

ESI-2021-22 AND OTHER CA 2021-22

INFRASTRUCTURE

(ESI – CHAPTER-8) – PART-5

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1. INFRASTRUCTURE: INDIAN RAILWAYS

- Railways in India began in **1853**, when the first train steamed off from **Mumbai to Thane**, a distance of **34 kms**.
- From that modest beginning today, Indian Railways have grown into vast network of **more than 7,000 stations**, over **68,000 kms** of route length and around **130,000 bridges**. It is the **third largest railway network in the world** (after USA and China) under single management.
 - » During the **FY20**, IR carried **1.2 billion tonnes of freight** and **8.1 billion passengers** - making it the **world's largest passenger carrier** and **fourth largest freight carrier**.
- The Indian railways is also one of the **largest employers** in the country by employing more than **13 lakh** workmen

1) 17 ZONES OF INDIAN RAILWAYS

- Indian Railways is divided into **17 zones** which are the **basic operating Units** of Railways. Each zone is further sub-divided into **divisions**, each having divisional headquarters. Each of the divisions is headed by a **Divisional Railway Manager (DRM)**, who reports to the **General Manager (GM)** of the Zone.
- The Zones and their headquarters are mentioned below:

Sl.No.	Zonal Railways	Headquarters
1	Central	Mumbai
2	Eastern	Sealdah (Kolkata)
3	East Coast	Bhubaneswar
4	East Central	Hajipur
5	Northern	Delhi
6	North-Central	Allahabad
7	North-Eastern	Gorakhpur
8	Northeast Frontier	Maligaon (Guwahati)
9	North Western	Jaipur
10	Southern	Chennai
11	South Central	Secundrabad
12	South Eastern	Garden Reach (Kolkata)
13	South East Central	Bilaspur
14	South Western	Hubli
15	Western	Churchgate, Mumbai
16	West Central Railway	Jabalpur
17	Metro Railway	Kolkata

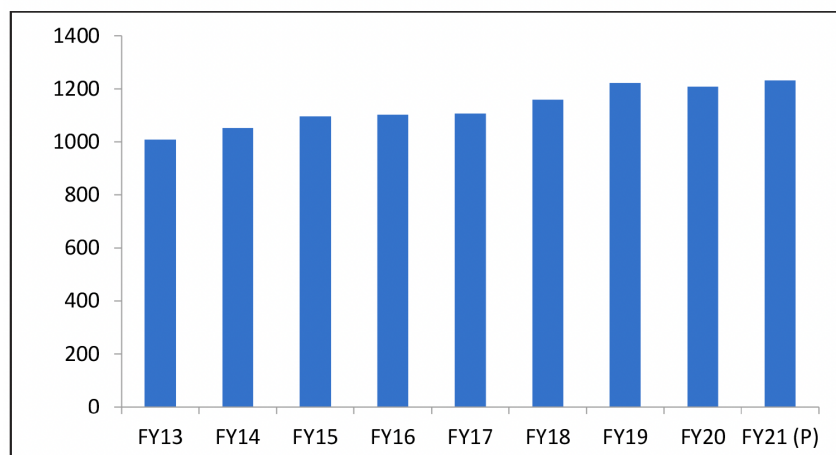
- Other Sources also mentions another zone: **Konkan Railway - Navi Mumbai**

2) ESI: 2021-22

- During FY21, Indian Railways carried **1.23 billion tonnes of freight** and **1.25 billion passengers**.

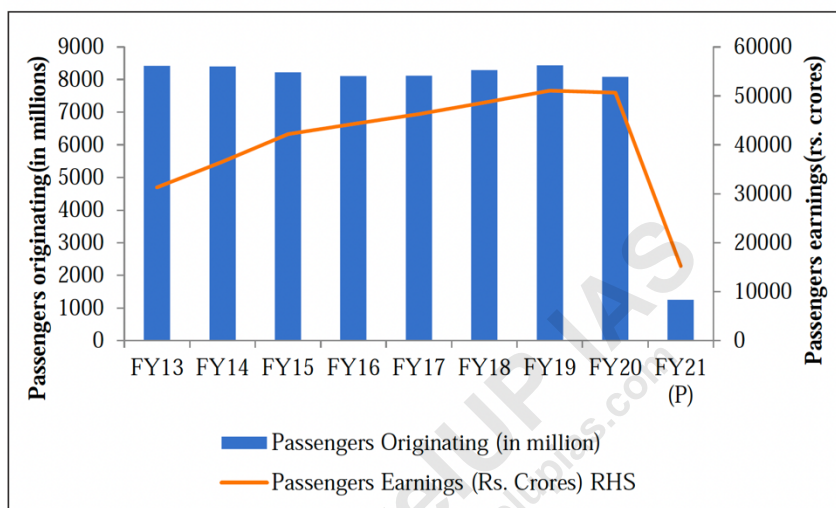
- » Despite COVID-19 pandemic, the revenue earning freight loading (excluding loading by Konkan Railway Corporation Limited (KRCL)) was 1230 million tonnes in 2020-21 as compared to 1208.4 million tonnes during 2019-20.
- » However, passengers originating was 1250 million in 2020-21, when compared to 8086 million in 2019-20.

Figure 26: Revenue earning freight loading originating traffic (million tonnes)



Source: Ministry of Railways. Excludes loading by Konkan Railway Corporation Ltd. (KRCL). P-provisional

Figure 27: Passengers originating (in millions) and passengers earnings (Rs crores)



Source: Ministry of Railways. Includes metro railway Kolkata

3) NATIONAL RAIL PLAN VISION – 2030

- **Why in news?**
 - » Indian railways have prepared a National Rail Plan (NRP) for India - 2030
- **Details**
 - » The plan is to create a 'future ready' Railway system by 2030.
 - » The NRP is aimed to formulate strategies based on both **operational capacities and commercial policy initiatives** to increase modal share of the Railways in freight.
 - » **Mains Features of the National Rail Plan are:**
 - » Formulate strategies based on both operational capacities and commercial policy initiatives to **increase modal share of the Railways in freight to 45%** (at present it is around 26-27%) and to continue to sustain it.

- » **Reduce transit time of freight** substantially by increasing average speed of freight trains to 50Kmph.
- » As part of the National Rail Plan, **Vision 2024 has been launched** for accelerated implementation of certain critical projects by 2024 such as: 100% electrification, multi-tracking of congested routes, upgradation of speed to 160 kmph on Delhi-Howrah and Delhi-Mumbai routes, upgradation of speed to 130kmph on all other Golden Quadrilateral-Golden Diagonal (GQ/GD) routes and elimination of all Level Crossings on all GQ/GD route.
- » Identify new Dedicated Freight Corridors and new High Speed Rail Corridors.
- » Assess rolling stock requirement for passenger traffic as well as wagon requirement for freight.
- » Assess Locomotive requirement to meet twin objectives of 100% electrification (Green Energy) and increasing freight modal share.
- » Assess the total investment in capital that would be required along with a periodical break up.
- » Sustained involvement of the Private Sector in areas like operations and ownership of rolling stock, development of freight and passenger terminals, development/operations of track infrastructure etc.
- The **draft plan** has been put in public domain and is also being circulated among various stakeholders for comment

4) RESTRUCTURING OF INDIAN RAILWAYS

- **Why in news?**
 - » Indian Railways merge eight service cadres into one newly created cadre called **Indian Railway Management Service (IRMS)** (Feb 2022)
- **Earlier Situation:**
 - » The **Railway Board** is the Indian Railway's apex decision making body.
 - It was constituted in 1905 to assist Ministry of Railways in key administrative and executive work of Railways.
 - It consisted of a **Chairman** and **seven members** from **different service departments** such as Finance, traffic, civil, mechanical, electrical and signal & telecom.
 - The department heads are generally secretary level officers and are a member of the Railway Board.
 - These departments are vertically separated from top to bottom and worked in Silos.
- **The Management and Administrative arm** of the organization was staffed by officers belonging to 8 Group A Services of IR that include Indian Railway Traffic Service (IRTS), Indian Railway Account Services (IRAS), Indian Railway Personal Service (IRPS), Indian Railway Service of Engineers (IRSE), Indian Railway Service of Mechanical Engineers, Indian Railway Service of Signal Engineers, and Indian Railway Service of Electrical Engineers. (3 civil and 5 engineering services)
- **Key Problems**
 - » **Over-departmentalization** has led to work taking place in Silos
 - According to **Bibek Debroy Committee**, this over departmentalization manifests itself in the form of
 - **unhealthy competition** among departments for **appropriating a larger share of scarce resources**.
 - **injurious competition** for usurping a larger share of **key general management posts** for better access to power, authority etc.;
 - a **clamor for pursuing narrow departmental goals at the cost of organizational goals and objectives**;

- and lack of team work and cohesion.
- **Various committees over the years** - Prakash Tandon Committee (1994), Rakesh Mohan Committee (2001), Sam Pitroda Committee (2012) and Bibek Debroy Committee (2015) has suggested unification of services, but the railway ministry hadn't acted on it till 2019.
- **In 2019, Union Cabinet approved restructuring of Indian Railways** with the following components:
 - » **Reorganization of the Railway Board**
 - Reduction in number of members of the board to 5 (a chairperson, who will act as CEO and **four members** responsible for infrastructure, operations & business development, rolling stock, and finance).
 - The four members will head the four functions.
 - The board will also consist of **independent members**, who will be highly distinguished professionals. They should have leadership experience (of at least 30 years) in technical domain.
 - » **Unification of existing 8 group A service** into single service: **The Indian Railway Management Service (IRMS)**
 - In Feb 2022, the Union government officially issued a gazette notification about the proposed merger of existing eight services of Indian Railways, which fall under the Central Civil Services.
 - » **Post of General Managers** working at zonal level will be upgraded to secretary level.
 - » **Indian Railway Medical Services (IRMS)** to be renamed to **Indian Railway Health Services (IRHS)**
- **Advantages:** Ending Departmentalism, create coherent vision for organization, promotes faster decision making, Recruit engineers/non-engineers as per need, bring decision making as per market realities, infuse fresh thinking etc.
- **Why serving civil servants are protesting against the move?**
 - » They claim that the **merger of all 8 services will be unscientific and against established norms** as two fundamentally dissimilar entities (Civil and Engineering) with multiple disparities are being merged.
 - » Officers have also alleged that a "a lack of clarity" on the IRMS part and raised apprehensions that the merger will reduce "intake" into the railway by half, "restrict promotion" of existing cadres, and change the eligibility criteria for aspirants with engineering background

5) ATTRACTING PRIVATE PLAYERS TO INDIAN RAILWAYS

- **Why in news?**
 - » Indian Railways have completed RFQ evaluations for PPP in Passenger Train Operations Project. Out of 120 applications, **102 applications are found eligible** to participate in the RFQ Stage (Nov 2020)
 - Earlier, in July 2020, IR had invited Request For Qualifications (RFQ) proposals for operation of passenger trains by private players
 - Bids, were opened in July 2021 but without much success.
- **Railways' Push towards privatization**
 - » **Introduction**
 - » By allowing IRCTC to run Tejas trains between Delhi-Lucknow and Mumbai-Ahmedabad, the Indian Railways had taken a **baby step towards allowing private players to operate trains in India**.
 - » The **recent move in July 2020** where Indian Railways have sought **Request for Qualifications (RFQ) proposals for operation of passenger train services on 109 routes with 151 modern trains** is another major step towards allowing private players in Railways. This has been done to allow

the private players to operate the Railways sector through the PPP mode under the "**New India New Railway**" initiative.

- » Railways expect an investment of around Rs 30,000 crore under this initiative.
 - » The **objective** of the initiative is to introduce modern technology rolling stock with reduced maintenance, reduced transit time, boost job creation, provide enhanced safety, provide world class travel experience to passengers, and also reduce demand supply deficit in the passenger transportation sector. **Increased competition** will also prevent unfair rise in fares.
 - **Note:** the initiative will only account for 5% of total 2800 Mail express trains operated by Indian Railways.
 - » The **Concession Period** of the project will be **35 years**, and the private entity will pay Indian railways fixed haulage charges, energy charges, as per actual consumption, and a share in gross revenue determined through a transparent bidding process. Each train will have a minimum 16 coaches.
 - » Further, the trains will be operated with **drivers and guards of Indian Railways**.
 - » Indian railways have also said that most of the trains would be manufactured in India and the **private player will be responsible for financing, procuring, operation and maintenance** of the trains. These trains will be designed for a maximum speed of 160 km/hr.
 - » These private trains are expected to begin operations by April 2023.
- **The Delhi-Lucknow Tejas** is the first train that is not operated by the Indian Railways. It is being run by IRCTC, which is a public sector undertaking. Other than Delhi-Lucknow Tejas, the IRCTC is also entrusted with running of **Mumbai-Ahmedabad Tejas** and **Kashi Mahakal** express.
 - **Need of involving Private Players**
 - » **Bringing more investment, better infrastructure, and improved services.**
 - » **Fighting corruptions and inefficiencies.**
 - » Privatization may also lead to **rationalization of Railway Fares**.
 - » **More business for railways**
 - **Progress: Bids were opened in July 2021**
 - » **Hopes were belied.**
 - There were no bids for nine clusters and only two bids for three clusters. Even for these three clusters, the only serious bid was by Indian Railways (IR) own company IRCTC, which in effect negated the basic objectives of bringing in private capital

6) BHARAT GAURAV SCHEME

- **Why in news?**
 - » Railway Minister Shri Ashwini Vaishnaw announces introduction of 'Bharat Gaurav Trains'. (Nov 2021)
- **Details**
 - » These trains will be operated by Private Players and run on theme-based circuits. These trains will help in showcasing India's rich cultural heritage and magnificent historical places to the people of India and the world. The core strength of the professionals of tourism sector would be leveraged to develop/identify tourist circuits and run theme-based trains to tap the vast tourism potential of India.
 - » Through this policy, which offers operators the "Right to Use" of its rakes and infrastructure, the Railways has liberalized and simplified a part of operations that was otherwise carried out mostly by IRCTC.

- » Under the scheme, the private players and tour operators can procure trains from railways on lease and operate them on any circuit of their choice and decide fares, routes, and quality of service.
- **Scope:**
 - » Service providers can decide themes like Guru Kripa trains, Ramayana trains etc.
 - » They can offer all inclusive package to tourist including railway fares, hotel stays, sightseeing arrangements, historical heritage sites etc.
 - » Full flexibility to decide package cost
 - » Different segments like luxury/budget etc.
 - » Free to design/furnish interior of the coaches based on the theme
 - » Branding and advertisement permitted both inside and outside the trains
- **Process:**
 - » Easy one step, online registration process. Reg fee of Rs 1 lakh only.
 - » Individual, partnership firm, company, society, trust, state governments etc. are eligible
 - » Right to use charges, and Haulage charges notified in the policy for Service provider to work out his business model
 - » Right to Use Period: 2-10 years

7) RECENT INITIATIVES/PLANS TO ENHANCE RAILWAYS

A) DIAMOND QUADRILATERAL

- **Introduction**
 - » In Planning phase
 - » A project of Indian railways to establish high speed rail network in India.
 - » The quadrilateral will connect the 4 metro cities in India.
- **Technical Details**
 - » Will be operated on broad gauge tracks (>1435mm) (1435 mm is standard gauge - Delhi metro runs on this) (<1435 mm is narrow gauge).
 - » Major terminals will be at Delhi, Mumbai, Pune, Thiruvananthapuram, Bangalore, Chennai, Hyderabad, and Kolkata

B) DEDICATED FREIGHT CORRIDORS (DFCS)

- **About DFCS**
 - » The ambitious 81,459 crore rupee project envisages freight rail lines along the western corridor between Delhi and Mumbai and the eastern corridor between Ludhiana and Howrah, running through Delhi.
 - » These DFCS are being developed by the Dedicated Freight Corridor Corporation of India.
- **EDFC: Eastern Dedicated Freight Corridor**
 - » EDFC is 1,840 km long freight corridor of Indian Railways extending from Ludhiana in Punjab to Dankuni (Near Kolkata) in WB.
- **WDFC: Western Dedicated Freight Corridor**
 - » The WDFC (1504 km) runs from Dadri near Delhi to Jawahar Lal Nehru Port Trust in Mumbai.
- **The Funding for DFC** is through World Bank (US\$ 2.725 billion) for EDFC, and Japan International Cooperation Agency (JICA) loan (38,722) for WDFC and rest from the Gross Budgetary Support (GBS).
- **Expected Impact**
 - » Reduce travel time on the two routes for both passengers and goods.

- DFCCIL will run freight trains at the maximum speed of 100 kmph as against the current maximum speed of 75 kmph on Indian Railway tracks whereas the average speed of freight trains will also be increased from existing speed of 26 kmph on Indian Railway lines to 70 kmph on DFC.
 - » Benefit industries in the region by speeding up transportation.
 - » Reduce pollution as the railway transportation is more efficient.
- **Trial Run of Double Stack Train** on newly built Rewari-Madar section of Western Dedicated Freight Corridor (WDFC) took place in Dec 2019.
 - » The **Rewari-Madar** section of DFC is located in Haryana (79 kms - Mahendragarh and Rewari Districts) and Rajasthan (227 km - Jaipur, Ajmer, Nagaur, & Alwar district)
- **World Bank offered funds for last remaining portion of EDFC between Sonnagar (Bihar) and Dankuni (WB)** which India had originally slated to constructed using PPP mode.
 - » **Note:** The Entire EDFC is being built with loan from World Bank, except for the last portion between Bihar and West Bengal.

C) GREEN TRAIN CORRIDORS – CLASS DISCUSSION

D) NEW INITIATIVES FOR UPGRADATION OF COACHES

- i. **Project Swarn**
 - » It was started in May 2017 to upgrade the conditions of Shatabdi and Rajdhani trains, with the objective of significantly improving the passenger experience across 9 dimensions which include coach interiors, toilets, on board cleanliness, staff Behaviour, catering, linen etc.
 - » Real time feedback is also part of Swarn.
 - » Under this scheme, total 29 trains are covered @Rs 50 lakh per rake.
- ii. **Project Utkrisht**
 - » Indian Railways have launched the Project Utkrisht in the Month of April 2018 in order to **improve the condition of ICF-design coaches** operating on **Mail/Express trains**.
 - Cleanliness of coach interiors, toilets, exteriors of train coaches in being taken up under Project Utkrisht.
- iii. **Induction of Modern Linke Hofmann Busch (LHB) coaches**
 - » In order to provide safer and more comfortable journey to the passengers, the Railway Ministry decided to proliferate or induct the modern LHB coaches and also to convert trains operating with conventional ICF type coaches to LHB coaches in a phased manner.
 - » From the financial year 2018-19, the Indian Railway Production Units are **only manufacturing LHB coaches**.
 - Based on German technology, LHB coaches are safer and also offer better riding comfort, compared to traditional Integral Coach Factory (ICF) design coaches.
 - It supports anti-climbing features and anti-telescopic features making them safer in case of accidents.
 - LHB coaches can travel with higher speeds when compared to ICF coaches.
 - LHB coaches were first introduced in Indian Railways in 2000 and the first indigenous LHB coach was put in service in 2003

E) VANDE BHARAT EXPRESS

- This is **India's first engine less semi-high speed train set - Train 18** named Vande Mataram. It was **flagged off in Feb 2019** by PM Modi. The train runs between Varanasi and Delhi.
- **Other Features**
 - Maximum Speed: 180 Kmph

- Developed under 'Make in India' initiative, the train boasts several modern features including European Style Seats, disabled friendly toilets, wheelchair parking spaces, fully sealed gangways, automatic doors with sliding footsteps among others.
- **Technical Features**
 - It has two Driving Trailer Coaches with Aerodynamic Driver's Cab (Nose Cone) on both the ends which will enable quicker turnaround time at destinations.
 - Every alternative coach is motorized to enable even distribution of motive power and faster acceleration/ deceleration.
- **Manufacturer**
 - **Integral Coach Factory (ICF), Chennai**
 - It is a production unit under Ministry of Railways

8) TRANSFORMATION OF INDIAN RAILWAYS THROUGH AVATARAN – SEVEN MISSION MODE ACTIVITIES (FEB 2016)

- The minister of Railways Shri Suresh Prabhakar Prabhu while presenting the Railway Budget 2016-17 in the Parliament has proposed to transform Indian Railways through seven Mission Activities - Avataran. These missions are:
 - **Mission 25 Tonne:** It aims to increase revenue by augmenting carrying capacity. To achieve this 10-20% freight loading will be done through 25-tonne axle-load wagons in 2016-17 and target movement of 70% freight traffic on high axle load wagons by FY 19-20.
 - **Mission 0 accidents:** It comprises of two sub-missions
 - » **Elimination of unmanned level crossings:** The goal is eliminating all unmanned level crossings on Broad Gauge in the next 3-4 years through innovative financing mechanism. It will reduce deaths due to accidents and improve throughput of the network.
 - » **Train Collision Avoidance System (TCAS):** An indigenous technology has been developed to equip 100% of the High-Density Network with TCAS in the next 3 years. This will prevent head on collisions and improve throughput by increasing average sectional speeds.
 - **Mission PACE (Procurement and Consumption Efficiency):** This mission aims to improve our procurement and consumption practices to improve the quality of goods and services.
 - **Mission Raftaar:** It targets doubling of average speed of freights trains and increasing the average speed of superfast mail/express trains by 25 kmph in the next 5 years. It will complement Mission 25 tonnes to increase throughput of the railways system.
 - **Mission Hundred:** The mission will commission at least 1 hundred sidings in next 2 years. The current siding/PFT policy would be revised to elicit greater private participation.
 - **Mission Beyond Bookkeeping:** It will establish an accounting system where outcomes can be tracked to inputs. This will transform Indian Railways as right accounting would determine right costing and hence right pricing and right outcomes
 - **Mission Capacity Utilization:** It proposed to prepare a blueprint for making full use of huge new capacity that will be created through two Dedicated Freight Corridors between Delhi-Mumbai and Delhi-Kolkata scheduled to be commissioned by 2019

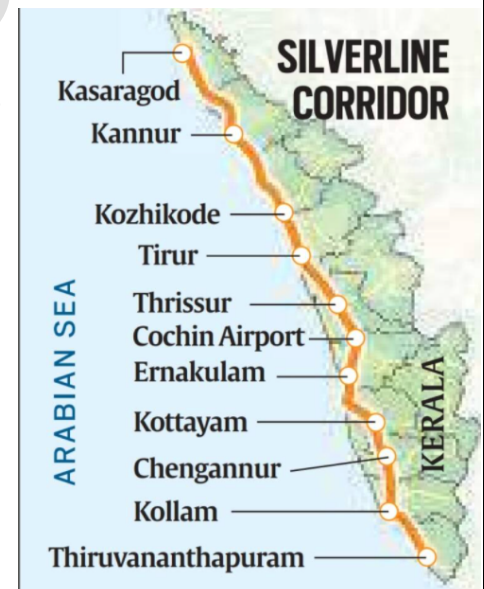
A) MISSION 25 TONNES

- It is one of the Mission under Transformation of Railways through Avataran - Seven Mission Mode Activities which was launched in 2016.
- **Mission 25 tonne** aims to increase revenue by augmenting carrying capacity.
- **March 2022:**
 - » Three new wagons (BLCS, BOXNS, and BOBSNS) have been designed with 25T axle load, which are having approx. 12% to 17% increase in carrying capacity over equivalent lesser axle load (22/22.9T) wagons.

- » Further, in four wagons (BOBSNM1, BOXNHL, 25T, BOYEL, and BOXNEL) axle load has been increased to 25T resulting in increased carrying capacity of approx. 12% to 14% over earlier lesser axle load wagon.
- **Gati-Shakti Multi-Modal Cargo Terminal (GCT):**
 - » In order to boost investment from industry in development of additional terminals for handling rail cargo, a new 'Gati-Shakti Multi-Modal Cargo Terminal (GCT)' policy has been launched in Dec 2021.
 - The target is to commission 100 Gati Shakti Cargo Terminal (GCTs) within next three financial years, i.e. 2022-23, 2023-24 and 2024-25.
 - These terminals will be constructed on non-Railway Land as well as partially or fully on Railway Land

9) KERALA'S SILVER LINE

- **Why in news?**
 - » Kerala's SilverLine project is facing protest (April 2022)
- **Details**
 - » Kerala's Silverline is a semi-high speed railway project that envisages trains running at 200 km/h between the state's northern and southern ends.
 - » It would be a 529.45 km which would link Thiruvananthapuram in the south to Kasargod in the north, covering 11 districts through 11 stations. Once completed, the two cities could be travelled to within 4 hours.
 - » The project is being executed by Kerala Rail Development Corporation Limited (KRDCL) (K-Rail) which is a joint venture between Government of Kerala and the Union Ministry of Railways and has been created to execute big railway projects.
- **Cost:** It is estimated to cost around 64,000 crores rupees and is considered one of the biggest infra push by the Pinarayi Vijayan government.
- **Need:**
 - » Being future ready (experts say that existing railway systems can't meet Kerala's future needs)
 - » Reduce congestion on roads and reduce greenhouse gas emissions.
 - » Help in expansion of RO-RO system.
 - » Produce employment opportunities
 - » Integrate airports and IT corridors.
 - » Ensure overall development of places it passes through.
- **Features of the project:**
 - » The project will have trains of electric multiple unit (EMU) type, each with preferably nine cars extendable to 12.
 - » The trains can run at a maximum of 225 km/hour on a standard gauge, completing journey in either direction in four hours.
 - » Cochin International Airport has already offered 1 acres of land for the station here.
 - » **Three stations** - Thiruvananthapuram, Ernakulam, and Thrissur - would be elevated; **1** underground (Kozhikode) and the rest at grade. At every 500 metres, there will be under passage with service roads.
- **Progress:**
 - » The process of land acquisition has started.
 - » Out of 1,383 hectares needed to be acquired, 1,198 hectares will be private land.



- » The Cabinet has also approved administrative station to get Rs 21,00 crore from the Kerala Infrastructure Investment Fund Board (KIIFB), the central investment arm of the government. The Centre has also given in principle approval to the project.

- **Protests:**

- » Financial unviability
- » Displacement of around 30,000 families
- » Environmental Damages (route cuts through wetlands, paddy fields and hills)

10) OTHER MAJOR RAILWAY INFRA IN NEWS

A) CHENAB BRIDGE

- **Why in news?**

- » **Indian Railways complete arch closure of Chenab Bridge, world's highest railway bridge** (April 2021)

- **Details**

- » Indian railways is constructing the iconic Arch Bridge on River Chenab as part of the Udhampur-Srinagar-Baramulla Railway Link (USBRL) project to connect the Kashmir valley to the rest of the nation.
- » It will be the world's highest railway bridge that soars 359 meters above the bed of the Chenab river in J&K.
 - The bridge is 35 meter higher than the Eiffel Tower in Paris.
- » The 1.315 km long bridge is being constructed at a cost of Rs 1486 crore.
- » In April 2021, Indian railways completed the arch closure of Chenab Bridge. The Arch is the most difficult part of the bridge. It stands only with the support from the two embankments and without any intermediate pier.
 - No pier could be used as the river is 359 meters below and no pier could possibly come at a height like that.
 - Arch consists of steel boxes, which will be filled with concrete to improve stability.



- Now, **within a year**, the whole bridge should be ready i.e. by April 2022.
- **Other key features of the Bridge**
 - The Bridge is designed to withstand high wind speed upto 266 km/hour.
 - The bridge is also designed for blast load in consultation with DRDO for the first time in India.
 - It can also withstand earthquake forces of highest intensity Zone-5 in India.

11) KAVACH TECHNOLOGY

- **Why in news?**

- » Indian Railways has developed its own Automatic Train Protection (ATP) System called **Kavach** for enhancing safety of running trains (March 2022)

- **Details**

- » **KAVACH** has been developed indigenously by RDSO in association with three Indian vendors and it has been adopted as our National Automatic Train Protection (ATP) System.
 - It will aid Loco Pilot to avoid Signal Passing At Danger (SPAD) and over speeding but also help in train running during inclement weather such as dense fog.
- » **Key features:**
 - Controls speed of the train by automatic application of brakes in case Loco Pilot fails to apply the brakes
 - Repeats line-side signal in cab which is very useful for higher speeds and foggy weather
 - Works on principle of continuous update of Movement authority
 - Auto Whistling at LC gates
 - **Collision avoidance** by direct to loco communication
 - **Supports** feature of SOS in case of any mishap to control train in vicinity.
- » **Total Expenditure** incurred so far on development work of Kavach is Rs 16.88 crores.
- » At present (March 2022) Kavach roll out is planned on New-Delhi Howrah and New Delhi - Mumbai Section which is targeted for completion by March 2024. Further rollout will be planned based on experience gained.

12) OPERATION AAHT

- **Why in news?**
 - » RPF launches nationwide operation to curb human trafficking (Feb 2022)
- **Details**
 - » Under Operation Aaht, teams will be deployed on all long distance trains/routes with focus on rescuing victims, particularly women and children, from the clutches of traffickers.
 - » **Why?**
 - Human traffickers often moved their victims on long-distance trains.
 - » As part of "Operation AAHT", the infrastructure and intelligence network of the forces could be utilized to collect, collate, and analyze clues on victims, source, route, destination, popular trains used by suspects, identity of carriers/agents, kingpins etc. and shared with other law enforcement agencies.
 - » RPF could act as a bridge cutting across states to assist the local police in the mission to curb the menace.

13) CAG REPORT ON RAILWAYS

- **Why in news?**
 - » **CAG Report** on Indian Railways tabled in the Parliament (April 2022)
- **Details**
 1. **CAG Report on Finances of Indian Railways (Dec 2021)**
 - » Railway Ministry's window dressing efforts to protect a rosy picture of its financial health by pointing out that the operating Ratio (OR) of 98.36% shown by the National Transporter doesn't reflect its true financial performance as the actual OR is 114%.
 - The actual OR would have been 114.35% instead of 98.36%, if the actual expenditure on pension payments was taken into account.
 - Note: OR is the amount of money an organization spends to earn every Rs 100. A high ratio indicates poorer ability to generate surplus.
 - » Profit from freight traffic at Rs 28,746 crore was utilized to compensate the loss of Rs 63,364 crore on operation of passenger and other coaching services.
 - » **Recommendations:**

- The CAG has recommended the Railways to revisit the passenger and other coaching tariffs so as to recover the cost of operations in a phased manner and reduce its losses in its core activities.
- Expedite winding-up process of non-working railway PSUs and also consider reviewing the working of loss-making PSUs.

2. Speed, Punctuality etc. (April 2022)

- Travel time has increased over the past few years, and that overall punctuality of trains has declined.
 - Even with a low benchmark and higher threshold, the punctuality of mail/express trains over IR declined from 79% (2012-13) to 69.23 % (2018-19) that too at the terminating stations only.
- Average observed speed of mail/express and freight trains is still around 50.6 kmph and 23.6 kmph respectively.
 - Mission Raftaar introduced in 2016-17 targeted an average speed of 75kmph for mail/express trains and 50 kmph for freight trains.
- Indian railways has no guaranteed delivery time for goods consignment.... Due to non-scheduling of goods trains operation.
- CONCOR, a railway PSU, suffered loss to the tune of Rs 86 crores in its decision to opt for an Advanced Freight Scheme in March 2019, without proper cost benefit analysis, after it paid Railways advanced freight of Rs 3000 crores.
- Dedicated Freight Corridor Corporation of India Limited couldn't fully utilize World Bank Funds, resulting in payment of avoidable commitment charges of Rs 16 crores. It also said that the progress of the project was affected due to a delay in awarding contract.

14) SELF-PROPELLED RAILWAY TRACK SCAVENGING VEHICLE CAN REPLACE MANUAL SCAVENGING (APRIL 2021)

- A self-propelled railway track scavenging vehicle may soon replace manual scavenging and cleaning which is still practiced removing human waste lying on the railway track.
- **Department of Mechanical Engineering**, National Institute of Teacher's Training and Research (NITTTR), Bhopal, has developed a Multifunctional Railway track Scavenging Vehicle with support from the Advanced Manufacturing Technologies programme, of the Department of Science and Technology (DST), GoI aligned with Make in India initiative. A national patent has been published for the technology.
- This self-propelled Road cum Rail vehicle equipped with dry and wet suction system, air and water spraying nozzles, control system, and road cum rail attachment is multifunctional and easy to operate

2. CIVIL AVIATION SECTOR

1) INTRODUCTION: BASICS

- India is the **third largest domestic market** for civil aviation in the world.
- Moreover, India is also witnessing a **healthy growth rate** of over 14 percent per annum.
 - » The **domestic passengers** in India more than doubled from 61 million in 2013-14 to around 137 million in 2019-20, registering a growth of over 14% per annum.
- **On Airport connectivity** India stood **first** along with (USA, China, Japan, UK etc.) in the **Global Competitiveness Report, 2019** of WEF.
- **Future Plans:**
 - » **100 more Airports to be made operational by 2023-24.** (ESI)
 - » Besides, 46 idle airstrips, 16 private greenfield airports, 15 AAI airports, 31 heliports, and 12 waterdromes will be developed.
 - » **Increasing number of aircrafts** from **680** (number of aircrafts endorsed on scheduled airlines - Nov 2019) to over **1200** by FY 2023-24.
 - This would be achieved by **easing leasing** and **financing** from Indian shores in conformance with the provisions of the **Cape Town Convention and Protocol** on Aircraft Equipment, efficient use of air traffic rights, encouraging domestic and international passenger and goods transfers, and rationalizing of tax regime.
- **Note: About Cape town Convention and Protocol on Aircraft Equipment**

2) NATIONAL CIVIL AVIATION POLICY, 2016

- **Introduction**
 - » It is the First time since independence that an integrated civil aviation policy has been brought out by the Ministry
 - » **Aims/Objectives**
 1. Make regional air connectivity a reality
 2. Take flying to masses by making it affordable and convenient
 3. Establish an integrated ecosystem which will lead to significant growth of the civil aviation sector to promote tourism, employment and balanced regional growth.
 4. Enhance ease of doing business through deregulation, simplified procedures and e-governance.
- **Salient Features**
 - i. **Regional Connectivity Scheme (UDAN Scheme)**
 - **Subsidization of regional flights - discussed in detail separately**
 - ii. **Route Dispersal Guidelines** - to make more services available for Tier-2, Tier-3 cities
 - iii. **5/20 Requirements replaced with new schemes for starting international flights -> Provides level playing field**
 - All airlines can commence international operations provided that they deploy 20 aircraft or 20% of total capacity (in terms of average number of seats on all departure put together), whichever is higher in domestic operations.
 - iv. **Bilateral Traffic Rights** - Enter into 'OPEN Sky' agreements with SAARC and other neighboring countries ASAP.
 - v. **Airport PPP/AAI**
 - Encourage development of airport by AAI, state government, the private sector or in PPP mode

- Future tariffs at all airports will be calculated on a '**hybrid till**' basis, unless specified otherwise in concession agreements.
 - 30% of non-aeronautical revenue will be used to cross subsidize aeronautical charges
- Increase non-aeronautical revenue by better utilization of commercial opportunities of city side land
- AAI to be compensated in case a new green field airport is approved in future within a 150 km radius of an existing unsaturated operational AAI airport (not applicable to civil enclaves)

3) RCS-UDAN SCHEME

- **UDAN Scheme** (A part of National Civil Aviation Policy 2016)
 - Launched in 2017.
 - **Aims:** Providing air connectivity to tier II and tier III cities and ensuring affordable fares.
- **Key Provisions of the scheme**
 1. **Subsidization of regional flights - to promote regional connectivity**
 - » **Regional Connectivity Fund** for VGF through a small levy per departure on all domestic flights other than Cat II / Cat IIA routes, RCS routes and small aircraft below 80 seats at a rate decided by Ministry from time to time.
 - » VGF to be shared by MoCA and the State government in the ratio of 80:20. For the Northeastern States, the ratio is 90:10.
 2. **Cap on Airfare:** Airfares on all flights under the scheme will be capped at Rs 2,500 for an hour's journey or approx. 500 km for some specified number of seats on each flight.
 3. **Other steps** which are being taken
 - » **Revival of airstrips/airports as No-Frills Airports** at an indicative cost of Rs 50 crore to Rs 100 crore
 - » No airport charges
 - » Reduce service tax on tickets (on 10% taxable value) for 1 year initially
 - » Reduced excise duty of 2% on ATF picked at RCS airports
 - » **Steps which states would need to take**
 - RCS only in those states which reduce VAT on ATF to 1% or less, provide other support services and 20% of VGF
 - State government will provide police and fire services free of cost. Power, water and other utilities at concessional rate.
 4. **Applicability:** It would be applicable on route length between 200 to 800 kms with no lower limit set for hilly, remote, island and security sensitive areas
 5. **Equitable Allocations:** For balanced regional growth, allocations will be spread equitably across 5 regions - North, South, West, East and North East with a cap of 25%.
 - A minimum of 3 and a maximum of 7 regional connectivity flights per week per route with minimum 9 and maximum 40 seats per flight under RCS.
 6. Regional connectivity scheme will be in operation for 10 years with individual route contract for a 3 year span.
 7. Market based **reverse competitive bidding mechanism** to determine least VGF to select the airline operator with the right to match the initial proposer. This means an airline quoting the lowest amount of subsidy would get the right to fly on a particular route.
 - VGF would be reduced if passenger load factor remains high and will be discontinued after 3 years when route become self-sustainable.
- **ESI 2021-22:**

- » Till the launch of UDAN in 2016, India had 74 airports having scheduled operations. But, within 4 years under UDAN, four rounds of bidding under RCS-UDAN have taken place and 153 RCS airports including 12 water aerodromes & 36 helipads have been identified for operation of RCS flights.
- » During the last four years after the commencement of the scheme, 948 valid awarded routes have been allotted to various airlines and out of which 389 RCS routes connecting 62 unserved and underserved airports (including 6 heliports & 02 water aerodromes) have been operationalized so far

4) RECENT INITIATIVES FOR THE GROWTH OF THE SECTOR

A) INTERNATIONAL AIR CONNECTIVITY SCHEME (INTERNATIONAL UDAN)

- **Why in news?**
 - » The Ministry of Civil Aviation has launched International Air Connectivity Scheme (IACS) (April 2022)
 - » International Air Connectivity Scheme (IACS) to connect North-Eastern States with selected International Airports
- **Details**
 - » IACS has been launched with an objective to enhance air connectivity from certain states of the country with selected international destinations to promote socio-economic growth. This scheme is supported by the state governments.
 - » The state governments of Assam, Manipur, and Tripura have identified routes connecting Guwhati, Imphal, and Agartala with selected international destinations viz. Bangkok, Dhaka, Kathmandu, Yangon, Hanoi, Mandalay, Kunming & Chittagong.
- **International Airports in North-East India:**
 - » As on date, there are two international airports in the north-east region at **Guwhati and Imphal** which are operated by Guwhati International Airport Limited (GIAL), and Airports Authority of India (AAI) respectively.
 - » AAI has also taken up the following development works to boost international connectivity to/from North-eastern region:
 - a. **The new terminal building at Agartala Airport** has been designed as integrated terminal keeping in view the future requirement for international operation
 - b. **Construction of a New Integrated Terminal Building for 2.4 million Passengers Per Annum (MPPA)**, at a cost of around Rs 500 crore has been undertaken at Imphal Airport to augment passenger handling capacity, which has been declared as international airport.

B) KRISHI UDAN SCHEME

- **Why in news?**
 - » **53 Airports are included** under Krishi Udan Scheme (April 2022)
- **Details**
 - » Krishi Udan Scheme was launched in Aug 2020, on international and national routes to assist farmers in transporting agriculture products so that it improves their value realization.
 - » **Krishi Udan 2.0** was announced in Oct 2021, enhancing the existing provisions, mainly focusing on transporting perishable food products, from the **hilly areas, North-Eastern states, and tribal areas**.
 - It was primarily focused on 25 airports of these regions. Later 28 more airports from other parts of the country were added into the scheme.
 - » Krishi Udan is a convergence scheme, where eight Ministries/Departments namely Ministry of Civil Aviation, Department of Agriculture & Farmer's Welfare, Department of Animal Husbandry and Dairying, Department of Fisheries, Ministry of Food Processing Industries, Department of Commerce, Ministry of Tribal Affairs, MoDONER would **leverage their existing schemes to strengthen the logistics for transportation of agri-produce**. There is **no budgetary allocation for the scheme**.
 - » **How is Krishi Udan facilitated and incentivized?**

- **Full waiver** of Landing, Parking, Terminal Navigational Landing Charges (TNLC), and Route Navigation Facility Charges (RNFC) for Indian freighters and Passenger to Cargo (P2C) at selected airports of AAI, primarily around 25 airports focusing on NER, Hilly and Tribal Region and 28 airports at other areas.

C) GOVERNMENT UNVEILS 100-DAY PLAN TO BOOST CIVIL AVIATION (SEP 2021)

- The 100-day scheme will continue from 30th Aug to 30th November.
 - The scheme has **16 main points** (4 under infrastructure, 8 under policy targets, and 4 under reforms)
- Under this four new airports - Kushinagar, Agartala, Jewar and second terminal building at Dehradun - would be constructed.
- Among other **6 heliports** would be developed in Himachal Pradesh and Uttarakhand under the regional air connectivity scheme UDAN.

D) AIRPORTS ECONOMIC REGULATORY AUTHORITY OF INDIA (AMENDMENT) BILL, 2021

- **Why in news?**
 - » In the Monsoon session, Parliament passed the Airports Economic Regulatory Authority of India (Amendment) Bill, 2021. (Aug 2021)
- **Details**
 - » **Background: About AERA Act:**
 - The AERA act was enacted in 2008 and an independent economic regulator, i.e., the AERA, was established in 2009. AERA determines the tariff for aeronautical services rendered at major airports.
 - Under the 2008 act, a major airport is one which "has or is designated to have, **annual passenger throughout in excess of 35 lakhs or any other airport as the Central Government may, by notification, specify. However, it doesn't specify determination of tariff for a group of airports.**
 - **For non-major airports**, the tariff for aeronautical services is determined by Airport Authority of India (AAI).
 - **Note:** There are a total of 154 airports in the country.
 - Among these AAI owns 136 airports and provide air traffic services over the entire Indian Airspace and adjoining areas.
 - The **Amendment** seeks to broaden the category of airports for which the Airports Economic Regulatory Authority (AERA) of India can determine Tariff by amending the **definition of major airports**. It includes "a group of airports" after the words "any other airport".
 - **What is the expectation from the amendment?**
 - Encourage development of smaller airports and make bidding for airports with less passenger traffic attractive. It plans to club profitable airports with non-profitable ones and offer them as a package for development in public-private partnership mode to expand connectivity

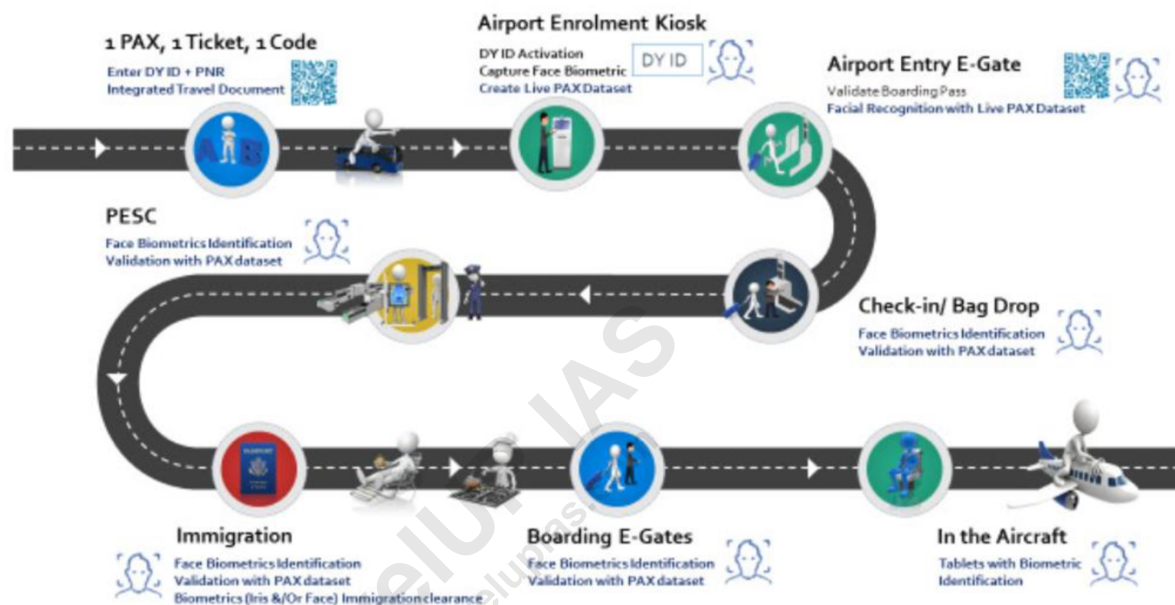
E) DIGI YATRA INITIATIVE

- It is an initiative for **Digital Processing of Passengers at Airports**.
- It envisages a connected ecosystem enhancing the seamless travel experience for the passengers and simultaneously improving the security.
- **Objectives:**
 - Every passenger (Indian or foreigner) become a 'Digi Yatri' and enjoy the privileges and benefits of the "Digi Yatra" Program. The main objectives are as follows:
 - A. Improved passenger experience

- B. Achieve better throughput through existing infrastructure
- C. Lower cost of operations
- D. Digitize current manual processes and to bring in efficiencies
- E. Enhance security standards and improve current system performance
- F. Rollout of "Digi Yatra" with a digital "ID" backed by a strong verifiable government issued identity AADHAAR, passport & others, enabling a seamless travel experience for passengers at all airports across India.

▪ **Process at the Airport:**

- a. At the entry point E-Gate the pax will scan his boarding pass or e-ticket (Print or a soft copy in mobile).
- b. On scanning the bar code/ QR code the system will validate the passenger details and flight details.
- c. Digi Yatra ID will verify the identity by Face Recognition.
- d. On successful verification of Ticket and Digi Yatra ID, e-Gate will open. Also, Face with ticket PNR is made in to a single token for the rest of the journey at the airport.
- e. Passenger will gain entry to security area and aircraft Boarding through e-Gate operated on Facial Recognition System



• **Facial Recognition System is to be implemented in a phased manner:**

- Facial Recognition system is part of the Digi Yatra initiative of the government of India for providing passengers seamless and hassle-free experience at the airports.
 - It is to be implemented in phased manner.
 - The **first phase** is planned at Kolkata, Varanasi, Pune, Vijaywada, Bangalore, Delhi and Hyderabad Airports by March 2023

5) NEW AIRPORTS

A) KUSHINAGAR INTERNATIONAL AIRPORT

- **Why in news?**
 - » Prime Minister Narendra Modi inaugurated the Kushinagar International Airport (Oct 2021)
- **Details**
 - » The airport in eastern UP, is the third international airport in the state and will mainly service the Buddhist tourism circuit.

- » The **Sri Lankan Airlines flight** carrying monks and dignitaries was the first to land at the airport.
- **Significance of Kushinagar:**
 - » Kushinagar is an important Buddhist pilgrim destination, and is believed to be the final resting place of Gautam Buddha. It is also the centre of a Buddhist tourist circuit, which includes Lumbini (Nepal), Sarnath and Bodh Gaya. Other Buddhist destination nearby include Nalanda, Sravasti, and Kapilvastu

B) JEWAR AIRPORT

- **Why in news?**
 - » UP government inks agreement with Swiss firm for Jewar airport (Oct 2020)
- **About the airport**
 - » The Noida International Airport at Jewar is a new proposed airport in Gautam Buddha Nagar district, located 70 kms from Delhi and 40 kms from Noida and 130 kms from Agra.
 - » The airport will be developed on 1,334 hectares of land and the U.P. government has reserved an additional 5,000 hectares for airport expansion.
- **Details of the Agreement**
 - » The UP government (Noida International Airport Limited) have signed a concession agreement with representatives of Zurich Airport International for designing, building and operating **the Noida International Airport at Jewar** for a period of 40 years.
 - Zurich Airport International AG (ZAIA) won the contract to build and operate the airport for a period of 40 years last November. They recently received security clearance from Ministry of Home Affairs.
 - » The airport will be developed on PPP basis and is scheduled to open in 2024

6) PRIVATIZATION IN AVIATION SECTOR

- i. **Disinvestment of Air India**
 - The process for disinvestment of Air India and its subsidiaries commenced in June 2017 with the 'in-principle' approval of Cabinet Committee on Economic Affairs (CCEA). CCEA also approved creation of an Air India Specific Alternative Mechanism (AISAM) for the disinvestment process. The AISAM decided the strategic disinvestment of 100percent stake of Government of India in Air India along with 100percent stake in Air India Express Ltd and 50percent stake in Air India SATS (joint venture between Air India (AI) and Singapore Airport Terminal Services (SATS)).
 - **Subsequently, M/s Talace Pvt Ltd, a wholly owned subsidiary of M/s Tata Sons Pvt. Ltd which was the highest bidder was awarded 100 percent equity shareholding in Air India along with equity shareholding of Air India in Air India Express Ltd. (AIXL) and AISATS.** The winning bid was for Rs 18,000 crore as Enterprise Value (EV) consideration for AI (100percent shares of AI along with AI's shareholding in AIXL and AISATS). Share - Purchase Agreement has been executed on 25th October, 2021 and the transaction has been completed.
- ii. **Privatization of Airports**
 - In order to improve efficiency and performance, service quality, encourage greater investment and to reduce government influence, **Airports Authority of India (AAI) has awarded six airports namely, Ahmedabad, Jaipur, Lucknow, Guwahati, Thiruvananthapuram and Mangaluru for Operations, Management and Development to the highest bidder i.e., M/s Adani Enterprises Limited (AEL) under Public Private Partnership (PPP) mode for a lease period of 50 years.**

- Besides, **AAI had leased out Delhi and Mumbai Airports in 2006 to M/s Delhi International Airport Limited and M/s Mumbai International Airport Limited** respectively for Operations, Management and Development under PPP mode for a period of 30 years.
- As per **National Monetization Pipeline (NMP)**, 25 AAI airports have been earmarked for asset monetization over the years 2022 to 2025 namely Bhubaneswar, Varanasi, Amritsar, Trichy, Indore, Raipur, Calicut, Coimbatore, Nagpur, Patna, Madurai, Surat, Ranchi, Jodhpur, Chennai, Vijayawada, Vadodara, Bhopal, Tirupati, Hubli, Imphal, Agartala, Udaipur, Dehradun and Rajahmundry.
- The criteria adopted for Monetization of airport assets under NMP is as following: (i) Airports having annual traffic above the threshold of 0.4 million passengers (in 2019 and 2020); (ii) Airports with a sizeable ongoing/proposed capex plan as per the National Infrastructure Pipeline (NIP).

3. UAV'S AND ASSOCIATED ISSUES

1) MINISTRY OF CIVIL AVIATION NOTIFIES LIBERALIZED DRONE RULES, 2021

- **Background:** In March 2021, the Ministry of Civil Aviation (MoCA) published UAS Rules, 2021. They were criticized by academia, Startups, end-users and other stakeholders as being restrictive in nature as they involved considerable paper work, required permission for every drone flight and very few "free to fly" green zones were available. Based on the feedback, the Government has decided to repeal the UAS Rules, 2021 and replaced the same with Liberalized Drone Rules, 2021.
- **Key Significance of the new Rules:**
 - **Reduces Operational Complexities and Promotes Ease of Doing Business**
 - The new rules are premised on **trust, self regulation and non-intrusive monitoring** rather than enforced regulation.
 - Rules have been **simplified by doing away with several unnecessary approvals** (e.g. Unique Authorization Number, certificate of manufacturing and airworthiness etc.)
 - **Reduction in number of forms (from 25 to 5) and number of fee (from 72 to 4).**
 - **Quantum of fee** reduced to nominal levels and delinked with size of drones.
 - For e.g. the fee for a remote pilot license has been reduced to INR 100 for all categories of drones; and is valid for 10 years.
 - **To promote minimum human interference,** the rules provide for creation of a **Digital Sky Platform**
 - It will serve as a business friendly single-window online system that allows for various approvals to be generated automatically for manufacturers, importers etc.
 - **Interactive airspace map** with green, yellow and red zones shall be displayed on the digital sky platform within 30 days of publication of these rules.
 - **No permission required** for operating drones in green zones.
 - **For micro drones** (non commercial use) and nano drones -> **No remote pilot license required**
 - **No requirement for security clearance** before issuance of any registration or license.
 - **Max penalty** for violation of the norms have been reduced to Rs 1 Lakh.
 - **Yellow zone,** where ATC permission is required, has been reduced from 45 km to 12 km from the airport perimeter.
 - **Foreign investment and imports in the sector** simplified
 - **No restriction on foreign ownership** in Indian drone companies.
 - **Import of drones** to be regulated by DGFT
 - **No requirement of import clearance** from DGCA
 - **Coverage of drones under drone rules 2021,** increased from 300 kg to 500 kg. This will cover drone taxis as well.

- DGCA shall prescribe drone training requirements, oversee drone schools and provide pilot licenses online.
 - Remote pilot license to be issued by DGCA within 15 days of pilot receiving the remote pilot certificate from the authorized drone school through the digital sky platform.
 - **Type certification** required only when a drone is to be operated in India. Importing and manufacturing of drones purely for exports are exempt from type certification and unique identification number.
 - **Nano and model drones** (made for research or recreational purpose) are exempt from type certification.
- **Safety Measures Ensured**
 - The central government will also be notifying the safety measures to be installed on a drone.
 - Some measures will include 'No permission - no takeoff (NPNT), real-time tracking beacon, geo-fencing etc.
 - A six month lead time will be provided to industries for compliance.
- **Infrastructure Improvement:**
 - **Drone corridors** will be developed for cargo deliveries.
- **Institutional Mechanism to promote the sector**
 - **Drone Promotion Council** will be set up by government with participation from academia, startups and other stakeholders to facilitate a growth oriented regulatory regime.
- Overall, these rules are expected to leverage India's capability in innovation, technology and engineering to develop India's Drone Sector.

2) PLI SCHEME FOR DRONE SECTOR (SEP 2021)

- **Total Amount allocated** for the PLI scheme for drones and drone component is INR 120 crore spread over three financial years. This amount is nearly double the combined turnover of all domestic drone manufacturing companies.
- **Incentives** for a manufacturer of drone and drone component shall be as high as 20% of the value addition made by her.
- Government has kept the PLI rate constant at 20% for all three years, an exceptional treatment given only to the drone industry. In PLI scheme for other sectors, the PLI rate reduces every year.
 - After three years, the scheme may be extended or redrafted after studying its impact in consultation with the industry.
- Government has also agreed to fix the minimum value addition norm to 40% of net sales for drones and drone components instead of 50%, another exceptional treatment given to the drone industry.
- Drone related IT Products are also included in the coverage of this PLI
- The government has kept the eligibility norms for MSME and Startups in terms of annual sales turnover at a nominal level - INR 2 crore (for drones) and INR 50 Lakh (for drone components). This will allow widening of number of beneficiaries.
- Eligibility norm for non-MSME companies in terms of annual sales turnover has been kept at INR 4 crores (for drones) and INR 1 crore (for drone components).
- PLI for a manufacturer shall be capped at **25% of total annual outlay**. This will allow widening of the number of beneficiaries.

3) INDIA'S AIRSPACE MAP FOR DRONE OPERATIONS RELEASED BY MINISTRY OF CIVIL AVIATION (SEP 2021)

- The drone airspace map comes as a follow-through of the liberalized Drone Rules, 2021 released by the central government on 25th Aug 2021, the PLI Scheme for drones released on 15th Sep 2021 and the Geospatial Data Guidelines issued on 15th Feb 2021.
- **Key features of the Drone Airspace Maps:**
 - » It's an interactive map of India that demarcates Yellow and Red Zones across the country.
 - » It is freely available on DGCA's digital Sky Platform at <http://digitalsky.dgca.gov.in/home>.
 - » **Green zone** is the airspace upto 400 feet that hasn't been designated as red/yellow zones; and upto 200 feet above the area located between 8-12 km from the perimeter of an operational airport.
 - In green zone, no permissions are needed for drones weighing upto 500 kg.
 - » **Yellow Zone** is the airspace above 400 feet in the designated green zone; and above 200 feet in area located between 8-12 kms from the perimeter of an operational airport and above ground in the area between 5-8 km from the perimter of an operational airport.
 - **In Yellow zone**, Drone operations require permission from the concerned air traffic control authority - AAI, IAF, Navy, HAL etc. as the case may be.
 - » **Red Zone** is a no-drone zone within which drones can be operated only after permission from central government.
 - » The airspace may be modified by authorized entities from time to time.
 - Anyone planning to operate drones, must regularly see the updated map