more volume of goods due to more load carrying capacity.
- **Double Stack Containers:** Freight would be carried in double stack containers. At present, single track containers are used.
- **Larger Length of Train:** The tracks are also designed to carry large number of wagons than the present. The present freight train length is 700 metres while that of the dedicated freight corridors is 1500 metres.
- **Higher Speed:** The speed of the freight trains would increase to 100 km per hour due to dedicated corridors.



---

## **Scheme for Setting up Public Wi-Fi Hotspots in the Country Approved**

- On December 9, 2020, the Union Government approved setting up of Public Wi-Fi hotspots in the country through Prime Minister Wi-Fi Access Network Interface (PM WANI) scheme.

### **Background:**

- This initiative was **recommended by the Telecom Regulatory Authority of India (TRAI)** in 2017 to deepen internet penetration in the country through provision of cheap internet connectivity. Mobile internet data is costlier when compared with Wi-Fi networks.
- According to TRAI, in **most major economies, for 50%-70 % of their total usage time, mobile users use Wi-Fi technology to communicate.**
- However, in India, this figure is **less than 10%**.
- Service providers had in 2018 stated that they aimed to provide 5 lakh hotspots by March 31, 2019 and 10 lakh hotspots by September 30, 2019. However, these targets have not been achieved.

### **How the (PM WANI) scheme would be Implemented?**

#### **Public Data Offices (PDOs):**

- **Public Data Offices (PDOs)** - comparable to a public call office (PCO) or a cybercafe - will establish, maintain, and operate Wi-Fi access points and deliver broadband services to subscribers.
- **Public Data Offices (PDOs)** would be setup across length and breadth of the country to accelerate proliferation of **Broadband Internet services through Public Wi-Fi network** in the country.
- A Public Data Office (PDO) could be the owner of a grocery store or kirana shop and even a pan vendor, and does not need a licence or registration.
- PDOs will have to buy bandwidth from telecom companies and internet service providers and resell them to consumers.

#### **Public Data Office Aggregators (PDOA):**

- Public Data Offices Aggregators (PDOAs) will provide the entire backend support to Public Data Offices.
- Centre for Development of Telematics (C-DOT), the technology development centre of the Department of Telecom (DoT), has developed a platform to provide services to PDOAs for applications such as authorisation, authentication, accounting, voucher management and linking to payment gateways.

#### **App for Registration of Users:**

- An App will be developed to register users and discover PM-WANI compliant Wi-Fi hotspots in the nearby area and display the same within the App for accessing the internet service.

- 
- No registration will be required for PDOs, the PDOAs and app providers will get themselves registered with the Department of Telecommunications through an online registration portal without paying any registration fee.
  - Registration will be granted within seven days of the application, else they will be deemed registered.

#### **Accessing Public Wi-Fi Services:**

- Those who want to access Wi-Fi should open the Wani App and choose from a list of all PM-Wani PDOAs providing connectivity.
- These will also be rated through user experience and user could choose whom to buy bandwidth from and also the amount of time you wish to access, buy a voucher online and start using the service.

#### **2 Million Wi-Fi Access Points Target:**

- The government is targeting a four-fold increase in public Wi-Fi access points to 2 million by the end of 2021.
- C-DoT, the technology development centre of the Department of Telecom (DoT), is working to make 'Wi-Fi access boxes' widely available at around **half the market price**.
- Details of the Scheme.

#### **Significance of the Scheme:**

- No License Fee for providing broadband internet services using public Wi-Fi Hotspots.
- Hence, the PM-WANI scheme will
  1. deepen internet penetration across the length and breadth of the country.
  2. provide cheap internet services through WI-FI which benefits small businesses and students,
  3. provide employment opportunities to small businessmen who set up WI-FI services,
  4. ensure ease of living, and
  5. contribute to digital India.

#### **Debate over Necessity and Viability of PM WANI Scheme:**

- While the PM -WANI scheme has many advantages, the necessity of viability of public Wi-Fi networks in India has also been called into question.
- Several tech-giants like Facebook and Google already have tried free public Wi-Fi services and failed.
- In 2017, social media company Facebook had launched Express Wi-Fi. The project made little impact.
- Google's Station project, to provide free Wi-Fi in more than 400 railway stations across India and "thousands" of other public places, was launched in 2015. It was shut down earlier this year (2020).

- 
- Google cited cheaper and more accessible mobile data as major reasons for shutting down the programme.
  - At present mobile data rates have fallen drastically in India and are the cheapest in the world.
  - In 2017, when Telecom Regulatory Authority (TRAI) recommended public Wi-Fi hotspots mobile data was expensive. One GB data cost was around Rs. 200. This was to be used over one month. However, with the entry of Reliance Jio into the telecom sector, data rates have fallen drastically. At present, for less than Rs. 200 a month, mobile service providers are offering 1.2 GB data daily

#### **Security Threats:**

- There is also threat of hacking or unapproved access to personal information from mobile phones while using public Wi-Fi hotspots.
- To overcome this limitation, the Indian public Wi-Fi hotspot network envisages that the access to the Internet through these points will be permitted only through electronic Know Your Customer (KYC) and other security protocols based authentication system. ,This minimises the risk of network security being compromised.

#### **Universal Service Obligation Fund to Be used for Providing Mobile Coverage in Arunachal Pradesh and Assam**

- On December 9, 2020, the Union Government approved Universal Service Obligation Fund Scheme for providing Mobile Coverage in Arunachal Pradesh and two Districts of Assam namely Karbi Anglong and Dima Hasao.
- This initiative is part of Comprehensive Telecom Development Plan (CTDP) for North Eastern Region (NER).

#### **Details:**

- The project envisages providing 4G mobile coverage to **2374 uncovered villages (1683 in Arunachal Pradesh and 691 in two districts of Assam)**.
- **Estimated cost of implementation** : Rs.2,029 crore including operational expenses for five years.
- **Funding:** The project would be funded by Universal Service Obligation Fund.
- **Completion:** The project is targeted to be completed by December, 2022.

#### **Benefits:**

- The provisioning of mobile services in the remote and difficult uncovered areas of Arunachal Pradesh and two districts of Assam will lead to following benefits.
- enhanced digital connectivity,
- facilitation of learning, dissemination of information and knowledge,
- skill up gradation and development,
- disaster management services,

- 
- e-governance initiatives,
  - e-commerce facilities,
  - support educational institutes for knowledge sharing.

### **What is Universal Service Obligation Fund (USOF)?**

- Provision of telecom services in rural areas is financially not viable as they generate lower revenue due to
  - lower population density,
  - low income, and
  - lack of commercial activity.
- Due to above reasons, telecom service providers do not adequately serve backward and rural areas.
- Hence, the New Telecom Policy - 1999 (NTP'99) provided for setting up of **Universal Service Obligation Fund (USOF)**.
- The USOF fund was set up by the Government in 2002 with the aim of universalising telecom services access and bridge the digital gap between rural and urban areas in the country
- The Government levies '**Universal Access Levy (UAL)**', which is a percentage of the annual revenue earned by the operators under licenses.
- At present this levy is **5 per cent of adjusted annual gross revenues of telecom companies**.
- The amount collected through the fund is deposited in Universal Service Obligation Fund (USOF).
- In the past, the fund was also used for subsidising rural landline services by paying the difference in rental actually charged from rural subscribers and rent prescribed by Telecom Regulatory Authority of India (TRAI).
- **At present, the USOF fund is used for setting up telecom infrastructure for provision of Mobile Services in Rural and Remote Areas and laying optical fibre cable network to increase broadband speeds in remote and strategically important areas like Andaman & Nicobar Islands, Lakshadweep islands.**
- The USOF fund is also being used for implementation of BharatNet project which aims to connect all the 2,50,000 Gram Panchayats in the country for providing broadband connectivity in the Gram Panchayats.
- Non-discriminatory access to the network will be provided to all the telecom service providers. These access providers like mobile operators, Internet Service Providers (ISPs), Cable TV operators, content providers can launch various services in rural areas.
- Various applications for e-health, e-education, e-governance etc. will be provided.
- The project is being executed by a Special Purpose Vehicle (SPV) namely Bharat Broadband Network Limited (BBNL).

---

### **Present Funds in the USOF:**

- As on August 2020, Rs. 1,10,023 crores were collected under the Universal Service Obligation Fund. Out of these, 54,490 crores has been utilised and 55,533 crores is remaining unutilised balance.
- Since, there is lot of unutilised balance in USOF and also the overall tele-density in the country has increased since the introduction of the levy in 2002, the telecom companies are demanding reduction of 'Universal Access Levy (UAL) to 3 % from the present 5 % of adjusted annual gross revenue.

### **Submarine Optical Fibre Cable Connectivity between Kochi and Lakshadweep Islands**

- On December 9, 2020, the Union Government approved provision of Submarine Optical Fibre Cable Connectivity between Kochi and Lakshadweep Islands.
- The Project envisages provision of a direct communication link through a dedicated submarine Optical Fibre Cable (OFC) between Kochi and 11 Islands of Lakshadweep viz. Kavaratti, Kalpeni, Agati, Amini, Androth, Minicoy, Bangaram, Bitra, Chetlat, Kiltan&Kadmat.
- **What is Optical Fibre Connectivity?**
- Optical Fibre (also called as fibre optics) has revolutionised the telecommunications industry.
- It enables telecommunications networks to transfer information (data) over long distance with high bandwidth and high data speed.
- Fiber optics **transmit data in the form of light particles** - or photons - that pulse through a fiber optic cable. As data is transferred in the light particles, it can travel longer distances without needing much signal boost.
- For providing optical fibre connectivity to Lakshadweep Islands optical fibre cables are laid through undersea cables in the Arabian sea from Kochi, Kerala.

### **Cost of Implementation:**

- **Rs. 1072 crore** including operational expenses for **5 years**.
- The Project would be funded by Universal Service Obligation Fund.
- **Completion Date:** The project is targeted to be completed by May 2023.
- **Implementation Agency:** Bharat Sanchar Nigam Ltd. (BSNL) has been nominated as Project Execution Agency

### **Need for the Project:**

- Union Territory of Lakshadweep comprising a number of Islands is **situated in the Arabian Sea** and of **strategic significance for India**.
- Presently **only medium of providing telecom connectivity to Lakshadweep is through satellites**, but the bandwidth available is limited to 1 Gbps.
- Lack of bandwidth is a major constraint in providing data services like e-governance, e-education, e-banking etc. for inclusive growth of society.

- 
- Hence, the Union Government decided to lay submarine optical fibre cable to Lakshadweep Islands.

### **Benefits of the Project:**

- Provision of Submarine Optical Fibre Cable Connectivity will vastly improve telecommunication facility in the Lakshadweep Islands by providing large bandwidth and will facilitate provision of following services.
- delivery of e-Governance services at the doorstep of citizens,
- potential development of fisheries, coconut based industries and high-value tourism,
- educational development in term of tele-education and in health care in terms of telemedicine facilities.
- It will help in establishment of numerous businesses, augment e-commerce activities and provide adequate support to educational institutes for knowledge sharing.
- The Lakshadweep Islands have the potential to become a hub of logistic services.

### **Prime Minister's Address at the Indian Mobile Congress**

- On December 8, 2020, Prime Minister Narendra Modi delivered the virtual address at the Indian Mobile Congress.

### **Highlights of the PM's Address:**

#### **1. Call for Making India a Hub of Telecom Equipment:**

The Prime Minister gave a call to work together to make India a global hub for telecom equipment, design, development and manufacturing.

#### **2. Handling of Electronic Waste:**

The Prime Minister stated that due to technological upgradation, there is a culture of replacing handsets and gadgets frequently. He asked the delegates to ponder whether the industry can form a task-force to think of a **better way of handling the electronic waste**.

#### **3. Roll out of 5G:**

The Prime Minister urged to work together to ensure a timely roll-out of 5G to leapfrog into the future and empower millions of Indians.

### **What is 5G Technology?**

- 5G is the 5th generation mobile network.
- It is a new global wireless standard after 1G, 2G, 3G, and 4G networks.
- 5G network **enables greater speeds than 4G**. 4G facilitates video streaming of content. But increasing demand is leading to congestion of networks.
- 5G is will support
- **significantly faster mobile broadband speeds than 4G,**
- **extensive mobile data usage** - as well as

- **enable the full potential of the Internet of Things.**
- From **virtual reality and autonomous cars, to the industrial internet and smart cities, 5G** will be at the **heart of the future of communications.**
- (Internet of Things refers to connecting devices and objects through internet connectivity. Consumer products, durable goods, cars and trucks, industrial and utility components, sensors, and other everyday objects are being combined with Internet connectivity).

		3G	4G	5G
	Deployment	2004-05	2006-10	2020
	Bandwidth	2mbps	200mbps	>1gbps
	Latency	100-500 milliseconds	20-30 milliseconds	<10 milliseconds
	Average Speed	144 kbps	25 mbps	200-400 mbps

Latency is a measure of delay. In a network, latency measures the time it takes for some data to get to its destination across the network.

#### ***Other Details of Prime Minister's Speech:***

##### **Role of Mobile Technology:**

- The Prime Minister stressed that it is because of mobile technology that Government is able to provide benefits citizens like helping the poor and vulnerable quickly during the pandemic.
- **Billions of cashless transactions** are taking place daily which boost formalisation and transparency and we will also enable a smooth contactless interface on toll booths.

##### **On the Role of Telecom Technology During Pandemic:**

- The Prime Minister stated that **digital technology and virtual communication tools have proved their extraordinary worth during challenging times of covid-19.**
- The Prime Minister stated that the **world was functional despite the pandemic due to their innovation and efforts.**
- The digital Technology has enabled us to **liberalise work from home systems.**
- **85% of IT operations are being worked from home.**
- He added that due to mobile technology that a son was connected with his mother in a different city, a student learnt from his teacher without being in the classroom, a patient consulted his doctor from his home and a trader connected with a consumer/ from a different geography.

---

### **Need to Think of How to Use Emerging Technology to Improve the Lives:**

- The Prime Minister said it is important to **think and plan how to improve lives with the upcoming technology revolution**. He added that **better healthcare, better education, better information and opportunities for our farmers, better market access for small businesses** are some of the goals that can be worked on.

### **India Emerging as One of the Most Preferred Destinations for Mobile Manufacturing:**

- The Prime Minister expressed satisfaction on achieving success in mobile manufacturing in India and stated that India is **emerging as one of the most preferred destinations for mobile manufacturing**.
- He added the **Production Linked Incentive scheme** was introduced **to promote telecom equipment manufacturing in India**.
- He stated that the Government aims to bring **high speed fibre-optic connectivity in every village** over the **next three years**. He said that towards this end, focus is made exclusively on places which can make the best out of such connectivity - **Aspirational Districts, Left wing extremism affected districts, North Eastern states, Lakshadweep Islands etc.**
- He also stated that **greater spread of fixed line broadband connectivity and public Wi-Fi hotspots** will be ensured.

### **Additional Information:**

Information about The **previous generations of mobile networks: 1G, 2G, 3G, and 4G.**

#### **First generation - 1G**

- 1980s: 1G delivered **analog voice**.

#### **Second generation - 2G**

- Early 1990s: 2G introduced **digital voice** (e.g. CDMA- Code Division Multiple Access).
- Analog and digital are the types of signals for transmitting information.

#### **Third generation - 3G**

- Early 2000s: 3G brought **mobile data** (e.g. CDMA2000).

#### **Fourth generation - 4G LTE**

- 2010s: 4G LTE ushered in the **era of mobile broadband (faster data transfer)**.

#### **Fifth Generation -5G:**

- 2020 Onwards: **With high speeds, superior reliability and negligible latency**, 5G will expand the mobile ecosystem into new realms.
- 5G will impact every industry, making **safer transportation, remote healthcare, precision agriculture, digitized logistics** - and more - a reality.
- South Korea is the first country to launch 5G services. It launched 5G service in June 2020.

---

## **Metro Services Will Reach 25 Cities by 2025 : Prime Minister**

- On December 28, 2020, Prime Minister Narendra Modi inaugurated India's first-ever driverless train operations on Delhi Metro's Magenta Line through a video conference.
- He also launched expansion of National Common Mobility Card to the Airport Express Line of Delhi.
- National Common Mobility Card (NCMC) was launched in 2019 in Ahmedabad.
- It is a regular RuPay debit card issued by the banks which will have a wallet facility. The amount can be transferred to wallet and can be used for payments while using public transport (metro, bus, suburban railways) and for paying parking fee, toll fee. It facilitates contactless payment.
- The Prime Minister stated that it is important responsibility of the Government to prepare the country today for future requirements.

### **Highlights of the Prime Minister Speech:**

#### **Urbanization an Opportunity:**

- The Prime Minister stated that urbanisation should not be seen as a challenge but used as an opportunity to **build better infrastructure in the country and enhance Ease of Living.**

#### **Expansion of Metro Network:**

- The Prime Minister stated that in 2014, only 5 cities had metro rail and today, metro rail is available in 18 cities.
- By the year 2025, metro services will be available in more than 25 cities.
- In 2014, only 248 km of metro lines were operational in the country and today it is more than 700 kilometers. By the year 2025, it would be expanded to 1700 km.
- The Prime Minister stated that the expansion of metro network is a proof of Government's work on **ease of living and fulfilment of aspirations middle class citizens in the country.**

#### **Reduction of Pollution:**

- He stated that **metro today is no longer just a medium of public transport but a great way to reduce pollution. Thousands of vehicles** have been **reduced from the road** due to the metro network, which used to cause **pollution** and **traffic congestion.**

#### **Different Modes of Metro:**

- The Prime Minister stated that modern modes of transport should be used according to the needs of the people of the city and work is being done on different types of metro rail in different cities.
- The Prime Minister listed different types of metro rail on which work is being carried out. On the Regional Rapid Transit System (RRTS) between Delhi and Meerut, the Prime Minister said it will reduce the distance of Delhi and Meerut to less than an hour.
- In cities where passenger numbers are less, work is being done on the MetroLite version. MetroLite version would be constructed at 40 percent cost of normal metro.

- 
- Similarly, Metro Neo is being worked in cities where the ridership is less. It would be built at the cost of 25 percent of the normal metro.
  - Similarly, water metro would be an out of the box thinking. For cities where there are large water bodies, the water metro is now being worked on. This will provide last mile connectivity to the people near the islands.

#### **Boost to Make in India:**

- The Prime Minister said with the expansion of metro services, Make in India is getting a boost.
- **Make in India reduces costs, saves foreign exchange, and gives more employment to people in the country itself.** He stated that standardization of rolling stock has reduced the cost of every coach from 12 crores to 8 crores now.
- He stated that today, four big companies are manufacturing metro coaches in the country and dozens of companies are engaged in the manufacture of metro components. This is helping Make in India as well as the campaign for self-reliant India.

#### **How Make in India Got a Boost?**

- When the first line of Delhi Metro was inaugurated in 2002, the coaches were imported as CBUs (Completely Built Units) from Germany and South Korea.
- Sustained indigenization initiatives taken by the Delhi Metro Rail Corporation (DMRC) have resulted in 90 percent of the Delhi Metro trains being manufactured in India.
- Conditions were built into contracts to promote indigenization
- The contract conditions in DMRC train contracts mandates a cap on **upper limit of 25% for production abroad** while the **balance of the contract order has necessarily to be manufactured in India** either through **tie ups** or a **wholly owned subsidiary**.
- This has resulted in major coach manufacturing companies setting up production facilities within the country.
- Four metro coach manufacturing units have already been established in India.
- Bombardier Transportation, a Canadian multinational company, has a unit in Savli, Gujarat.
- State owned Bharat Earth Movers Limited has a unit in Bengaluru.
- Alstom, a French company, has also established a new facility at Sricity near Chennai in Tamil Nadu.

#### **Support to ancillary industries:**

- Besides manufacturing coaches in the country, 18 major sub systems of these coaches, have also been indigenized in the country in a phased manner. This has led to lot of ancillary industry and skilled man power development in house. Window glasses, battery boxes, brake blocks, bogie frames, vacuum circuit breakers, Propulsion etc are being manufactured in India now.

---

## Exports:

- Manufacturing units set up to supply Metro trains to DMRC are now exporting to other countries as the cost of manufacturing is cheap in India.
- Bombardier's India unit, which is a major supplier to Delhi Metro, got its first export order in 2012 for supply of components for trains in Adelaide. Since then it has supplied components and railway coaches for projects in Victoria, and Queensland in Australia, Sao Paulo in Brazil, and Riyadh in Saudi Arabia. It
- Alstom is executing metro projects in several Indian cities including Mumbai, Chennai, Kochi & Lucknow. It is supplying Rolling Stock manufactured out its state of the art facility at Sri City in Andhra Pradesh to Montreal (Canada) and Sydney (Australia).

## Consolidation of Governance and Delivery Systems to Strengthen the Country:

- The Prime Minister stated that the Government is consolidating governance and delivery systems to strengthen the country.
- **One Nation, One Fastag** has made travel seamless on highways across the country. This has saved commuters from jam and delays.
- **One Nation, One Tax i.e. GST** has ended the complications in the tax system and has brought uniformity in indirect tax system.
- **One Nation, One Power Grid**, is ensuring adequate and continuous power availability in every part of the country. Power loss is reduced.
- With **One Nation, One Gas Grid**, Seamless Gas Connectivity is being ensured of the parts where gas-based life and economy used to be a dream earlier.
- **One Nation, One Health Insurance Scheme** i.e. Ayushman Bharat through which millions of people from India are taking advantage anywhere in the country.
- **One Nation, One Ration Card** has relieved the citizens migrating from one place to another to avail their monthly rations from anywhere in the country.
- Similarly, the country is moving in the direction of **One Nation, One Agriculture Market** due to new agricultural reforms and arrangements like e-NAM.

## Prime Minister Flags off 100th Kisan Rail

- On December 28, 2020, Prime Minister Narendra Modi flagged off the 100th Kisan Rail from Sangola in Maharashtra to Shalimar in West Bengal via video conferencing.

## What are Kisan Rails?

- Kisan rails **provide air-conditioned wagons for transportation of perishable commodities like perishable products like fruits, vegetables, milk and fish.**
- The Union Government gives 50 per cent subsidy on rail freight for transportation of notified fruits and vegetables through ' Kisan Rail'.
- Eligible Items under subsidy include Fruits- Mango, Banana, Guava, Kiwi, Litchi, Papaya, Mousambi, Orange, Kinnow, Lime, Lemon, Pineapple, Pomegranate, Jackfruit, Apple, Almond, Aonla, Passion fruit and Pear;

- 
- Vegetables - French beans, Bitter Gourd, Brinjal, Capsicum, Carrot, Cauliflower, Chillies (Green), Okra, Cucumber, Peas, Garlic, Onion, Potato and Tomato.
  - Any other fruit/vegetable can be added in future based on a recommendation by the Ministry of Agriculture or State Government.
  - In the last four months 100 kisan rails (Farmers' Trains) have been launched by the Union Government.
  - The initiative is part of **Union Government's effort to double the income of farmers.**

### **Advantages of Kisan Rails:**

#### **1. Newer and Bigger Markets:**

- Kisan rails **open up newer and bigger markets in other States to farmers** for perishable commodities like milk, fruits, and vegetables and increases the chances of better price realisation for their produce due to availability of transport facilities to wide markets.

#### **2. Faster and Cheaper Mode of Transport:**

- It is **faster and cheaper mode of transport** when compared with road transport. At present, most of the transport takes place through trucks on road. But the time consumed for transportation and cost of transportation is high through roads.
- For instance, Kisan train from West Bengal to Maharashtra reach in about 40 hours, whereas it takes several days to cover a distance of more than 2,000 kilometres by road. The train will have stopovers at major stations in several states. That is, the Kisan Rail also carries the goods of the farmers to and fro from many markets enroute the destination. As far as freight charge is concerned, the freight of the train on this route is about Rs. 1700 less than the truck.
- The Prime Minister stated that though the **massive railway network existed connecting every part of the country since independence**, it was **not exploited for the benefit of the farmers.**

#### **3. Benefit to Small Farmers:**

- No minimum quantity has been fixed to transport through Kisan Rail so that, even the smallest produce will be able to reach the big market properly at a low price.
- This benefits country's 80% small and marginal farmers, who constitute the backbone of the agrarian economy. The smallest consignment sent by a farmer was a three kg packet of pomegranate while a poultry farmer sent 17 dozen eggs using this service.
- Farmers in India now have an option today to send their produce to that part of the country where there was a demand for a particular crop or fruit.
- West Bengal's farmers and fishermen could now find a bigger market in Maharashtra's major cities such as Mumbai, Pune and Nagpur while Maharashtra's farmers have found a cheaper alternative to sell their produce in West Bengal's markets.

---

### **Increase in Frequency:**

- Earlier, the 'Kisan Rail' was being run only once a week. But due to increase demand, these are running three times a week.

### **Storage Infrastructure:**

- The Prime Minister stated that **lack of cold storage facilities had often resulted in losses for farmers.**
- Hence, perishable Cargo Centers are being set up near railway stations across the country, where the farmer can store his produce.
- Under the PM Krishi Sampada Yojana, about 6,500 projects like mega food parks, cold chain infrastructure, agro processing clusters, processing units, have been sanctioned. Many of these projects have been completed and lakhs of farmer families are getting the benefit.
- Under the self-reliant campaign package, Rs. 10,000 crore has also been sanctioned for micro food processing industries.

### **Additional Information:**

- The first Kisan Rail, ex Devlali (Nashik, Maharashtra) to Danapur (Patna, Bihar), was inaugurated on August 7 - as a weekly train. Subsequently, on popular demand, the train has been extended to Muzaffarpur (Bihar), and has also been made bi-weekly. In addition, link coaches - from Sangla and Pune - have also been introduced which joins this Kisan Rail at Manmad.
- Second Kisan Rail - from Anantapur (Andhra Pradesh) to Adarsh Nagar Delhi - was inaugurated on September 9, 2020 as a weekly train.
- Third Kisan Rail - from Bengaluru (Karnataka) to Hazrat Nizamuddin (Delhi) - was inaugurated on September 9, 2020 as a weekly train.
- Fourth Kisan Rail - from Nagpur & Warud Orange City (Maharashtra) to Adarsh Nagar Delhi - was inaugurated on October 14, 2020.

### **Krishi Udaan:**

- In 2020-21 Budget, the Union Government has also announced launching of Krishi Udaan (Farmers' flights) for transportation of agriculture products to enable farmers to realise better prices.

### **Industrial Nodes in Andhra Pradesh, Karnataka, Multi Modal Logistics Hub and Multi Modal Transport Hub at Greater Noida**

- On December 30, 2020, the Union Government approved the trunk infrastructure projects in the following.
  1. Krishnapatnam Industrial Area in Andhra Pradesh.
  2. Tumakuru Industrial Area in Karnataka.
  3. Multi Modal Logistics Hub (MMLH) and Multi Modal Transport Hub (MMTH) at Greater Noida in Uttar Pradesh.

**Details:**

- Krishnapatnam Industrial Area in Andhra Pradesh and Tumakuru Industrial Area in Karnataka are part of **Chennai Bengaluru Industrial Corridor (CBIC)**.
- These projects will generate ample employment opportunities through industrialisation.

**Krishnapatnam Industrial Area:**

- Estimated cost : Rs. 2,139.44 crore.
- Estimated employment is likely to be around 98,000 persons.

**Tumakuru Industrial Area:**

- Estimated cost : Rs. 1,701.81 crore
- Employment for 88,500 persons would be created.

**Multi Modal Logistics Hub (MMLH) & Multi Modal Transport Hub (MMTH):**

- Estimated cost : Rs. 3,883.80 crore.
- Employment Generation: 1,00,000 persons by 2040
- Multi Modal Logistics Hub (MMLH) & Multi Modal Transport Hub (MMTH) Projects at Greater Noida, U.P. are in close proximity to Eastern peripheral expressway, NH91, Noida- Greater Noida Expressway, Yamuna Expressway, Eastern & Western Dedicated Freight Corridors.
- Logistics Hub project will be developed as a world-class facility that will provide efficient storage/transitioning of goods to/from the Dedicated Freight Corridors (DFC) and offer a one-stop destination to freight companies and customers.

**Multi Modal Transport Hub (MMTH) project:**

- Multi Modal Transport Hub (MMTH) project located near the already existing Indian Railways station of Boraki will act as a transport hub with provisioning of Rail, Road and Mass Rapid Transit System (MRTS) accessibility for the passengers in a seamless manner.
- MMTH will have space for Inter State Bus Terminal (ISBT), Local Bus Terminal (LBT), Metro, commercial, retail & hotel space and green open spaces.
- The project will provide world-class passenger movement facilities for the growing population of the catchment zone catering to upcoming developments in U.P. sub-region of the NCR and thus, decongest Delhi.

**Industrial Corridors:**

Government of India is developing Industrial Corridor Projects as part of National Industrial Corridor programme. The objectives of the programme are to

1. enhance India's competitiveness in manufacturing through the creation of futuristic industrial cities with world class infrastructure and reduced logistics costs.
2. attract investments into manufacturing sector
3. positioning India as a strong player in the Global Value Chain, and
4. increase employment opportunities in the country.

---

### Where and How Industrial Corridors Are Set up?

- These industrial corridors are envisioned on the backbone of major transportation corridors like Eastern & Western Dedicated Freight Corridors, Expressways and National Highways, proximity to ports, airports, etc.
- Land is acquired around the transportation corridors and Greenfield industrial cities are created with developed land parcels and world class infrastructure (roads, power, water supply, etc.)
- They will have road and rail connectivity for freight movement to and from ports and logistic hubs along with reliable power and quality social infrastructure.
- After developing the infrastructure , these land parcels are given for setting up industries.
- Each industrial city /node in the Industrial Corridors is implemented by a Special Purpose Vehicle (SPV) in the form of a company set up under the Companies Act, as a joint venture between Govt. of India, and the respective State Government.
- All the corridors function under the administrative control of **National Industrial Corridor Development and Implementation Trust (NICDIT)**.

### Identified Industrial Corridors:

Initially, 5 industrial corridors were identified for development.

S.No.	Industrial Corridor	States
1	Delhi Mumbai Industrial Corridor (DMIC)	Uttar Pradesh, Haryana, Rajasthan, Madhya Pradesh, Gujarat, Maharashtra
2	Amritsar Kolkata Industrial Corridor (AKIC)	Punjab, Haryana, Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, West Bengal
3	Chennai Bengaluru Industrial Corridor (CBIC)	Andhra Pradesh, Karnataka, Tamil Nadu, Kerala
4	East Coast Economic Corridor (ECEC) with Vizag Chennai Industrial Corridor (VCIC) as Phase-1	West Bengal, Odisha, Andhra Pradesh, Tamil Nadu
5	Bengaluru Mumbai Industrial Corridor (BMIC)	Karnataka, Maharashtra

Later, 6 more industrial corridors were identified taking the total to 11. The 6 other industrial corridors are

1. Extension of Chennai Bengaluru Industrial Corridor (CBIC) to Kochi via Coimbatore;
2. Hyderabad Nagpur Industrial Corridor (HNIC);
3. Hyderabad Warangal Industrial Corridor (HWIC);
4. Hyderabad Bengaluru Industrial Corridor (HBIC);

- 
5. Odisha Economic Corridor (OEC); and
  6. Delhi Nagpur Industrial Corridor (DNIC).

**Status of Industrial Corridors:**

**Delhi Mumbai Industrial Corridor (DMIC):**

- Special Purpose Vehicles (SPVs) for all identified nodes/cities have been incorporated.
- Trunk infrastructure works are nearing completion.
- Process of land allotment to investors has been initiated at the following locations:
  1. Dholera Special Investment Region in Gujarat (22.5 Square kms);
  2. Shendra-Bidkin Industrial Area in Maharashtra (18.55 Square kms);
  3. Integrated Industrial Township Project at Greater Noida in Uttar Pradesh (747.5 acres);
  4. Integrated Industrial Township Project 'Vikram Udyogpuri' near Ujjain in Madhya Pradesh (1100 acres).

**Amritsar Kolkata Industrial Corridor (AKIC):**

- Perspective plan for the overall AKIC Corridor has been completed and one Integrated Manufacturing Cluster (IMC) site in following States has been finalized for further development:
  1. Punjab (Rajpura-Patiala)
  2. Uttarakhand (Prag-Khurpia Farms)
  3. Uttar Pradesh (Bhaupur)
  4. Bihar (Gamhariya)
  5. Jharkhand (Barhi)
  6. West Bengal (Raghunathpur)
  7. Haryana (Saha)

**Chennai Bengaluru Industrial Corridor (CBIC):**

- Perspective plan for the overall corridor has been completed and following three nodes have been identified for further development:
  1. Krishnapatnam (Andhra Pradesh)
  2. Tumakuru (Karnataka)
  3. Ponneri (Tamil Nadu)
- A Special Purpose Vehicle (SPV) for execution of the project at Krishnapatnam node in Andhra Pradesh has been incorporated.
- A SPV for execution of the project at Tumakuru node in Karnataka has been incorporated.

**Vizag Chennai Industrial Corridor (VCIC):**

- Government of Andhra Pradesh (GoAP) is implementing the VCIC project with ADB loan of US\$ 631 million.

- 
- Asian Development Bank (ADB) has carried out the initial project development activities for VCIC.
  - ADB has identified four nodes for development namely,
    1. Visakhapatnam,
    2. Chittoor,
    3. Donakonda and
    4. Machilipatnam.
  - Amongst these, Visakhapatnam and Chittoor have been prioritized by the Government of Andhra Pradesh.

#### **Bengaluru Mumbai Industrial Corridor (BMIC):**

- Perspective plan has been completed for the overall BMEC Project and Dharwad node in Karnataka has been identified as the priority node for further implementation.

#### **Interest Subvention Scheme for Ethanol Production Plants Expanded to Expand Distillation Capacity and Increase Production**

- On December 30, 2020, the Union Government approved the **expansion of interest subvention scheme ethanol production plants** for enhancement of ethanol distillation capacity in the country.
- The total outlay under the interest subvention scheme is estimated at Rs. 8460 crore. The scheme will fuel investment of about Rs. 40,120 crore in the ethanol production plants.
- The interest subvention scheme will be available for setting up
  - a) stand-alone grain-based distilleries or capacity expansion,
  - b) molasses based distilleries which adopt zero liquid discharge technologies,
  - c) putting up dual feed (sugarcane as well as grains) distilleries or
  - d) for converting existing single feed distilleries to dual feed distilleries
- Government would bear interest subvention for five years including one year moratorium against the loan availed by firms for setting up the distilleries - based on sugarcane or foodgrains - from banks at a rate of 6 per cent per annum or 50 per cent of the rate of interest charged by banks whichever is lower,
- Interest subvention would be available to only those distilleries which will supply at least 75 per cent of ethanol produced from the added distillation capacity to oil marketing companies.

#### **Why was the Interest Subvention Scheme Expanded?**

- There are two reasons for expansion of interest subvention scheme ethanol production plants.
- Government's target to blending 20 per cent ethanol with petrol, and
- Excess sugar production in the country.

---

### **Ethanol Blending Target:**

- The Government has fixed a target of 10% blending of ethanol with petrol by 2022, and 20% by 2030.
- The above targets cannot be met with the existing plant capacities for ethanol production.

### **Excess Sugar Production:**

- Besides, there is excess production of sugar in the country since 2010-11 (except during 2016-17 due to drought).
- Sugar production is likely to remain surplus in the country in coming years due to introduction of improved varieties of sugarcane.
- In the normal sugar season (October- September) about 320 Lakh Metric Tonnes (LMT) of sugar is produced whereas, our domestic consumption is about 260 LMT.
- This surplus sugar of 60 LMT in normal sugar season put pressure on domestic ex-mill prices of sugar.
- The excess stocks of 60 LMT which remain unsold also block funds of sugar mills to the tune of about **Rs. 19,000 crore** thereby affecting liquidity positions of sugar mills **resulting in accumulation of cane price arrears of farmers.**
- To deal with surplus stocks of sugar, sugar mills have been exporting sugar, for which Government has been extending financial assistance. However, India being a developing country can export sugar by extending financial assistance only up to year 2023 as per WTO arrangements.
- So, diversion of excess sugarcane & sugar to ethanol is a way forward to deal with surplus stocks.

### **Benefits:**

- Diversion of excess sugar would help in stabilizing the domestic ex-mill sugar prices and will also help sugar mills to get relieved from storage problems.
- It will **improve sugar mills' cash flows and facilitate them in clearance of cane price dues of farmers;** and will facilitate mills to function in the coming years.

### **Targets Ethanol Blending with Petrol:**

- Government has fixed the following targets for ethanol blending with petrol.  
2022 : 10%  
2026 : 15%, and  
2030 : 20%.
- Government is also planning to **prepone achievement of 20% blending target by year 2025.**
- However, the existing ethanol distillation capacity in the country is not sufficient to divert surplus stocks of sugar & to produce ethanol to supply to Oil Marketing Companies (OMCs) for blending with petrol as per the blending targets fixed by Government of India.

---

### **Present Status of Ethanol Blending:**

- The **Ethanol Blending Program (EBP) which started in 2003.**
- But the progress was not satisfactory in the initial years. The blending programme got renewed thrust after 2014.

### **Procurement:**

- Ethanol procurement has gone up from 38 crore litres in 2013-14 with a value of around Rs.1500 crore to estimated procurement of 325 crore Litres in sugar year 2020-21, with an estimated value of Rs. 19,000 crore.

### **Price:**

- The price of ethanol procurement has also gone up from around Rs. 39 per litre in sugar year 2013-14 to an average price of **Rs. 58 per litre in sugar year 2020-21.**
- This progressive increase in prices has helped augment farmers' income.

### **Blending:**

- The blending percentage of ethanol in petrol has gone up from 1.53% in 2013-14 to 5% in 2019-20 and estimated to be 8.5% in 2020-21.
- The Government is likely to achieve 10% blending target by 2022.

### **Benefits of Enhancing Ethanol Production:**

1. import substitution,
2. savings of foreign exchange,
3. environment sustainability, and
4. employment generation.

### **Environmental Sustainability:**

- Ethanol is a renewable fuel because it is produced from biomass.
- Ethanol also burns more cleanly and completely than petrol or diesel fuel.
- With increase in blending levels, dependence on imported fossil fuel will decrease and will also **reduce the air pollution.**

### **Employment Generation:**

- Upcoming investment in capacity addition/new distilleries will lead to creation of various new employment opportunities in rural areas.
- New capacity addition also contributes to the goal of Atmanirbhar Bharat (Self Reliant India).

### **Measures Taken to Increase Ethanol Production:**

#### **1. Production from B- heavy Molasses:**

- With a view to support sugar sector and in the interest of sugarcane farmers, the Government has also allowed production of ethanol from B-Heavy Molasses, sugarcane juice, sugar syrup

---

and sugar. (Details about B heavy molasses and C heavy molasses are given at the end of this article).

## 2. Production through Maize and Rice:

- To increase production of fuel grade ethanol, Government is also encouraging distilleries to produce ethanol from **maize; & rice** available with Food Corporation of India (FCI).
- Government has fixed remunerative price of ethanol from maize & rice.

## 3. Other grain based production:

- Further the blending targets cannot be achieved only by diverting sugarcane / sugar to ethanol. **Ethanol is required to be produced from other feed stocks like feed stocks such as cereals (rice, wheat, barley, corn & sorghum), sugarcane, sugar beet etc.** to enhance ethanol distillation capacity in the country. Hence, grain based distilleries have been brought under interest subvention scheme.

## 4. Price Support:

- Government has been fixing the remunerative ex-mill price of ethanol derived from C-heavy molasses, B-heavy molasses and ethanol derived from sugarcane juice/ sugar/ sugar syrup for ethanol season.
- For ethanol supply year 2020-21, Government has now increased the ex-mill price of ethanol derived from various feed stocks.

### ***Additional Information:***

#### **About B-heavy molasses and C-heavy molasses:**

- Both the sugar extraction process and the sugar refining process yield molasses, and each step of these processes output specific types of molasses.
- Sugar mills usually produce ethanol from **C-heavy molasses (third stage extraction)**, which is the slurry left after the extraction of sugar from concentrated cane juice.
- For producing ethanol, the government has been trying to encourage mills to use **B-heavy molasses (second stage extraction)** from which sugar has been extracted only once, as well as **100% concentrated cane juice**, as this would ensure higher ethanol output and a reduction in sugar production.
- On an average, 1 tonne of C-heavy molasses yields 250 litres of ethanol. The same quantity of B-heavy molasses would yield about 350 litres of ethanol, while 100% concentrated cane juice would yield about 600 litres.

### **India Ranked 131st in Human Development Report 2020**

- India was ranked 131st out of 189 countries in the Human Development Index (HDI) Report 2020 released by the United Nations Development Programme (UNDP) on December 15, 2020.
- India was ranked in the **Medium Human Development Countries category**.

- 
- India's rank dropped by 2 places from 129 in 2019 report to 131 in 2020 report. This is due to better performance of

#### **Top 3 Countries in the HDI:**

- 1 Norway
- 2 Ireland
- 3 Switzerland

#### **Bottom 3 Countries in the HDI:**

Chad	187
Central African Republic	188
Niger	189

#### **What is Human Development Index (HDI):**

- Till 1990's, human progress or development was measured in terms of economic growth.
- In 1990, United Nations Development Programme (UNDP) created a new way to conceive and measure progress.
- It challenged the primacy of economic growth as a measure of country's progress.
- Instead of using economic growth as the sole measure of development, it ranked the world's countries by their human development by launching Human Development Index.
- Human Development Index (HDI) which takes into account two important variables Education and Health (Living standards) apart from income.
- Economists Mahbub UI Haq and Amartya Sen contributed to the development of Human Development Index (HDI).

#### **Why was HDI Developed?**

- Economic growth is a means to the process of development but is not an end in itself.
  - **Human capabilities** in terms of **access to health and education** decide the **extent of participation of people in economy** and **benefit from the growth process**.
  - Thus the Human Development Index (HDI) is a ranking of countries on composite index of three indicators
1. Income
  2. Health
  3. Education

---

**Top 10 Countries in the HDI Index 2020:**

<b>Rank</b>	<b>Country</b>
1	Norway
2	Ireland
3	Switzerland
4	Hong Kong
5	Iceland
6	Germany
7	Sweden
8	Australia
9	Netherlands
10	Denmark

**Bottom 5 Countries in HDI Index 2020:**

<b>Country</b>	<b>Rank</b>
Burundi	185
South Sudan	185
Chad	187
Central African Republic	188
Niger	189

**Ranking of India and Its Neighbours:**

<b>Country</b>	<b>Ranking</b>
Sri Lanka	72
China	85
Maldives	95
Bhutan	129
India	131
Bangladesh	133
Nepal	142
Myanmar	147
Pakistan	154

---

### Ranking of BRICS (Brazil, Russia, India, China, South Africa) Countries:

Country	Ranking
Russia	52
Brazil	84
China	85
South Africa	114
India	131

### Planetary-Pressures Adjusted HDI

- The 2020 HDI Report introduced the concept of Planetary-Pressures Adjusted HDI to highlight the impact of climate change and the urgency to take collective measures, at individual level and by the Governments to tackle climate change.

#### What is Planetary-Pressures Adjusted HDI ?

- It is the HDI value **adjusted by the level of carbon dioxide emissions and material footprint per capita to account for excessive human pressures on the planet.**
- HDI is calculated taking into account **a nation's health, education, and standards of living,**
- Planetary-Pressures Adjusted HDI is measured by adding two more components to the HDI and adjusting the HDI accordingly. The two components are
  1. **a country's per capita carbon dioxide emissions, and**
  2. **its per capita material footprint (extraction of fossil fuels, metal and non metal ores).**
- By adjusting the HDI, which measures a nation's health, education, and standards of living, to include two more elements: a country's carbon dioxide emissions and its material footprint, the Planetary-Pressures Adjusted HDI index shows how the global development landscape would change if both the wellbeing of people and also the planet were central to defining humanity's progress.

#### Findings of Planetary-Pressures Adjusted HDI:

- More than 50 countries drop out of the **very high human development group**, reflecting their dependence on fossil fuels and material footprint.
- (In the Human Development Index, countries are grouped into following categories based on the level of human development. 1. Very High Human Development, 2. High Human Development, 3. Medium Human Development, 4. Low Human Development).
- Norway which is ranked 1st in HDI dropped by 15 places in Planetary-Pressures Adjusted HDI.
- Australia which is ranked 8th on HDI dropped by 72 ranks, and Singapore ranked 11th in HDI dropped by 92 ranks in Planetary-Pressures Adjusted HDI.
- India which is ranked 131 in HDI dropped by 8 places in Planetary-Pressures Adjusted HDI.

- 
- China which is ranked 85th in HDI dropped by 16 places in Planetary-Pressures Adjusted HDI.
  - On the other hand, despite these adjustments, countries like Costa Rica, Moldova, and Panama move upwards by at least 30 places in Planetary-Pressures Adjusted HDI, recognizing that lighter pressure on the planet is possible.

#### **Age of Anthropocene:**

- **Most people now live longer and healthier lives than their predecessors**, but the opposite is true for the vast majority of the rest of life forms on Earth.
- **Humans evolved over 300,000 years amid a richness and diversity of life unprecedented in the planet's history**, as measured by the absolute number of species. That **richness of life is now being destroyed at an alarming rate** due to **direct and indirect human action**, with a **quarter of species facing extinction**, many within decades.
- Though humanity has achieved incredible progress, we have **taken the Earth for granted, destabilizing the very systems upon which we rely for survival**.
- The report stated that we are in a **unprecedented moment in history**, in which **human activity has become a dominant force shaping the planet**.
- **Instead of the planet shaping humans, humans are shaping the planet**. It is called **Anthropocene** - the Age of Humans. This represents a new geological era, the consequences of which are being faced by humans.

#### **Climate Change:**

- The Covid-19 pandemic is a cautionary tale. For decades scientists have been predicting just such a pandemic, pointing to the rise of new diseases that jump from animals to humans- and the virus that causes Covid-19 is likely one. Indeed, the increasing transmission of disease from wildlife to humans reflects the pressures we are putting on the planet.
- For the first time in our history the **most serious and immediate, even existential, risks are human made and unfolding at planetary scale**.
- The changes now unfolding reflect human pressures that are **planetary (not just local) in scope, at a scale that is overwhelming the biosphere's regenerative ability** and that has been **unleashed with unprecedented speed**.
- **Climate is changing in dangerous ways**, and urgent action is needed to curb the greenhouse gas emissions causing global warming. Concentrations of carbon dioxide are high and increasing because the planetary processes.
- Other key biogeochemical cycles are being dramatically altered as well. The use of **synthetic fertilizers** (which increased eightfold between 1960 and 2000) and the **combustion of fossil fuels** have **produced the largest disturbance to the nitrogen biogeochemical cycle** since it emerged 2.5 billion years ago.
- **Rates of extinction of species are estimated to be hundreds or thousands higher than the normal**. This is an indication that **we are undergoing the sixth mass extinction in the**

---

**planet's history.** The other five extinctions were due to natural causes. Humans are driving the sixth.

**Recommendations:**

- **Human development process has to find new paths that expand human freedoms and choices while at the same time easing pressure on the planet.**
- **Protection of planet** should be understood as the **foundation of progress not a constraint on prosperity.**
- Economic growth will continue to put upward pressure on total energy demand and emissions. Energy efficiency is crucial in mitigating the rise of greenhouse gas emissions from the expanding pace of worldwide energy demand.
- **Designing effective regulations** on, for example, air quality, land use or deforestation and setting emissions standards can play a broader role in bringing about technical advances to deal with carbon emissions.

RC REDDY IAS STUDY CIRCLE