MODULE –V

AIR SPACE AND AIR TRAFFIC MANAGEMENT IN INDIA

PART -1

WING COMMANDER K VENUGOPAL (RETD)

INTRODUCTION AND HISTORICAL EVOLUTION

- AVIATION COME A LONG WAY SINCE 17 DEC 1903, GLOBE NOW ENVELOPED BY NETWORK OF AIR ROUTES AND AIRSPACE HAS BECOME BUSY AIRWAYS FOR WORLD COMMERCE
- AIR TRANSPORT CHANGED AT REMARKABLE PACE AND MOVED RATHER FAST FROM THE PISTON – ENGINE TO TURBO-PROPS AND TO ALL JETS–WIDE BODY IN QUICK SUCCESSION
- AIR TRAFFIC GROWTH GREATER THAN GROWTH IN NATIONAL ECONOMY, DEMAND FOR AIR TPT DETERMINED BY ECONOMIC DEVELOPMENT- STRONG CORRELATION BETWEEN THE TWO
- PERSONAL INCOME HAS A DIRECT BEARING ON AIR TRAVEL
- INTERNATIONAL TRADE - DIRECT IMPACT
- EXPANSION OF INTERNATIONAL TOURISM. WORLD TOURISM ORGANIZATION (WTO) ESTIMATES 1.56BILLION ARRIVALS IN 2020 AS AGAINST 657 MILLION INTERNATIONAL TOURIST ARRIVALS IN 199 -ASIA-PACIFIC IS THE FASTEST GROWING REGION
- FORECAST BY AIR TRANSPORT ACTION GROUP (ATAG), GENEVA, THE REGION'S SHARE OF SCHEDULED INTERNATIONAL PASSENGER TRAFFIC WILL REACH 49.8 PERCENT BY 2010
- AVIATION INDUSTRY - MAJOR ECONOMIC ACTIVITY.
- COMPETITION BETWEEN AIRLINES, BETWEEN AIRPORTS IS INCREASING IN MANY PARTS OF THE WORLD.
- AVERAGE ANNUAL RATE OF 5 PERCENT TO 6 PERCENT OVER THE NEXT 20 YEARS
- CHALLENGES TO EVERY SECTOR OF THE INDUSTRY
- AIRLINES AND MANUFACTURERS WORKING TO BRING NEW AIRCRAFT THAT ARE LARGER, ECONOMICAL AND ENVIRONMENT- FRIENDLY
- DIFFICULT AND TIME CONSUMING FOR THE AIRPORTS TO BUILD UP COMPATIBLE GROUND ENVIRONMENT- LIKE A380 CHALLENGES TO AIRPORT MANAGEMENT.

INTRODUCTION AND HISTORICAL EVOLUTION

- AIRPORT AND AIRSPACE CONGESTION -BURNING PROBLEM
- SATELLITE BASED HIGH TECH COMMUNICATION, NAVIGATION SURVEILLANCE AND AIR TRAFFIC MANAGEMENT (CNS/ATM)- 'SEAMLESS TRAVEL'
- AVIATION/AIR TRANSPORT INFRASTRUCTURE OF NATION INCLUDES AIRPORTS, AIRCRAFT (AIRLINES), AND AEROSPACE INDUSTRY AND AIR TRAFFIC CONTROL / AIR NAVIGATION SERVICES
- MUTUALLY DEPEND ON EACH OTHER -AIRPORT PLAYS A DOMINANT ROLE AS IT IS RUNWAY THAT TRIGGERS AVIATION ACTIVITIES IN A COUNTRY
- AIRPORTS ARE KEY ATTRACTION FOR FOREIGN INVESTMENTS, OUTPUT GENERATORS AND JOB CREATORS
- DELICATE BALANCE - ECONOMIC ACTIVITIES AND ENVIRONMENT PROTECTIONS
- INDIAN AVIATION AUTHORITIES HAVE BEEN BOLD IN PREPARING A VISION DOCUMENT TITLED VISION 2040. WHILE VISUALIZING 20 YEARS INTO THE FUTURE IN AVIATION IS VERY DIFFICULT NONETHELESS THE VERY THOUGHT OF CREATING A VISION FOR NEXT 20 YEARS WILL GIVE A REALISTIC BENCHMARKING IN PLANNING AND IMPLEMENTATION OF VARIOUS PROJECTS.

AN OVER VIEW ON AIR TRANSPORT MANAGEMENT IN INDIA

- AVIATION IN INDIA ALMOST SAME TIME AS IN EUROPE
- FIRST AIR DISPLAY AT TOLLYGANJ CLUB, CALCUTTA 28 DEC 1910
- FIRST LONG DISTANCE CAIRO TO CALCUTTA 29 NOV – 12 DEC, 1918
- 24 JAN, 1920, INDIAN POSTAL DEPT ANNOUNCED A WEEKLY BOMBAY - KARACHI AIRMAIL SERVICE
- AFTER INDEPENDENCE, BOMBAY FIRST AIR INDIA LANDING WITH CONSTELLATION AIRCRAFT 16 MAR 1948
- INTERNATIONAL SECTOR AIR INDIA TOURIST CLASS FLIGHT TO NAIROBI 01 DEC, 1952
- 01 AUG 1953, GOI NATIONALIZED ALL AVIATION SERVICES
- INTERNATIONAL AIR SERVICES PROVIDED BY AIR INDIA INTERNATIONAL LTD AND DOMESTIC FLIGHTS INCLUDING AIR INDIA INTEGRATED INTO– INDIAN AIRLINES LTD BY AIR CORPORATION ACT, 1953

AN OVER VIEW ON AIR TRANSPORT MANAGEMENT IN INDIA

- MINISTRY OF CIVIL AVIATION IS APEX BODY FOR POLICY MAKING AND OVERALL COORDINATION BODY FOR DGCA AND ALL OTHER AVIATION RELATED AUTHORITIES
- DGCA APPOINTED TO DISCHARGE REGULATORY FUNCTIONS IN RESPECT OF CIVIL AVIATION, UNDER PROVISIONS OF RULE 134 OF AIRCRAFT RULES 1937, PERMISSION TO PERSONS TO OPERATE AN AIR TRANSPORT SERVICE TO, WITH IN AND FROM INDIA
- FOUR INTERNATIONAL, BOMBAY, CALCUTTA, DELHI AND MADRAS, IAAI SINCE 1 APR 1972. TRIVANDRUM ON 1 APR 1991
- NAA FORMED BY TRANSFERRING ALL THE FUNCTION/PROVISION OF ATC AND ANS FROM DGCA ON 1 JUN 1986
- LIBERALIZATION OF NATIONAL ECONOMY- FIRST STEP TOWARDS LIBERALIZATION IN 1986, DEREGULATED SCHEDULED AIR OPS BY THE ISSUE OF AIC24/1990, DETAILED GUIDELINES FOR AIR TAXI OPERATIONS AND ELIGIBLE TO OPERATE TO ALL AIRPORTS IN COUNTRY INCLUDING AIRPORTS WHICH WERE HITHERTO OPEN TO SCHEDULED OPERATIONS
- PRIVATE AIRLINES ALLOWED OPERATING CHARTER AND NON-SCHEDULED SERVICES TO ALL AUTHORIZED AIRPORTS UNDER THE AIR TAXI SCHEME AND WERE ALSO PERMITTED TO DECIDE THEIR FARES AND FLIGHT SCHEDULES

AN OVER VIEW ON AIR TRANSPORT MANAGEMENT IN INDIA

- ANOTHER MOVE TOWARDS LIBERALIZATION EARLY 1990S IMPLEMENTED OPEN SKY POLICY FOR CARGO WHICH ALLOWED INTL AIRLINES TO OPERATE CARGO FLIGHTS WITHOUT RESTRICTIONS, CHARGE RATE WITHOUT REFERENCE TO DGCA
- UNDER THIS, ANY FOREIGN DOMESTIC AIRLINE OR ASSOCIATION OF EXPORTERS OR PRIVATE OPERATOR'S COULD BRING FREIGHT CARRIERS TO INDIA FOR LIFTING CARGO FROM ANY AIRPORT
- RESTRICTIONS INTERNATIONAL AIRLINES NOT ALLOWED TO CARRY DOMESTIC CARGO ON THEIR FLIGHTS WITHIN COUNTRY
- NEXT MAJOR STEP WAS TERMINATION OF STATE MONOPOLY OVER SCHEDULED AIR TRANSPORT SERVICES WITH ENACTMENT OF AIR CORPORATION (TRANSFER OF UNDERTAKING AND REPEAL) ACT, 1994.
- MAIN REASONS FOR DEREGULATION - DECLINE IN PROFITABILITY OF AIR INDIA AND INDIAN AIRLINES OWING TO ORGANIZATIONAL AND MANAGERIAL INEFFICIENCIES AND THAT CAPACITY OF NATIONAL CARRIERS ENOUGH TO MEET GROWING PASSENGER DEMAND
- ENACTMENT OF 1994 ACT, PVT OPERATORS ALLOWED TO OPERATE BOTH SCHEDULED AND NON-SCHEDULED IN DOMESTIC SECTOR, NO MAJOR RESTRICTIONS ON AIRCRAFT SIZE AND TYPE
- TO ENSURE SAFETY, SECURITY AND ORDERLY GROWTH OF AIR TRANSPORT SERVICES LEAD TO ESTABLISHMENT OF NAAI FOR MANAGEMENT OF AIRPORTS, CIVIL ENCLAVES, AIR TRANSPORT SERVICES AND ALL NAVIGATION AND COMMUNICATION STATIONS
- NAA HELPED TO PROVIDE A FACELIFT TO DOMESTIC AIRPORT AND MODERNIZED AIR SPACE MANAGEMENT
- NAA AND IAAI MERGED IN 1994 AND BECAME AAI
- CONSTITUTION OF AAI AND TRANSFER AND VESTING OF THE UNDERTAKINGS OF THE IAAI AND NAAI WERE FOR BETTER ADMINISTRATION AND CO-ORDINATE MANAGEMENT OF AIRPORTS AND CIVIL ENCLAVES
- DUE TO INFRASTRUCTURAL CONSTRAINTS OF NUMBER OF AIRPORTS, GOVERNMENT PERMITTED ADDITION TO CAPACITY BASED ON TRAFFIC PROJECTIONS
- 1994-95 PERMITTED DIRECT IMPORT OF ATF UNDER THE SPECIAL IMPORT LICENSE SCHEME
- 1997-98, PRIVATIZATION POLICY FURTHER LIBERALIZED AND FOREIGN EQUITY PARTICIPATION UP TO 40% (100 % FOR NRI) ALLOWED IN DOMESTIC AIRLINE SECTOR. FOREIGN AIRLINES NOT ALLOWED TO PICK UP EQUITY, DIRECTLY OR INDIRECTLY

AN OVER VIEW ON AIR TRANSPORT MANAGEMENT IN INDIA

- MANY OPERATORS AS AIR TAXI OPERATORS IN 1997, 21 AIR TAXI OPERATORS OVERALL SHARE NEARLY 30% OF TRAFFIC
- MUSHROOMING OF AIR TAXI OPERATORS WITNESSED IN EARLY 90S ALMOST VANISHED, LEAVING ONLY VERY FEW PRIVATE AIRLINES
- SOME CONSOLIDATED BY MERGERS AND ACQUISITIONS- JET ACQUIRED, SAHARA; KINGFISHER ACQUIRED DECCAN AND AIR INDIA AND INDIAN AIRLINES MERGED
- LIBERALIZATION OF AVIATION PRECIPITATED BOOM FOR DOMESTIC AND INTERNATIONAL CARRIERS
- DOMESTIC PASSENGER AND CARGO TRAFFIC -GROWTH RATE OF 44.6% AND 8.7%
- INTERNATIONAL PASSENGER AND CARGO TRAFFIC -GROWTH RATES OF 15.8% AND 13.8% DURING 2006-07
- TILL RECENTLY AAI MANAGED 122 AIRPORTS IN THE COUNTRY, 11 INTL 94 DOMESTIC AND 28 CIVIL ENCLAVES
- TOP 5 AIRPORTS HANDLE 70% OF THE PASSENGER TRAFFIC -DELHI AND MUMBAI MORE THAN 50%
- LATEST DATA SHOW ALL AIRPORTS HANDLED 90.44 MILLION PASSENGERS IN 2006 COMPARED TO 67.95 MILLION IN 05

AN OVER VIEW ON AIR TRANSPORT MANAGEMENT IN INDIA

- SUBSTANTIAL GROWTH OF AVIATION INDUSTRY DUE TO LOW FARES OFFERED BY LCC LIKE DECCAN, SPICE JET, GO AIR ETC
- SCHEDULED DOMESTIC AIR SERVICES AVBL FROM 75 AIRPORTS AGAINST 50
- HEALTHY COMPETITIONS AND EFFECTIVE MANAGEMENT ESSENTIAL FOR BALANCED GROWTH, BOTH QUALITY AND QUANTITY
- OPENING UP OF SKY IN 90S- HIGH-PACED ECONOMY AND SUBSEQUENT GROWTH FOR AVIATION INDUSTRY
- INDIA AND CHINA TO BE DRIVING FORCE BEHIND GROWTH
- INDIA SIGNATORY TO SEVERAL INTERNATIONAL CONVENTIONS GOVERNING AIR TRANSPORTATION
- ENTERED INTO AIR SERVICE AGREEMENTS (ASA) WITH 100 COUNTRIES TILL DATE
- BILATERAL AGREEMENTS PROVIDE BASIC LEGAL FRAMEWORK FOR OPERATION OF AIR SERVICES BETWEEN TWO CONTRACTING PARTIES
- NUMBER OF FLIGHTS EACH COUNTRY CAN OPERATE AND DESTINATIONS SERVED SPECIFIED

AN OVER VIEW ON AIR TRANSPORT MANAGEMENT IN INDIA

AVIATION GROWTH AND GDP

- WELL ESTABLISHED THAT GROWTH OF AIR TRAVEL A DIRECT REFLECTION OF
  - INCOME LEVELS
  - COST OF AIR TRAVEL
  - TARGET POPULATION

  AIRLINE/AIRPORT CONTRIBUTIONS BY WAY OF PASSENGER AND FREIGHT MOVEMENTS, AND INCREASING NUMBER OF AIRCRAFT MOVEMENT VITAL INPUT TO NATIONAL ECONOMY

  FOR PAST 35 YEARS ON AVERAGE, THE GLOBAL PASSENGER- KILOMETER PERFORMED (PKP) RECORDED 1.6 TIMES THE GDP

  HENCE CLOSELY LINKED WITH GROWTH RATE OF A COUNTRY

  ADEQUACY OF AIR TRANSPORT BOTH IN QUALITY AND RELIABILITY A BIG FACTOR IN ABILITY OF COUNTRIES TO COMPETE AT GLOBAL LEVEL

AIRPORT AS GROWTH ENGINE

- "A MILE OF RUNWAY CAN CHANGE THE DEMOGRAPHY AND CULTURE OF THE PEOPLE IS A REALITY"
- AIRPORTS BASIC MODE ON WHICH AIR TRANSPORT INDUSTRY THRIVES
- VITAL CATALYST IN CREATING NEW EMPLOYMENT OPPORTUNITIES AND BUSINESS GROUND FOR FOREIGN INVESTMENT
- DIVERSIFYING THEIR BUSINESS- DIRECT OPERATION IN GROUND HANDLING, MANAGEMENT CONTRACT AT OTHER AIRPORTS, PROVIDING TRAINING OR CONSULTING SERVICES, AIRLINE PARTNERSHIP AND DIVERSIFICATION INTO NON-AVIATION ACTIVITIES
- DIRECT ECONOMIC IMPACT OBTAINED BY MEASURING ACTIVITIES OF AIRLINES, AIRPORTS AND BUSINESS GENERATED AT AIRPORT
- AIRPORT ARE TIME SAVING AND COST AVOIDED BY AIR TRAVELERS WITH HIGHER LEVEL OF SAFETY, COMFORT AND CONVENIENCE OF AIR TRAVEL
- SPIN OFF EFFECTS OF AIRPORT NUMEROUS, LIKE RIPPLE EFFECT, ON TOTAL ECONOMY- PROVIDE DIRECT AND INDIRECT EMPLOYMENT OPPORTUNITIES

AIRPORT AS REVENUE GENERATOR

- GENERATES A HOST OF OTHER NON AERONAUTICAL REVENUES
- STIMULATES TOURISM AND HAS CATALYTIC IMPACT ON OTHER SERVICES LIKE IN FLIGHT CATERING, DEVELOPMENT OF NEW BUSINESS UNIT IN LOCATIONS WITH GOOD AIR SERVICE LINK
- PROVIDES FASTEST DISTRIBUTION SERVICE THROUGHOUT THE WORLD
- NON AERONAUTICAL ACTIVITIES BY OUTSIDE PARTIES SUCH AS AUTOMOBILE PARKING, HOTEL/GUESTHOUSES ETC
- IN ASIA RATIO OF AERONAUTICAL TO NON AERONAUTICAL REVENUE AROUND 67:33
- AIR TRANSPORT DRIVES ECONOMIC AND SOCIAL PROGRESS, ONE OF LARGEST AND FASTEST GROWING INDUSTRIES CONTRIBUTING TO EVERY SECTOR OF ECONOMY EITHER DIRECTLY OR INDIRECTLY
- WILL INDIAN AVIATION INDUSTRY SURVIVE THE HEAT ???
- MOST AIRLINES REPORTED LOSSES IN 2007-08 WORLDWIDE
- RESPONSE
  - CUTTING ROUTES
  - ISSUING E-TICKETS
  - CHARGING FOR ITEMS SUCH AS SNACKS
  - CHECKED-IN LUGGAGE
  - ALSO HIKED FUEL SURCHARGES
  - SELLING THEIR STAKE

TOUGH CHALLENGES AHEAD AND URGENT REQUIREMENT TO NOT ONLY SURVIVE CURRENT TURBULENCE BUT ALSO MAINTAIN GROWTH

AIRPORT AS REVENUE GENERATOR

IDENTIFIED CHALLENGES

- AIRPORT AND AIRSPACE CONGESTION
- AIRCRAFT PRICING AND RUNNING COST AS A CHALLENGES
- RISING FUEL PRICES
- GAPS IN AIRPORT INFRASTRUCTURE AND LEADERSHIP
- SAFETY AND INSURANCE
- REGIONAL CONNECTIVITY
- EMPLOYEE SHORTAGE
- DECLINING YIELDS
- ENVIRONMENT
- ADVANCEMENT

AIRPORT AS REVENUE GENERATOR

COMPACTING STRATIGIES

- CHALLENGES -THE NOTION OF RESTRUCTURING AND COST CUTTING HAS BEEN EMBRACED WHOLEHEARTEDLY BY ALL AIRLINES AS THE ONLY VIABLE WAY TO SECURE THEIR LONG-TERM SECURITY
- DGCA MUST UNVEIL PLANS TO DRIVE THE DEVELOPMENT AND GROWTH OF THE AVIATION
- BUILT AROUND THE THREE THRUSTS OF ENABLING ENTERPRISE, IDEAS AND PEOPLE
- AIRCRAFT MANUFACTURING PURSUE DEVELOPMENT OF SUSTAINABLE BIO-FUELS. CONSTANTLY REDESIGNING AND RE-ENGINEERING AIRCRAFT, DEVELOP LIGHTER COMPOSITE MATERIALS, MORE AERODYNAMIC DESIGNS AND MORE EFFICIENT ENGINES.
- THE LCC BOOM IN INDIA STARTED WITH LOW PRICE TAGS, APEX FARES, INTERNET AUCTIONS, BULK PURCHASES AND LAST DAY FARES
- NEW MANAGEMENT STRATEGIES LIKE LOAD MANAGEMENT PLANNING, MARKETING YOUR AIRPORT AND CODE SHARING TO BE
- ANALYSTS HAVE LONG CALLED FOR THE LIBERALIZATION OF THE AVIATION INDUSTRY AND ITS POLICIES TO REALIZE ITS TRUE POTENTIAL.

AIRPORT AS REVENUE GENERATOR

CONCLUSION

- ECONOMIC RECOVERY COUPLED WITH THE STEADYING OF WORLD MARKETS, HAS RESULTED IN RETURN OF BUSINESS CONFIDENCE AND CORPORATE INVESTMENT IN THE AVIATION INDUSTRY
- POLITICAL ENVIRONMENT HAS ALSO BEGUN TO SLOWLY STABILIZE; RESULTED IN HIGH LEVEL GROWTH IN THE DEMAND FOR WORLDWIDE LEISURE TRAVEL
- RESULTED IN MUCH STRONGER LEVELS OF AIR TRAFFIC IN 2004 THAN HAD BEEN FORECAST
- OVER THE 2004 – 2023 PERIOD WORLD PASSENGER LEVELS FORECAST TO INCREASE BY 5.3% YEAR ON YEAR
- COMPANIES SUCH AS BOEING AND AIRBUS WILL REAP BENEFITS OF THIS GROWTH
- TRAFFIC GROWTH COUPLED WITH FLEET RENEWAL, WILL REQUIRE THE DELIVERY OF APPROXIMATELY 16,600 NEW PASSENGER AIRCRAFT. FREIGHT TRAFFIC IS ALSO EXPECTED TO GROW AT 5.9% PER YEAR, THROUGHOUT THE 2004 – 2023 PERIODS. TRAFFIC GROWTH AND FLEET DEMAND WILL RESULT IN THE DEMAND 3,100 FREIGHTER DELIVERIES OF WHICH 23% WILL BE PURPOSE BUILT FREIGHTERS.
- CIVIL AVIATION BY ITSELF IS A CREATIVE ACTIVITY AND IT PLAYS A MAJOR ROLE IN THE WORLD ECONOMIC DEVELOPMENT. SOME OF THE IMMEDIATE CHALLENGES FOR AIR TRANSPORT ARE AIRPORT AND AIRSPACE CONGESTION, IMPLEMENTATION OF CNS/ATM SYSTEM, INTRODUCTION OF NEW FUEL EFFICIENT, LESS NOISY LARGE AIRCRAFT, INCREASED SECURITY CONCERNS, ENVIRONMENTAL PRESSURE AND CHANGING FACES OF AIRPORT LEADERSHIP. ALL THESE CHALLENGES REQUIRES NEW DEMAND ON AVIATION/AIRPORT MANAGEMENT. MANAGEMENT OF AIRPORT IS REQUIRED TO BE DONE ON COMMERCIAL PHILOSOPHY AND PERFORMED EXCEPTIONALLY WELL TO BE A ‘WORLD CLASS” DESPITE FACING TREMENDOUS CONSTRAINTS. NAMELY THREE KEY AREAS ‘ACCESS, COMMERCIALIZATION AND ENVIRONMENT. MANAGEMENT MUST APPROACH TO EXCELLENCE AND BRING OUT TECHNIQUES THAT CAN GIVE SAFE AIRCRAFTS, EQUIPMENTS, AND AIR TRAVEL TO WORLD CLASS AND BEYOND.

INSTITUTIONAL AND ORGANIZATIONAL FRAMEWORK TO REGULATE AIR TRAFFIC AND AIR SPACE MANAGEMENT IN INDIA

STAKEHOLDERS

- PILOTS, CREW MEMBERS AND TECHNICIANS
- AIRLINE OPERATORS.
- AIRPORT OPERATORS AND MANAGERS OF AVIATION INFRASTRUCTURE
- DEFENCE MINISTRY
- MINISTRY OF ENVIRONMENT
- REGULATORS DGCA, BCAS AND AIRPORT ECONOMIC REGULATION AUTHORITY. INTERNATIONAL REGULATORS LIKE EU, FAA AND ICAO REGULATE INTERNATIONAL OPERATIONS AND PRESCRIBE STANDARDS THAT SIGNIFICANTLY DETERMINE INDIAN AVIATION AS WELL.
- REGULATORY SERVICE PROVIDERS LIKE THE CISF
- THE MINISTRY OF HOME
- MRO
- TRAINING SCHOOLS
- GROUND HANDLING.
- OIL MARKETING COMPANIES
- MINISTRIES OF FINANCE
- MINISTRY OF URBAN DEVELOPMENT AND MUNICIPAL AGENCIES
- AIR TRAFFIC CONTROLLERS
- MINISTRY OF SCIENCE AND TECHNOLOGY
- MINISTRY OF COMMUNICATION
- MANUFACTURERS OF AIRCRAFTS AND ENGINES

DIRECTORATE GENERAL OF CIVIL AVIATION

- RESPONSIBLE FOR ENSURING CNS/ATM SERVICES PROVIDED BY AAI IN ACCORDANCE WITH CAR ISSUED UNDER SECTION 4
- CARRY OUT SURVEILLANCE/ AUDIT ETC
- AERODROME STANDARDS DIRECTORATE NOT ADEQUATELY, INTERIM MEASURE, MANPOWER OF AIRPORTS AUTHORITY OF INDIA FOR THE PURPOSE OF CARRYING OUT THE OVERSIGHT FUNCTIONS IN AN EFFECTIVE MANNER AND ALSO ASSIST
- CAR ISSUED UNDER PROVISIONS OF RULE 133A OF AIRCRAFT RULES, 1937 AND SUPERSEDES CAR SECTION 4 SERIES A PART II, ISSUE I DATED 11TH MARCH 2009.

APPLICABILITY

- TO AIRPORTS AUTHORITY OF INDIA

FUNCTIONS

- COMMUNICATION, NAVIGATION AND SURVEILLANCE (CNS):
- COMMISSIONING OF THE CNS EQUIPMENT;
- PERIODIC INSPECTIONS AND SURVEILLANCE OF THE AERONAUTICAL TELECOMMUNICATION STATIONS
- SCRUTINY AND PROCESSING OF MANUALS OF AERONAUTICAL TELECOMMUNICATION STATIONS SUBMITTED BY AAI
- PROVIDE ASSISTANCE IN THE ESTABLISHMENT OF DIRECTORATE OF AIRSPACE AND AIR TRAFFIC MANAGEMENT IN DGCA FOR CERTIFICATION AND FORMULATION OF RELATED REGULATION AND GUIDANCE MATERIAL;
- ANY OTHER DUTY ASSIGNED BY DGCA FROM TIME TO TIME PARTICULARLY SURVEILLANCE/ OVERSIGHT FUNCTIONS.
- AIR TRAFFIC MANAGEMENT
- ALL MATTERS RELATED WITH THE LICENSING OF ATCOS
- DEAL WITH THE MATTERS RELATING TO AIRSPACE MANAGEMENT LIKE NOTIFICATION OF THE AIRSPACE, TEMPORARY CLOSURE OF AIRSPACE, IMPLEMENTATION OF FLEXI USE OF AIRSPACE;

DIRECTORATE GENERAL OF CIVIL AVIATION

- PROCESS CASES RELATING TO PROMULGATION OF NAVIGATION PROCEDURES FOR EN-ROUTE (ATS ROUTE), PBN PROCEDURE AND TERMINAL IAL PROCEDURES ETC
- APPROVAL OF MAPS AND CHARTS IN ACCORDANCE WITH CAR
- CERTIFICATION OF ATM FACILITIES AND SYSTEMS

CRITERIA FOR NOMINATION OF AIR TRAFFIC MANAGEMENT & CNS INSPECTORS

- AAI NOMINATE AT LEAST FOUR CNS INSPECTORS AND EIGHT ATM INSPECTORS
- NOMINATED INSPECTORS SHALL MEET FOLLOWING CRITERIA:-
  - QUALIFICATION: CONVERSANT WITH INDIAN REGULATIONS/ REQUIREMENTS, ICAO SARPS, RELATED GUIDANCE MATERIAL. PREFERENCE TO THOSE WHO HAVE UNDERGONE TRAINING IN FIELD OF ATCO LICENSING AND CERTIFICATION
  - KNOWLEDGE : BASIC KNOWLEDGE AND EXPERTISE IN THE FIELD OF COMMISSIONING AND MAINTENANCE OF CNS EQPT, ATS, AIS, AERONAUTICAL CHARTS, DESIGNING OF IAL PROCEDURES
  - EXPERIENCE: WORKED IN RELEVANT FIELD AT LEAST 5 YEARS

SELECTION PROCESS

- COMMITTEE CONSTITUTED BY THE DG, ON BASIS OF QUALIFICATIONS, EXPERIENCE AND PAST PERFORMANCE

TERMS AND CONDITIONS OF SECONDMENT

- CNS/ ATM INSPECTOR ON DEPUTATION TO DGCA NOT EXCEEDING TWO YEARS INITIALLY, RENEWABLE.
- NO MANAGEMENT RESPONSIBILITIES IN AAI, ASSOCIATED WITH ASSOCIATIONS/UNIONS, ETC
- PAY, ALLOWANCES, PROGRESSION IN SERVICE, PERKS PROTECTED AND PAID BY AAI
- REPORT TO DGCA FOR ASSIGNMENT OF DUTIES BOTH FOR INSPECTIONS AND OFFICE WORK
- INSPECTIONS/ SURVEILLANCE DUTIES ONLY ON BEHALF OF DGCA AND PERFORM MANNER BEFITTING
- ACCOUNTABLE TO DGCA FOR ALL INSPECTION/SURVEILLANCE

DIRECTORATE GENERAL OF CIVIL AVIATION

- BEFORE ASSIGNING UNDERGO ORIENTATION TRAINING AND STANDARDIZATION COURSE TO BE CONDUCTED IN DGCA, INCLUDING OJT

GENERAL REQUIREMENTS

- CANCEL SECONDMENT, AAI ASKED TO NOMINATE REPLACEMENT
- DGCA MAY GRANT DISPENSATION FROM ANY OF THE REQUIREMENT SPECIFIED ABOVE IN ANY CASE WHERE HE IS SATISFIED THAT IT IS EXPEDIENT SO TO DO.
- DGCA HAS DISCRETION TO REVIEW

ROLE OF AAI IN AIR SPACE AND ATM

- AAI CONSTITUTED ON 1 APR, 95 BY MERGING ERSTWHILE NAA AND IAAI
- AIMED TO DERIVE SYNERGY OF MERGER AND BUILD A NEW ORGANIZATION TO TAKE UP UPCOMING CHALLENGES IN COMPETITIVE ENVIRONMENT
- CIVIL AVIATION SEEN SEA CHANGE AND AAI READY TO MEET CHALLENGES NATIONAL AND INTERNATIONAL
- 11TH FIVE YEAR PLAN PREPARED AND GROWTH TARGETS SET FOR PARAMETERS CONTRIBUTING TO GROWTH OF CIVIL AVIATION ENCOURAGING
- AAI MAINTAINS AND OPERATES 127 AIRPORTS INCL CIVIL ENCLAVE AT DEFENCE AIRFIELDS FOR COMMERCIAL AIRLINES OPERATIONS
- DELHI AND MUMBAI HAVE BEEN LEASED TO JOINT VENTURE COMPANIES ON 03.05.2006 FOR MODERNIZATION
- GREENFIELD AIRPORT- HYDERABAD OPERATIONAL WEF 23.3.2008.
- BENGALURU OPERATIONAL WEF 24.5. 2008.
- AAI PROVIDES CNS/ATM SERVICES AT ALL THE AIRPORTS (INDIAN AIRSPACE OVER 2.8 MILLION SQUARE NM
- 2008-09, AAI HANDLED 13.06 LAKH MOVEMENTS (10.40 L DOMESTIC AND 2.70 L INTL); 108.88 MILLION PASSENGERS (77.30 MILLION DOMESTIC AND 31.58 MILLION INTERNATIONAL) AND 16.97 LAKH METRIC TONNES OF AIR CARGO (5.48 LAKH METRIC TONNES DOMESTIC AND 11.49 LAKH METRIC TONNES INTERNATIONAL).

TRAINING

- AAI IMPARTS TRAINING AT CATC, ALLAHABAD ON VARIOUS OPERATIONAL AREAS LIKE ATC, RADARS, COMM
- NIAMAR AT DELHI FOR IMPARTING AVIATION MANAGEMENT TRAINING PROGRAMMES AND REFRESHER COURSES.
- FIRE SERVICE TRAINING SCHOOL AT NARAYANPUR NEAR KOLKATA AND FIRE TRAINING CENTRE AT NEW DELHI

ROLE OF AAI IN AIR SPACE AND ATM

GAGAN PROJECT

- 'GPS AIDED GEO AUGMENTED NAVIGATION - AUGMENTATION SYSTEM TO ENHANCE ACCURACY AND INTEGRITY OF GPS SIGNALS TO MEET PRECISION APPROACH REQUIREMENTS IN CIVIL AVIATION AND BEING IMPLEMENTED JOINTLY BY AAI AND ISRO IN THREE PHASES
- FOOTPRINT COVERS VAST GEOGRAPHICAL AREA FROM AFRICA TO AUSTRALIA AND WOULD FACILITATE EXPANSION OF SERVICE AREA OF "GAGAN" FAR BEYOND INDIAN AIRSPACE
- A SUCCESS STORY AND CONSIDERED VERY USEFUL FOR GROWTH IN INDIAN AVIATION.

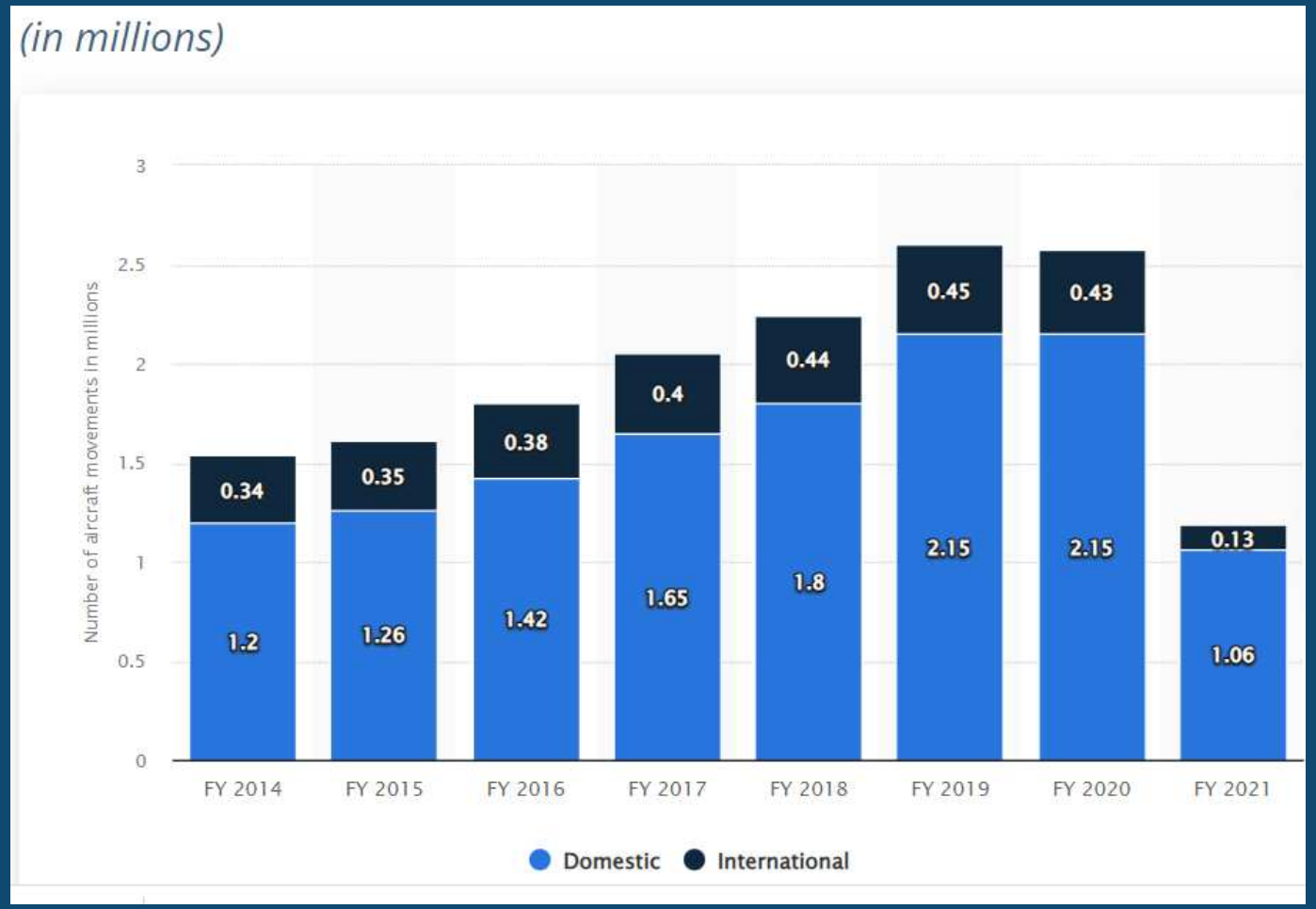
DEVELOPMENT OF NON-METRO AIRPORTS BY AAI

- TO MEET GROWING DEMAND FOR INFRASTRUCTURE AT AIRPORTS, AAI TO MODERNIZE AND DEVELOP 100 NON-METRO AND REMOTE AIRPORTS BY PROVIDING WORLD CLASS INFRASTRUCTURE FACILITIES
- NON-METRO AIRPORTS IDENTIFIED ARE AHMEDABAD, AMRITSAR, GUWAHATI, JAIPUR, UDAIPUR, TRIVANDRUM, LUCKNOW, GOA, MADURAI, MANGALORE, AGATTI, AURANGABAD, KHAJURAHO, RAJKOT, VADODARA, BHOPAL, INDORE, NAGPUR, VISAKHAPATANAM, TRICHY, BHUBANESWAR, COIMBATORE, PATNA, PORT BLAIR, VARANASI, AGARTALA, DEHRADUN, IMPHAL, RANCHI, RAJPUR, AGRA, CHANDIGARH, DIMAPUR, JAMMU AND PUNE
- DEVELOPED TO WORLD CLASS STANDARDS WHICH INCLUDE FEATURES SUCH AS MODULAR DESIGN, STRUCTURED STEEL AND TOUGHENED GLASS GLAZING, MODERN FLOORING, HIGH CEILING WITH VERTICAL AIR CONDITIONING SYSTEM, MODERN PASSENGER BOARDING BRIDGES WITH GLASS WALL, WALK WAYS, CONVEYOR BELTS, ESCALATORS, ELEVATORS, IMPROVED SIGNAGES, INTELLIGENT TERMINALS WAS INTEGRATED BUILDING MANAGEMENT SYSTEM AND COMMON USER TERMINAL EQUIPMENT (CUTE).
- CITY SIDE DEVELOPMENT AT SELECTED NON-METRO AIRPORTS DONE WITH PRIVATE SECTOR PARTICIPATION
- UNDER FINALIZATION FOR AMRITSAR AND UDAIPUR AIRPORT AND WILL BE EXTENDED
- UDAAN SCHEME

ROLE OF AIR TRAFFIC CONTROLLERS IN INDIA

- MEANING OF AIR TRAFFIC CONTROL
- TO PREVENT COLLISIONS
- ATC PROVIDES SERVICES TO ALL PRIVATE, MILITARY, AND COMMERCIAL AIRCRAFT OPERATING WITHIN ITS AIRSPACE. DEPENDING ON THE TYPE OF FLIGHT AND THE CLASS OF AIRSPACE, ATC MAY ISSUE INSTRUCTIONS THAT PILOTS ARE REQUIRED TO OBEY, OR ADVISORIES (KNOWN AS FLIGHT INFORMATION IN SOME COUNTRIES) THAT PILOTS MAY, AT THEIR DISCRETION, DISREGARD. GENERALLY THE PILOT IN COMMAND IS THE FINAL AUTHORITY FOR THE SAFE OPERATION OF THE AIRCRAFT AND MAY, IN AN EMERGENCY, DEVIATE FROM ATC INSTRUCTIONS TO THE EXTENT REQUIRED TO MAINTAIN SAFE OPERATION OF THEIR AIRCRAFT. PURSUANT TO REQUIREMENTS OF THE INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO), ATC OPERATIONS ARE CONDUCTED EITHER IN THE ENGLISH LANGUAGE OR THE LANGUAGE USED BY THE STATION ON THE GROUND. IN PRACTICE, THE NATIVE LANGUAGE FOR A REGION IS NORMALLY USED; HOWEVER, THE ENGLISH LANGUAGE MUST BE USED UPON REQUEST.
- IN 1921, CROYDON AIRPORT, LONDON WAS THE FIRST AIRPORT IN THE WORLD TO INTRODUCE AIR TRAFFIC CONTROL.
- ROLES AND RESPONSIBILITIES OF AIR TRAFFIC CONTROLLERS
- AIR TRAFFIC CONTROL (ATC)
- AERODROME CONTROL
- REMOTE/VIRTUL TOWERS (RVT)
- *GROUND/SURFACE MOVEMENT CONTROL*
- *FLIGHT DATA / CLEARANCE DELIVERY*
- *APPROACH AND TERMINAL CONTROL*
  - *RADAR*
  - *PROCEDURAL*
  - *PRECISION*
- *AREA/ENROUTE CONTROL*

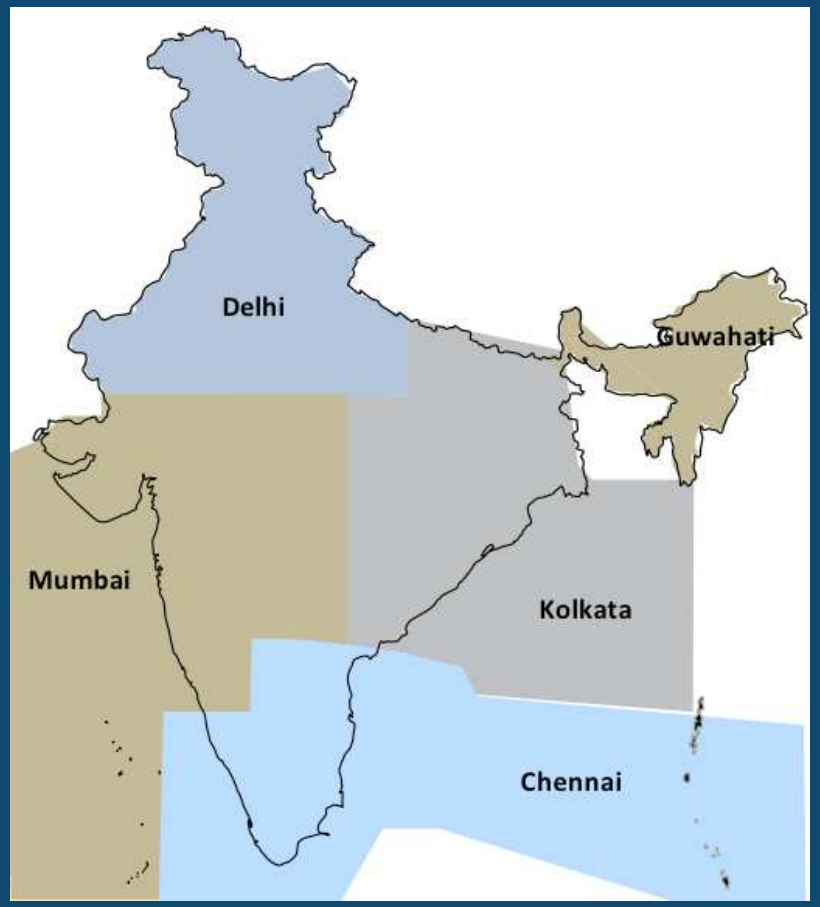
THE FUTURE OF AIRSPACE AND ATM IN INDIA



CAPA PROJECTS THAT BY FY2023 ARRIVING AND DEPARTING MOVEMENTS WILL HAVE MORE THAN DOUBLED AGAIN TO 3.8 MILLION. AND IN TERMS OF OVER-FLIGHT MOVEMENTS, GIVEN INDIA'S GEOGRAPHIC LOCATION BETWEEN TWO OF THE FASTEST GROWING AVIATION MARKETS IN THE WORLD, NAMELY ASIA AND THE MIDDLE EAST, THE UPPER LEVEL CORRIDORS THROUGH INDIAN AIRSPACE ARE ALSO EXPECTED TO BECOME INCREASINGLY CROWDED.

AIRPSACE IN INDIA

- INDIA'S AIRSPACE COVERS 9.5 MILLION SQUARE KILOMETRES, OF WHICH JUST OVER 60% IS OCEANIC, COMPRISING REGIONS OVER THE ARABIAN SEA, THE BAY OF BENGAL AND THE INDIAN OCEAN. APPROXIMATELY 35% OF THE AIRSPACE IN INDIA IS RESERVED FOR MILITARY USE WHICH DOES CREATE CHALLENGES FOR COMMERCIAL OPERATIONS.
- THE AIRSPACE IS DIVIDED INTO FOUR PRIMARY FLIGHT INFORMATION REGIONS (FIR) AT DELHI, MUMBAI, CHENNAI AND KOLKOTA, WITH A SUB-FIR ATGUWAHATI



AAI REVENUES

AIRPORTS AUTHORITY OF INDIA

REVENUE AND OPERATIONAL BUDGET
(AAI AS A WHOLE)

Rs in crores

		ACTUAL (PY) 2017_18	BE 2018_19	RE 2018_19	BE 2019_20
I	REVENUE				
	REVENUE FROM ANS				
	1. Route Navigational Facility Charges	3002.18	3067.73	3223.51	3409.11
	2. Terminal Navigational Landing Charges	488.61	503.86	540.37	571.53
	3.OTHER CNS_ATM	4.56	5.25	5.81	6.07
	TOTAL	3495.34	3576.84	3769.69	3986.71

HOW AAI IMPROVED SERVICES

- RESTRUCTURING OF INDIAN AIRSPACE WITH UPPER LEVEL HARMONISATION OF CHENNAI FIR (AND BEING ROLLED OUT ACROSS THE OTHER FIRS) AND INTEGRATION OF RADARS INTO ATC AUTOMATION SYSTEM WHICH HAS INCREASED HANDLING CAPACITY
- EXTENDED PROVISION OF VHF DATA LINK; DATIS, PDC, AIDC
- AUTOMATIC DEPENDENCE SURVEILLANCE – BROADCAST (ADS-B) HAS BEEN EXTENDED FROM 14 TO 21 LOCATIONS
- IMPROVED DVOR/DME AND ILS NAVIGATION EQUIPMENT
- EXTENSION OF PBN: STANDARD INSTRUMENT DEPARTURES (SIDS) AND STANDARD TERMINAL ARRIVAL PROCEDURES (STARS) HAVE BEEN IMPLEMENTED AT TEN INTERNATIONAL AIRPORTS AND IN PROCESS OF BEING INTRODUCED AT SEVEN ADDITIONAL AIRPORTS
- INTRODUCTION OF A-CDM HAS IMPROVED ON TIME PERFORMANCE SIGNIFICANTLY. AT DELHI AIRPORT ON-TIME DEPARTURES HAVE INCREASED FROM 79.4% TO 86.4%, AND ARRIVALS IMPROVED FROM 73.0% TO 79.2%. A-CDM WILL BE IMPLEMENTED AT THE SIX METRO AIRPORTS AND EIGHT NON-METRO AIRPORTS BY THE END OF 2015
- RADAR SEPARATION WITHIN THE TERMINAL AIRSPACE OF DELHI, MUMBAI, BENGALURE AND HYDERABAD AIRPORTS HAS BEEN REDUCED FROM FIVE TO THREE NAUTICAL MILES
- ISSUANCE OF PRE-DEPARTURE CLEARANCE TO AIRCRAFT VIA A DEDICATED CHANNEL ON A DATA LINK HAS BEEN IMPLEMENTED AT THE SIX METRO AIRPORTS
- CONTINUOUS DESCENT PROCEDURES HAVE BEEN IMPLEMENTED AT DELHI, MUMBAI, AHMEDABAD AND HYDERABAD
- CONSTRUCTION OF RAPID-EXIT TAXIWAYS AT SEVERAL BUSY AIRPORTS HAS REDUCED RUNWAY OCCUPANCY TIME WHICH HAS ENHANCED TRAFFIC HANDLING CAPACITY
- IMPLEMENTATION OF ADVANCED SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEMS (A-SMGCS) AT INTERNATIONAL AIRPORTS;
- THREE RUNWAY OPERATIONS AT DELHI AIRPORT (INCREASING CAPACITY FROM 60 TO 75 HOURLY MOVEMENTS)
- ADVANCED ATM AUTOMATION SYSTEMS HAVE BEEN INTRODUCED AT 38 NON METRO AIRPORTS AS WELL AS THE 6 METROS, PROVIDING TOOLS THAT ENHANCE SAFETY AND EFFICIENCY
- CONTINUED PROGRESS TOWARDS THE IMPLEMENTATION OF GROUND BASED AND SATELLITE BASED AUGMENTATION SYSTEM, GAGAN.

SATELLITE-BASED NAVIGATION SYSTEM IS THE FLAGSHIP PROJECT

- INDIAN SATELLITE BASED AUGMENTATION SYSTEM (SBAS) - GPS AIDED GEO AUGMENTED NAVIGATION (GAGAN) - TO PROVIDE SEAMLESS AIR TRAFFIC MANAGEMENT OVER INDIAN AIR SPACE IN LINE WITH ICAOs FUTURE AIR NAVIGATION SYSTEM REQUIREMENT.
- GAGAN IS INTENDED TO PROVIDE IMPROVED ACCURACY, AVAILABILITY AND INTEGRITY NECESSARY TO ENABLE USERS TO RELY ON GPS FOR ALL PHASES OF FLIGHT, FROM EN ROUTE THROUGH TO APPROACH FOR ALL AIRPORTS WITHIN THE GAGAN COVERAGE AREA.
- THE CABINET COMMITTEE ON ECONOMIC AFFAIRS HAD APPROVED A BUDGET FOR THE DEVELOPMENT AND IMPLEMENTATION OF GAGAN OF INR7.74 BILLION OF WHICH THE AAI WAS TO CONTRIBUTE ALMOST 80%, WITH THE BALANCE TO COME FROM ISRO. APPROXIMATELY INR5 BILLION HAS BEEN SPENT TO DATE

BENEFITS FROM THE IMPLEMENTATION OF GAGAN ARE EXPECTED TO INCLUDE:

- ABILITY TO OPERATE MORE DIRECT ROUTES AND REDUCE FUEL BURN;
- ENHANCED SAFETY DUE TO INCREASED PRECISION APPROACHES;
- POTENTIAL COST SAVINGS DUE TO THE ELIMINATION OF GROUND EQUIPMENT;
- IMPROVED NAVIGATION COVERAGE IN REMOTE AND OCEANIC AIRSPACE;
- REDUCED WORKLOAD FOR FLIGHT CREW AND AIR TRAFFIC CONTROLLERS;
- OPTIMISED AIRSPACE UTILISATION DUE TO THE REDUCED SEPARATION.

- FLEXIBLE USE OF INDIA'S AIRSPACE WILL DELIVER SIGNIFICANT EFFICIENCIES
- A NATIONAL HIGH LEVEL AIRSPACE POLICY BOARD
- AVAILABILITY OF SKILLED MANPOWER
- GROWTH CHALLENGES CALL FOR A NEW GOVERNANCE STRUCTURE FOR THE ANSP

THANK YOU