

**Deloitte.**



Indian Aviation  
Scaling New Heights





# 1. Executive summary

Aviation sector in India has been transformed from an over regulated and under managed sector to a more open, liberal and investment friendly sector since 2004. Entry of low cost carriers, higher house hold incomes, strong economic growth, increased FDI inflows, surging tourist inflow, increased cargo movement, sustained business growth and supporting government policies are the major drivers for the growth of aviation sector in India. Forecasts by AAI for the next 5 years have projected a sustainable growth rate of 16% for international and 20% for domestic aviation sector. Recognizing the exponential growth of air traffic in India, the Ministry of Civil Aviation has been following a very liberal policy in the exchange of capacity entitlements / traffic rights. Domestic airlines have been allowed to fly overseas, forge partnerships with foreign carriers while foreign carriers in turn have been interlining with domestic airlines to access secondary destinations.

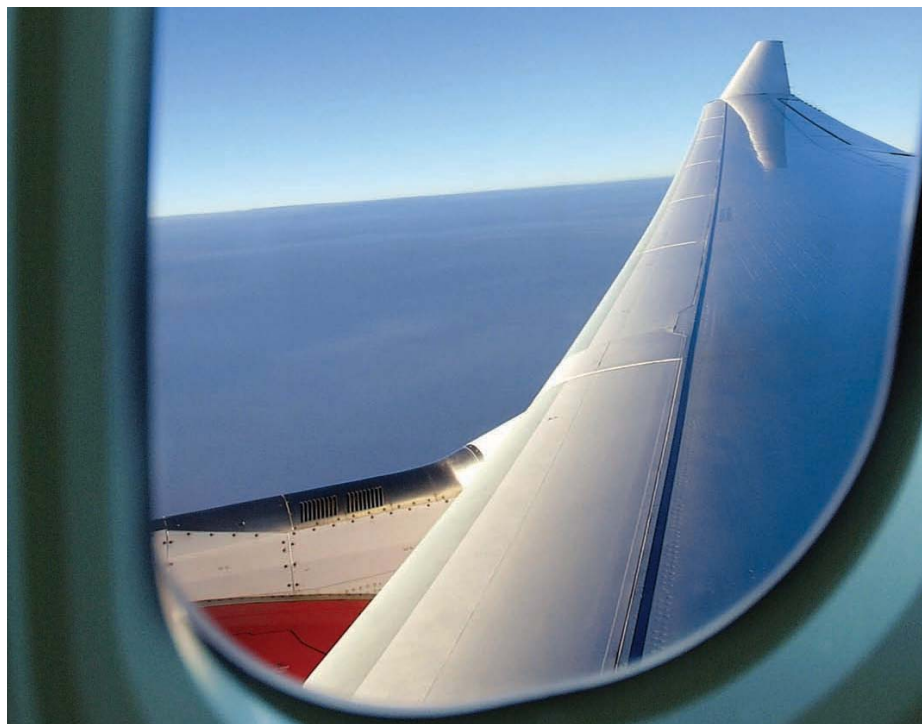
The government has also tried to ensure an environment conducive for growth of all stakeholders associated with Indian aviation segment. With the rise in the number of airlines, growing passenger segment and route expansion, there is however a need for Indian airports to have their infrastructure in place, which unfortunately at present is the weakest link in the chain. Greenfield and modernisation projects are being developed on PPP model to develop facilities conforming to international standards and to encourage the domestic operators to shift base, so as to decongest major airports. To monitor the quality of services rendered by various airports and their tariff, an independent regulator, Airport Economic Regulatory Authority (AERA), is proposed to be appointed. To ensure competitive practices in ground handling services, the government has proposed adoption of a new ground handling policy from January 2009.

Global and domestic aircraft manufacturers are upbeat on the aircraft demands from India. Non scheduled services have also steadily picked up and are growing at a CAGR of 19% primarily driven by a sustained growth in the economy and facilitated by the need of Indian corporate captains to invest in more productive hours everyday. In addition, total cargo traffic of all airports has increased from 10% during 2006-07 to 14% in 2007-08, recording a CAGR of 13% for last six years. With the growth in the passenger and aircraft traffic in India, there has also been a significant focus on

## Global and domestic aircraft manufacturers are upbeat on the aircraft demands from India.

requirement of maintenance, repair and overhaul (MRO) facilities. The Indian MRO market is growing at about 15% annually. However, on the man-power front, currently there is a shortage of qualified pilots and other technical staff including Aircraft Maintenance Engineers and Air Traffic Controllers.

While there are a lot of new avenues in aerospace services in the coming decades, the constraints associated need to be addressed to enable the smooth growth of the sector. Some of the issues faced by the sector include mounting losses of the airlines, rising aviation fuel prices, congestion at airports, shortage of qualified pilots and technical manpower, upgradation of security, land acquisition, high taxation, high airport charges etc. There is a need to study the causes of the issues and address the same thereby paving an unobstructed growth path for the various opportunities.





In times of current US slowdown and fear of recession, the role of developing economies like India assumes greater significance. Its thrust for capacity and capabilities enhancement will be the drivers of growth. The Indian government has initiated several reforms and steps to keep the momentum going. Indian aviation

space offers promising opportunities in the areas of aircraft manufacturing, airport infrastructure, airport and ground support equipment, MRO facilities, ground handling services, trained manpower, air cargo, fuel hedging, aerotropolis along with tapping the potential stream of non aeronautical revenues.

The need of the hour is to efficiently utilize the existing resources and at the same time commission the planned infrastructure in a timely manner. In addition, a collaborative effort must be initiated involving all the stakeholders concerned to chalk out a framework detailing the measures, the Indian aviation sector needs to pursue in the next five to ten years. This framework would act as a platform to scale new heights and make India one of the leaders in the global aviation industry. The framework would require prioritization of various issues on the basis of importance (high, normal or low). This would ensure a focused approach to understand the root cause of the issue and to address the same by taking necessary remedial actions. The framework would also emphasize on the time lines for leveraging the opportunities abound in the sector.

# 2. Overview of Indian aviation

India is one of the fastest growing economies of the world with an average GDP growth of over 8.9 percent in last five years. For India to sustain its economic growth story it has to strengthen its infrastructure sector and in particular, critically improve its transportation infrastructure. Aviation is an important part of national infrastructure and one of the prime movers for economic growth and an important strategic element of employment generation. Aviation sector in India has been transformed from an over regulated and under managed sector to a more open, liberal and investment friendly sector since 2004. Adoption of global standards has made aviation a safer way to travel.

## Passenger growth

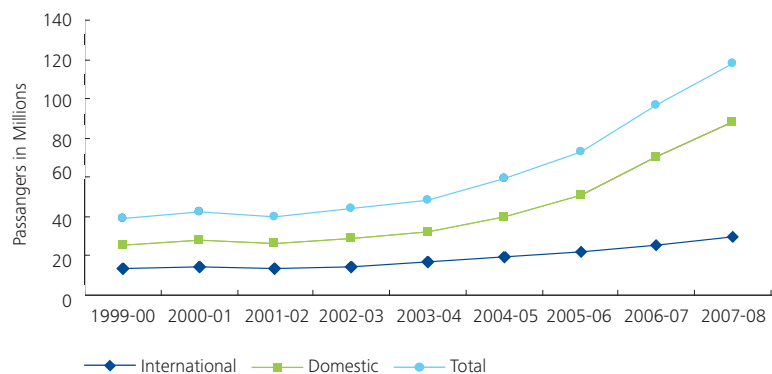
Generally it has observed that the air transport grows at twice the rate of GDP growth. The international passenger growth has been growing at CAGR of over 14% and domestic growth has been an impressive 22% for last 6 years. The passenger growth trends for the past 8 years is indicated in figure 1.

## Cargo growth

India already has an open sky policy for air cargo. An air cargo hub is being developed at Nagpur by the Ministry of Civil Aviation. The ministry also has plans to build dedicated cargo airports across the country to cater to increasing demand in air cargo traffic.

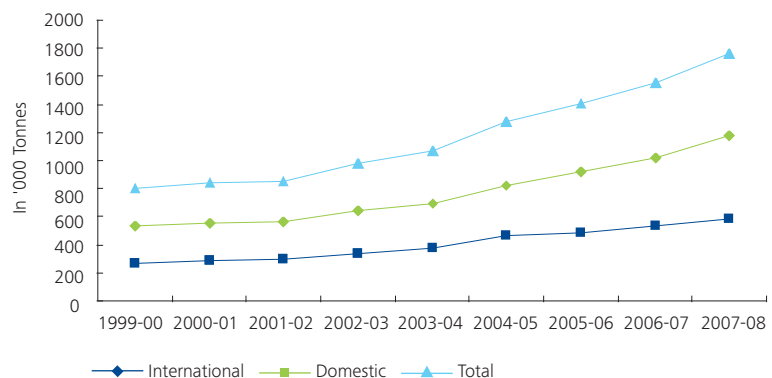
During the year 2007-08, the domestic cargo traffic grew by 11% while the international cargo traffic grew by 15%. The domestic cargo is expected to increase at a CAGR of 13% during the period 2007-2010 while the international cargo is expected to grow at a CAGR of 14% over the same period. At present India contributes over 1% of the world air cargo traffic. The growth trends in the air cargo segment is depicted in figure 2.

Figure 1: Passenger Growth Trends



Source: Airports Authority of India (AAI)

Figure 2: Air-cargo growth trends



Source: Airports Authority of India (AAI)

**Table 1 : Growth drivers**

Economic Factor	Policy Factor
<ul style="list-style-type: none"> <li>• Liberalisation and economic reforms undertaken by the government</li> <li>• Fast expansion of industries in consonance with economic reforms</li> <li>• Emergence of service sector</li> <li>• Average GDP growth of around 8.9% during the last 5 years</li> <li>• Increase in inbound and outbound tourists and medical tourism</li> <li>• Over 300 million strong middle class</li> <li>• Disposable incomes expected to increase at an average of 8.5% p.a. till 2015</li> <li>• Emergence of low cost airlines</li> <li>• The organised retail boom that would require the need for timely delivery thus contributing to the growth in the air cargo segment</li> <li>• Corporate showing increasing preference for private jets and air charter services</li> </ul>	<ul style="list-style-type: none"> <li>• Modernisation and setting up new airports across country</li> <li>• City side development of non metro airports</li> <li>• Providing international airport status to major tier I and tier II cities</li> <li>• Open sky policy</li> <li>• Policy of license to new scheduled operators</li> <li>• Permission to acquire new aircrafts</li> <li>• Permission of private operators to operate on international sectors</li> <li>• Encouraging private investments in airlines and airport infrastructure</li> <li>• Facilitative foreign direct investment norms</li> <li>• Liberal bilateral service agreements</li> <li>• Emphasis on development through PPP mode</li> </ul>

Source: 11th Planning Commission Report and others

**Growth drivers**

The factors contributing to the air traffic growth can be broadly classified into economic and policy factors. Entry of low cost carriers, higher house hold incomes, strong economic growth, increased FDI inflows, surging tourist inflow, increased cargo movement, strong business growth and supporting government policies are the major drivers for the growth of aviation sector in India. For growth drivers refer the table below:

**Table 2 : Passenger / Cargo forecast till 2016-17**

Year	Aircraft Movements (in 000)		Passenger (in million)		Cargo (in 000 tones)	
	International	Domestic	International	Domestic	International	Domestic
2005-06 Base year	190.89	647.4	22.36	50.98	920.15	483.8
Growth rate (%)	13.2	14.7	15.9	19.9	12.1	10.1
2006-07	216.14	737.94	25.85	60.91	1028.66	531.64
2007-08	243.91	843.1	29.85	72.87	1151.05	584.61
2008-09	275.58	965.54	34.53	87.31	1289.26	643.31
2009-10	311.74	1108.39	40.01	104.75	1445.5	708.39
2010-11	353.09	1275.38	46.45	125.84	1622.33	780.6
2011-12	400.45	1470.99	54.04	151.36	1822.69	860.78
Growth rate (%)	10.5	9.8	16.2	13.3	12.8	8.4
2012-13	441.58	1653.63	61.04	175.64	1998.45	931.91
2013-14	487.36	1862.08	69.05	203.99	2192.47	1009.47
2014-15	538.38	2100.35	78.23	237.13	2406.81	1094.07
2015-16	595.29	2373.13	88.78	275.9	2643.73	1186.39
2016-17	658.89	2685.9	100.93	321.28	2905.79	1287.18

Source: Airports Authority of India

### AAI forecast

Forecasts by AAI for the next 5 years have projected a sustainable growth rate of 16% for international and 20% for domestic aviation sector. AAI projects 105 million domestic passengers and 40 million international passengers by end of the year 2010.

### Bilateral agreements

India has so far entered into Air Services Agreements with around 101 countries. A bilateral Air Transport Agreement (also sometimes called a bilateral Air Service Agreement) is an agreement which two nations sign to allow civil aviation between their territories. Air Services Agreement provides the basic legal framework for operation of air services between India and the country concerned. The number of flights/ seats per week to be operated by the designated airlines of India and the contracting foreign country are decided by Government level bilateral talks, which are held at regular interval depending upon growth of traffic based on the principle of mutual benefit and reciprocity. During past five years as a result of open skies with USA, near open skies with UK/ASEAN/SAARC along with liberal bilateral agreements with other countries there has been huge increase in entitlements/new routes for foreign airlines. Recognizing the exponential growth in air traffic in India, the Ministry of Civil Aviation has been following a very open-minded policy in exchange of capacity entitlements / traffic rights. Domestic airlines have been allowed to fly overseas, forge partnerships with foreign carriers while foreign carriers in turn have been interlining with domestic airlines to assess secondary destinations. In addition, the government has also tried to ensure a conducive environment for the growth of all stakeholders associated with Indian aviation segment.

### FDI guidelines in civil aviation

The FDI guidelines in Indian civil aviation are listed in the table below:

### Proposed regulatory authority

The Ministry of Civil Aviation is planning to establish an Airport Economic Regulatory Authority (AERA). AERA, an independent regulator would be responsible to facilitate the development of the Indian airports. AERA will also look into issues such as tariffs, and monitor the quality of services rendered by various airports. Initially only major airports viz those airports which have

**Table 3 : FDI guidelines in Indian civil aviation**

Sector	FDI guidelines as on June 30, 2008
Airports	<ul style="list-style-type: none"> <li>Greenfield projects – FDI up to 100% is allowed under automatic route</li> <li>Existing projects – FDI up to 100% is allowed with prior approval of the Govt. for FDI beyond 74%</li> </ul>
Air transport services	<ul style="list-style-type: none"> <li>Scheduled Air Transport Service / Domestic Scheduled Passenger Airline - FDI up to 49% and investment by Non-resident Indians (NRI) up to 100% allowed under the automatic route.</li> <li>Non-Scheduled Air Transport Service/ Non-Scheduled airlines, Chartered airlines, and Cargo airlines- FDI up to 74% and investment by Non-resident Indians (NRI) up to 100% allowed under the automatic route.</li> <li>Helicopter services/seaplane services requiring DGCA approval- FDI up to 100% allowed under the automatic route.</li> <li>No foreign airlines would be allowed to participate directly or indirectly in the equity of an Air Transport Undertaking engaged in operating Scheduled, Non-Scheduled, and Chartered airlines.</li> <li>Foreign airlines are allowed to participate in the equity of companies operating cargo airlines, helicopter and seaplane services.</li> </ul>
Ground handling services	<ul style="list-style-type: none"> <li>FDI up to 74% and investment by Nonresident Indians (NRI) up to 100% allowed under the automatic route. This will be subject to sectoral regulations and security clearance.</li> </ul>
Maintenance and Repairs Overhaul	<ul style="list-style-type: none"> <li>FDI up to 100% allowed under the automatic route.</li> </ul>
Flying training schools and technical training institutions	<ul style="list-style-type: none"> <li>FDI up to 100% allowed under the automatic route.</li> </ul>

However there are certain provisions and guidelines with regards to the entity that is granted permission to operate the above services. These guidelines are promulgated by DGCA and are subject to compliance with applicable regulatory norms / rules.

Source: DGCA

or are designed to have annual passenger throughput of more than 1.5 million will fall under the purview of AERA. However, if at a later stage it is felt that any other airport with a throughput of less than 1.5 million passengers needs to be brought under AERA, the government will accordingly notify such an airport as a “major airport” and bring it under the scope of AERA.

Present scenario for key aviation areas and stakeholders is described in the section below:

### Domestic airlines

Over the past few years, the number of domestic airlines increased which led to a reduction in fares (till early 2008) facilitating the increase in passenger growth. Launching of the low cost airline model by Air Deccan in 2003, initiated a series of new airlines coming in the aviation sector taking the total number of airlines to ten. A spate of mergers and acquisitions started in 2006 has reduced the number of scheduled airlines from ten to the current seven which include National Aviation Company of India Limited (Air India, Indian Airlines and Air India Express brand); Jet Airways (Jet Airways and Jetlite brand); Kingfisher Airlines (Kingfisher

and Air Deccan (now Kingfisher Red) brand); Spicejet, IndiGo Airlines; Go Air and Paramount Airlines. NACIL, Jet Airways and Kingfisher-Air Deccan combine have permission to fly international routes.

### Airports

There are around 454 airports/airstrips in the country which includes operational, non operational, abandoned and disused airports, whose ownership pattern is illustrated in figure 4.

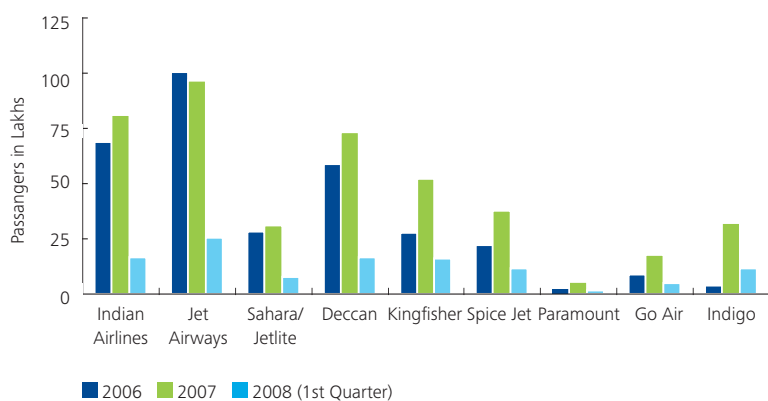
In India, Airports Authority of India (AAI) is the authority for the development and management of airport infrastructure and air traffic management. With the rise in the number of airlines, growing passenger segment and route expansion, there is a need for Indian airports to have their infrastructure in place, which unfortunately at present is the weakest link in the chain. The Government has acknowledged the infrastructure deficiency and has wisely sought private sector participation to facilitate infrastructure improvements (modernization of Delhi and Mumbai airports, commissioning of green field projects at Hyderabad and Bengaluru, modernization of 35 non metro airports). The estimated investments at Delhi airport are in the order of Rs. 7,531 crores; while that at Mumbai airport is estimated to be in the region of Rs. 11,553 crores. Greenfield airport projects have also been proposed at Goa, Navi Mumbai, Pune, Greater Noida and Kannur. The objective is to develop facilities conforming to international standards and try to encourage the domestic operators to shift base, so as to decongest the major airports.

AAI is also planning to identify non operational airports that could be put to use to provide better air connectivity in the country. AAI is in the process of carrying out feasibility studies for this purpose. The Civil Aviation Ministry has set a target of getting around 500 airports operational in the country by 2020. This will include renovation of used airports, developing greenfield airports, establishing merchant and low cost airports and airports dedicated to movement of cargo and logistics.

### Aircraft manufacturers

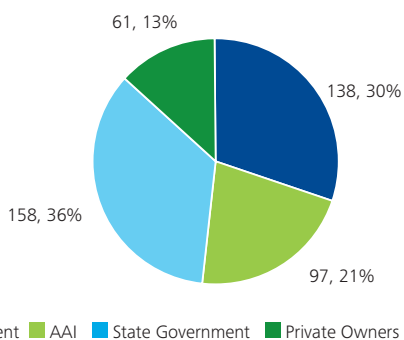
Hindustan Aeronautics Limited (HAL), based in Bangalore, is one of Asia's largest aerospace companies. Under the management of the Ministry of Defence, the

Figure 3: Domestic passengers carried by Indian domestic carriers (in lakhs)



Source: DGCA

Figure 4: Ownership pattern of the airports/ airstrips (operational / non-operational) in the country



Source: 11th Five Year Planning Commission's working group report on Civil Aviation.

company is mainly involved in manufacturing and assembling aircraft, navigation and related communication equipment, as well as operating airports. National Aerospace Laboratories (NAL), is India's second largest aerospace firm after HAL. The firm closely operates with HAL, DRDO and ISRO and has the prime responsibility of developing civilian aircrafts in India. NAL is presently designing an aircraft that can carry 90 passengers on short flights, and compete with planes of Franco-Italian aircraft maker ATR in Indian skies.

International aircraft manufacturers, Boeing and Airbus are buoyant about the potential and opportunity in the Indian aviation space. In addition, with the fleet expansion plans of non-scheduled airline operators, small aircraft manufacturers are also expected to garner aircraft orders from the Indian air taxi players.

### Non scheduled services

Non scheduled services are services which are not operated on a published time table and possibly be on charter basis. The operator of non scheduled services is not permitted to publish time schedule and issue tickets to passengers. Such services are used mainly for air charter, joy charter, tour operations, corporate charter, air ambulance, cargo charters, corporate charters, aerial photography, geographical surveys, and relief and rescue operations. Non scheduled services have steadily picked up primarily driven by a booming economy and facilitated by the need of Indian Corporate Captains to invest in more productive hours everyday. Today's businessmen understand better than anyone else that time is money. CEOs and other senior executives want to achieve more in their full-up schedules. This is indeed why more and more companies and individuals are realizing the cost and timesaving benefits of using private jets and helicopters.

At present there are over 60 operators in the country providing non scheduled services. The major aircrafts used for the services are jet aircrafts, helicopters, turbo prop and multipiston aircrafts. Bell, Chetak, Ecureil, Dhuv, Dauplin and Agusta are the helicopters used for non scheduled services. The smaller aircrafts mainly used are Beechcraft, Agusta, Cessna, Pilatus, Partenavia, Seneca, Schweizer. Broadly there are four categories of non-scheduled operations viz - pure charter operations; industrial house own charters; on demand services and fractional ownership program. The non

Figure 5: Growth trends in the non-scheduled operators and aircrafts



Source: Airports Authority of India (AAI)

scheduled operators are growing at an impressive compounded annual growth rate (CAGR) of 19%. The Ministry of Civil Aviation has since May 2008, issued at least 32 no-objection certificates (NOCs), to firms that applied to operate non-scheduled passenger carriers.

### Air cargo / express cargo

Air cargo operations generates additional revenue for airports and provides better utilisation of the airport facilities as majority of these services are undertaken during the non-peak hours. While the amount of cargo freighted via air is growing steadily, the infrastructure related to air cargo handling and evacuation is not.



The Government has acknowledged the need for development of cargo related facilities and is taking the necessary steps to address the situation with consistent and coherent application of policies. For a country like India, with its natural challenges in terrestrial transportation, a well networked air cargo system will go a long way in addressing the problem of networking the remote areas and creating a proper international market access to them.

Air cargo remains a vital mode of transport for India's international trade especially for products with high value or value addition. The five major airports (Mumbai, Delhi, Kolkatta, Chennai and Bangalore) account for around 88% of the total air cargo handled in India. Growth in cargo / freight volumes is an outcome of macro-economic factors such as domestic consumption, exports and imports. The infrastructure needed to cater to the growth remains a major challenge. However, the international and domestic cargo volumes have shown a steady growth despite inadequate capacity and infrastructure. Government's plans for developing MIHAN (The Multimodal International Hub Airport at Nagpur) as the first cargo hub in India are in progress.

Some of the cargo service providers include Blue Dart, FedEx, Air India, Crescent Air Cargo, Gati etc. The major

commodities being air freighted out of India are garments, machinery components, pharmaceuticals, dyes, chemicals and perishables such as fruits, vegetables, flowers, fish and meat. Due to the high time sensitivity clientele demand, there has also been a steady patronage of air cargo services across industries including telecom, gems and jewellery, electronics, IT and ITES related equipment etc. The increased usage of IT applications in cargo handling is likely to enhance the efficiency of movement of cargo traffic. With the opening of the economy, buoyant trade, new low cost carriers, upgradation of the airports across the country, the cargo handled by air is expected to grow more rapidly in the next decade. This will require not only better connecting transportation infrastructure, but also quality, standard warehouses, and speedy operations through automation.

#### Aviation training institutes

The demand for experienced pilots and other technical staff is increasing. Largely government-owned earlier, the industry is now dominated by privately owned full service airlines and low cost carriers – making it a glamorous and lucrative career choice. Professional training institutes, various aviation schools and academies are providing the much needed training and grooming to youngsters. Some of the DGCA approved flying clubs / schools / institutes include Indira Gandhi Rashtriya Udan Akademi, Raebareilly; Andhra Pradesh Aviation Academy, Hyderabad; Haryana Institute of Civil Aviation, Karnal; Madras Flying Club, Chennai; Bombay Flying Club, Juhu airport; HAL Rotary Wing Academy, Bangalore. At present there is a shortage of Aircraft Maintenance Engineers and Air Traffic Controllers.

#### Technology

It becomes extremely important for airports to maintain and improve efficiency in Ground Handling (GH), Air Traffic Control (ATC), safety, security, airport operations and administrative processes to result in overall business/operational benefits to all concerned.

Usage of IT and technology over the years has been deployed in aviation in various aspects and has been a major contributor in improving the passenger and cargo facilitation, operational and financial results of



the airports. The business value of IT and technology application in airport is cost containment, increased operational efficiency and enhanced safety, regularity and security of operations. Deployment of advanced technologies in air traffic management (ATM), airport safety, efficient ground handling and security services create new opportunities to increase the productivity of the airport organization.

The Government is planning for technology upgradations in data network and data consolidation, city side technology, immigration, customs, access control and security surveillance and airspace and airport operations including proposing to make it mandatory to have Category II instrument landing system at all airports across the country to tackle fog-related problems. In this regards, AAI has upgraded the landing system from CAT III A to CAT III B at Indira Gandhi International airport, New Delhi.

#### Maintenance and repairs overhaul

MRO services include engine overhaul, airframe maintenance, heavy checks and line maintenance, component overhaul and major airframe modifications. A major part of the MRO work for the Indian aircrafts is sourced to the service providers in Europe and Singapore. While airlines are increasing and strengthening their in-house MRO facilities, dedicated MRO players are also entering the Indian aviation space. The Indian MRO market is growing at about 15% annually. The entire Asia- Pacific aircrafts and engine MRO market is estimated to touch US \$12.90 billion in 2011. Recently, three different joint ventures between Indian companies and foreign companies like Airbus, Boeing and SIA Engineering have embarked upon setting up of MROs. India thus has a great opportunity to emerge as a major MRO hub in the Asia Pacific region.

#### Ground handling services

Ground handling activities broadly mean the handling of passengers and baggage at the airport, loading or unloading of aircraft, activities relating to the ramp, re-fuelling and cleaning of aircraft and push-back

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## MRO services include engine overhaul, airframe maintenance, heavy checks and line maintenance, component overhaul and major airframe modifications.

facilities. At present, every airline conducts its own ground handling services. The ground handling facilities are expected to grow at 15% CAGR till 2011-12. There are opportunities for third party handling as well as entering into service contracts with private airports / AAI to offer comprehensive ground handling solutions.

The government has suo moto felt that ground handling services tend to be monopolistic in nature and need to be brought under the purview of AERA. The government has proposed adoption of a new ground handling policy from January 2009. The new policy proposes to allow only three agencies to take up ground handling services at six major airports namely Delhi,



Mumbai, Kolkata, Chennai, Hyderabad and Bangalore. At other airports the policy being followed at present would continue.



The three agencies would be:

- An airport operator or a joint venture company
- Subsidiaries of National Aviation Company of India (NACIL) or their joint ventures
- A professional ground handling service provider on a revenue-sharing basis ( with the airport operator)

Around 25 national and international companies have shown interest to provide ground handling services at more than 40 airports undergoing modernization. The ground handling services market in India is estimated to be Rs. 3000 crore. The government has increased

Foreign Direct Investment (FDI) in ground-handling services to 74% on the automatic route. The ground handling agencies are expected to benefit from the relaxed norms.

### In-flight catering

In-flight catering is an essential component of an airline's marketing strategy, especially in view of the stiff airline competition. Airlines insist on menus that follow specific safety standards and local availability of ingredients, as well as caterers complying with HACCP (Hazard Analysis and Critical Control Points) / International Hygiene codes. There are three main meals - hot meal (lunch or dinner), snacks and breakfast. A snack costs around Rs 125-Rs 130; a breakfast Rs 170 to Rs 180 and a hot meal comes for about Rs 250. With the advent of low cost carriers, in-flight catering which was earlier dominated by the five-star hospitality players was thrown open to fast food chains and FMCG players. In-flight catering does not fit into low-cost model as loading food products could add to the costs. The products are sold at a marginally higher price on-board, as compared to the price offered at its retail outlets, owing to the incentives given to the airline and logistics cost. With increased competition even full service carriers might revisit their in-flight catering model. Taj Air, SkyGourmet Catering Pvt. Ltd, Café Coffee Day are some of the in-flight caterers.

As indicated above, civil aviation in India is expected to open up a lot of new avenues in aerospace services in the next ten years. However the constraints are far too many and need to be addressed urgently to enable the smooth growth of the sector. Some of the issues / constraints are addressed in the subsequent section.

We now turn our attention to the plethora of issues facing the aviation sector and try to examine what options exist before us to deal with these issues.

# 3. Issues

Having appreciated the current scenario in the Indian aviation sector over a very broad canvas, we now turn our attention to the plethora of issues facing the aviation sector and try to examine what options exist before us to deal with these issues. In the table below for each of these issues you will find:

- Statement of issue
- Analysis of issue
- Options analysis

The following are the issues addressed –

- Shrinking profitability of airlines
- The new Ground Handling policy
- High Aviation Turbine Fuel (ATF) prices
- High airport charges
- Shortage of technical manpower
- Safety and security
- Land acquisition
- Closure of old airports

## Statement of issue

### Shrinking profitability of airlines

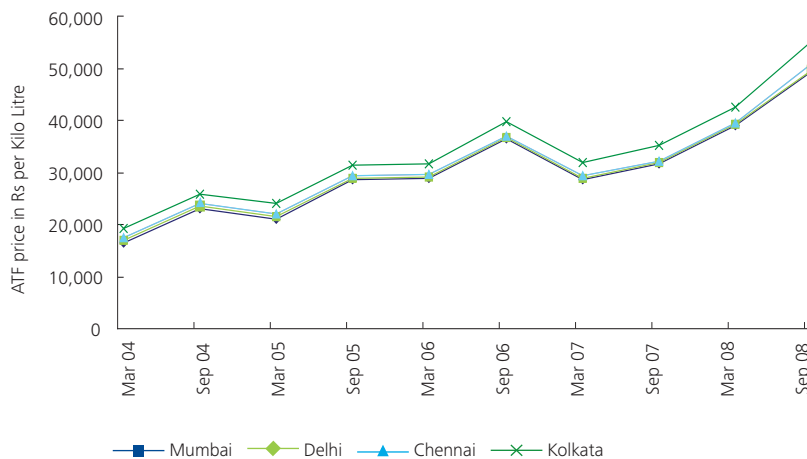
It has been observed that the Airlines have reported losses, inspite of the 20-25% y-o-y growth in passenger and cargo volume over the past three years.

## Analysis of the issue

### Rising fuel prices

- Aviation Turbine Fuel (ATF) prices in India are higher than the international market. The airline industry's operational cost component is dominated by the cost of the (ATF). The ATF price accounts for nearly 45% of the operational expenses. A 10% increase in fuel price would push up costs by atleast 4%, thus causing a dampner on the financial health of an airline business.

**Figure 6: ATF price fluctuations in INR / kilo-litre (exclusive of sales tax and local levies)**



Source – [www.hindustanpetroleum.com](http://www.hindustanpetroleum.com)

### Congestion

- Presently capacity constraints are reported mainly at Delhi and Mumbai airports. Congestion leads to a huge wastage of fuel. It is estimated that if a flight hovers in the sky for an additional half an hour due to delay in allocation of landing slot, it can consume between 25 to 30 per cent extra fuel thereby increasing the operational cost of the airline. Half an hour of hovering costs an airline anywhere over Rs. 50,000 /-. There are over 40 flights that operate about 80 trips between Mumbai and Delhi every day. If all of them have an average circling time of 30 minutes each, around Rs 40 lakhs of fuel is wasted in a day.

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**Analysis of the issue**

- The congestion also affects the turn around time of the aircraft and reduces the average aircraft utilization. Hence there is a need to address the congestion issue to facilitate savings on fuel and higher utilization of the aircraft. Disruption of schedules corrupts the optimized scheduling of aircrafts and contributes to overall inefficiencies in asset utilization by airlines. In the present knowledge economy, where the value of time is at a premium, the delays caused to passengers due to congestion issues not only cause an inconvenience but also unsettle the passengers' time schedules. Wastage of man-time has a huge cost and is almost incalculable.

**High airport charges**

- The airport charges payable at the International airports are higher than those payable at the airports designated as Domestic airports for domestic flights. As a consequence, the domestic airlines in India are incurring additional costs at the international designated airports without enjoying or utilizing any additional facilities.
- In addition, the airport charges levied by the Indian airports are stated to be amongst the highest amongst the Asian and the Gulf countries.

**Emergence of substitutes***The rail option*

- With the emergence of the Low Cost Carriers (LCC), the passengers who would have traveled in III / II class AC rail considered the option of LCCs beneficial due to marginal cost difference as compared to the rail travel. The railways on its part sensing competition from LCCs undertook various measures to consciously compete with the LCCs and to retain and improve its existing passenger base. Some of the measures included introducing faster trains between short to medium distances, improving connectivity, maintaining on-time schedules, introducing entertainment facilities, structuring the rail fares intelligently, providing a reliable e-ticketing facility and in general improving the overall quality of services offered.
- Given the provision of such improved rail facilities and with the recent increase in air fares, the price conscious passengers who would have weighed the option of traveling in a LCC are again opting for rail travel.
- In addition, with the looming global slowdown, Indian corporates are also becoming increasingly stringent on the travel practices adhered to by their staff. Corporates are instructing / encouraging their officials to prefer railways as the first choice of travel for short routes.

*The technology factor*

- Corporates are also cutting down on their air travel time by utilizing the many advantages of virtual face-to-face communication from the comfort of their offices through Video Conferencing Communication. Video conferencing facilitates meetings with selected participants in a controlled setting that is either well planned or spontaneous – thus eliminating problems with time consuming logistics of travel and accommodations.

**Low Cost Carrier (LCC) business models**

- Indian LCCs tried to replicate the business models of their international peers. However the Indian LCCs were not completely successful in replicating the profitability that was achieved by the International LCCs.
  - International LCC model was based on reducing operating expenditure by undertaking measures like
    - Maintaining fewer crew on board and ground staff resulting in lower wage bill, adhering strictly to on-line booking and bypassing travel agents.
    - Cutting down on in-flight services.
    - Entering into a long term hedging contract to sustain their revenues against fuel price fluctuations etc.
  - In addition, the supporting infrastructure for international LCCs also facilitate reduction of operating cost by having secondary airports with bare minimum necessary infrastructure designed for the Low Cost Carriers (LCCs) resulting in lower airport charges.
  - India at present does not have any secondary airports for LCCs and the Indian LCCs have to shell out comparatively higher airport charges than its international peers. The under-developed commodity hedging market also puts a stumbling block on these companies to hedge against fluctuating prices of air fuel.
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**Analysis of the issue**

- The Indian LCC airlines prefer to halt and ply between only metros and airports which have sufficient landing and parking place, leading to long halts. This model is contrary to the European LCCs which ply between airports which reduce their halting and turn around time thereby reducing their costs further.

**Pressure faced by premium airlines on their pricing**

- The advent of LCCs witnessed steady erosion in the market share of the premium airlines. To mitigate the decline in market share, the premium airlines were forced to reduce their fares and this eventually led to a pricing war amongst the airlines with the single objective of increasing their market share. The ensuing price-war was a lose-lose situation to all concerned and bled the air carriers.

**Sector pricing difference**

- Airlines who were enduring losses tried to make up for the losses by charging significantly higher fares in monopoly like sectors resulting into anomalous pricing from a customer point of view thereby forcing shift of traffic to other modes.

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**Options analysis****Fuel hedging**

- Recently, the Indian Government has also allowed domestic airlines to hedge fuel risk. Hedging would allow the carriers to safeguard themselves against rising fuel prices and increasing operational cost. It would also help airlines generate more stable cash flows and better predict future cash flows and earnings.

**Currency futures**

- Trading in currency futures (introduced recently by MCX) will provide a means of hedging the foreign exchange exposure that the airlines are naturally subjected to because of amount of payments to be made in foreign currency with respect to parts and other ancillaries which face an exchange rate risk, the payments to be made to international airports for the countries in which the airlines operate, etc. Trading in foreign currency futures may enable the airlines to reduce the risk component of the same.

**Reducing congestion**

- To reduce the air space congestion, the government authorities and airport operator should deploy suitable technology that would result in effective air traffic management. This will ensure that the Air Traffic Controllers are able to leverage on technology to handle increase in traffic. In addition, parking bays and rapid taxiways have to be augmented at the identified airports.

**The taxation factor**

- Service tax and fringe benefit tax (FBT) are emerging as major cost components for the entire industry. FBT has been extended to cover expenses on catering and in-flight entertainment, hotel accommodation provided to passengers due to delays and cancellation, fuel, running and maintenance expenses (including depreciation) of the aircraft etc. which may not exactly constitute fringe benefits. Further, despite the significant reduction in percentages to be applied for valuation of some of the fringe benefits provided by aircraft operators, the FBT continues to remain one of the factors leading to increase in cost.
  - In addition, airlines depend a great deal on third party services in many areas such as ticketing, aircraft maintenance, ground handling, catering etc. If aviation services are excluded from the domain of Service tax, the viability of the airline operations would increase. Also the applicability of Service tax reduces the competitiveness of India's air transport sector.
  - Exemption from payment of withholding tax on lease rental incomes on aircrafts and engines earned by a non-resident lessor from an Indian company is currently applicable only for lease agreements which have been signed prior to 31 March, 2007 (subject to respective agreements being approved by the Indian Government). The non-availability of this exemption would significantly increase fleet acquisition costs of Indian carriers. This is because aircraft leasing finance companies generally have a clause in their agreements whereby the withholding tax, if any, is to be paid not by the lessor (i.e. leasing company), but by the lessee (Indian carriers).
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**Alternate revenue generation**

- Airlines earn additional revenues from in-flight catering, excess baggage charges, aircraft branding and hotel booking. Airlines can also consider generating earnings from hawking life and travel insurance, offering the service of pre-paid taxi vouchers onboard and other such services. Revenue from these alternate sources will keep the airline's fare stable even if operational costs shoot up.
- UK's Ryanair earns a non-passenger income of around 20-26% of its turnover. By pursuing higher non-passenger income, low cost carriers would be able to replicate the business model of successful overseas budget carriers, which use ancillary income to subsidize passenger fares.

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**Statement of issue****New Ground Handling (GH) policy**

- According to the new Ground Handling policy, which will come into effect from January 2009, only three agencies will be allowed to take up ground handling services at the six major metro airports. The same set of specialised Ground Handling agents would handle passenger baggage and cargo that is carried in the belly-hold of passenger aircraft and express cargo.
- The proposed new GH policy has faced lot of opposition from the airline operators as well as the cargo carriers.

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**Analysis of issue****Rationale for the new policy**

- In the existing scenario for GH services, many ground handling operators are sharing limited space for parking and equipment. Most of the equipment is old and the manpower of these operators is usually outsourced and not properly trained leading to inefficiencies.
- The rationale behind the new policy is that professional ground handlers will provide the latest ground handling equipment and trained professional manpower for ground handling services. The latest equipment will lead to an improvement in the productivity and hence to a better service standard. The aircrafts would also have a faster turnaround time, thereby improving utilization of the same and reducing operational cost for the airlines.

**Airlines perspective**

- The airlines feel that they would lose their competitive edge which they possess when they were themselves managing the GH services of their own airlines. Airlines prefer managing their own ground handling services in areas where one needs to interact with the passengers. This helps them to differentiate from other carriers. In addition, airlines view that the specialised foreign ground handling players may need not necessarily have the understanding of the Indian conditions and other operational issues perspective that are unique to India, thereby negating the cost advantage.

**Cargo carriers perspective**

- Handling of express cargo is different from the passenger segment and special handling is required. Outsourcing it to a third party agency might only increase the cost and reduce operations efficiency. Since express cargo entails timebound deliveries involving a system through which the customer can track the whereabouts of his consignment, the express cargo carriers are of the opinion that it would be prudent for them to do self handling of their cargo.
- In US and Canada, where ground handling services are provided by specialised agencies, the cargo carriers are allowed to do their own ground handling. The manpower for handling the cargo carriers are specially trained and in the event these GH services are outsourced to third party agencies, the cargo carriers would be forced to downsize their GH workforce.

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**Options analysis****Review of the GH policy**

- The government may review the Ground Handling policy taking into consideration the interests of all the stakeholders concerned.

**Cargo handling and warehousing**

- The ground handling market should be open for free competition and if security is an issue for not doing so, then the number of operators may be restricted for ramp and passenger. However there should be no cap on the number of operators for cargo handling and warehousing. To avoid situations of shortage of space for cargo handling, airports should earmark adequate land for the cargo development as cargo handling is an integral part of airport services.

<b>Statement of issue</b>	<p><b>High Aviation Turbine Fuel (ATF) price</b></p> <ul style="list-style-type: none"> <li>• The operational cost of an airline significantly depends on the fuel prices. Rising fuel prices affect the airline profitability and have a cascading effect on the other supporting services of the aviation industry.</li> </ul>
<b>Analysis of issue</b>	<p><b>Multiple taxation</b></p> <ul style="list-style-type: none"> <li>• In India there is no direct import of ATF and the ATF supplied by the Indian oil companies is from imported crude refined by them.</li> <li>• The import duty for ATF is 20%. Oil companies thereby follow an import parity principle and levy a 20% add-on to the refinery transfer price.</li> <li>• Apart from the import parity principle, oil companies also include a 16% to 49% add on towards marketing margin and contingencies on the refinery transfer price (the add on varies between various cities).</li> <li>• On this central government levies an excise duty of 8%.</li> <li>• On the resultant price, the various state government levy local sales tax ranging from 4% to 39% which on an average works out to be around 25% countrywide.</li> <li>• The Government levies thus work out to an add-on of around 35%.</li> </ul> <p>Due to the discrepancy in the sales tax charges at various states, the airlines tend to fill up more fuel than required at the state where the sales tax is minimal. By doing so, the aircraft weight increases and this leads to burning of more fuel thereby contributing to operational inefficiencies.</p>
<b>Options analysis</b>	<p><b>Uniformity in taxes</b></p> <ul style="list-style-type: none"> <li>• One option is to reduce the excise duty to 4% and to undertake necessary measures to remove the disparity in the state levied taxes and enforce a common uniform rate which is the bare minimal. ATF may be put under “Declared Goods” category to bring about uniformity in levy of sales tax.</li> </ul> <p><b>Direct import of ATF by airlines</b></p> <ul style="list-style-type: none"> <li>• Allowing airlines to import ATF may help in reducing the cost by almost 25% than what the airlines are paying to the oil companies. Even after the 20% import duty is paid, the price of the fuel will be lower than what is charged currently. Airlines however will have to consider the logistics of importing fuel, including warehousing.</li> </ul> <p><b>Responsibility of oil companies</b></p> <ul style="list-style-type: none"> <li>• The Indian oil companies must consider themselves as critical stakeholders of the aviation industry. Accordingly, they must ensure that they share the responsibility in sustaining the growth of the Indian aviation sector by trying to cut down on their marketing margins and contingencies charges imposed on the ATF price. The relatively monopolistic situation that the oil companies enjoy may probably come in the way of doing so. However considering the long term good of the industry, this is desirable.</li> </ul> <p><b>Sharing of distribution network and infrastructure</b></p> <ul style="list-style-type: none"> <li>• Sharing of Distribution Network and Infrastructure of the Oil Marketing firms can eliminate overhead channel costs. Fuel hedging</li> <li>• Indian carriers may develop the necessary expertise for fuel hedging and try to offset the fluctuations in the fuel prices, thereby reducing their operational costs.</li> </ul>

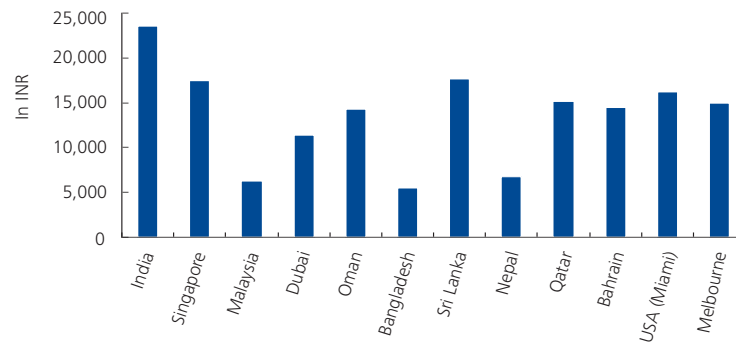
The airport  
(aeronautical)  
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the Indian airports  
are reportedly  
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second highest  
amongst the Asian  
and Gulf countries

**Statement of issue**

**High airport charges**

- The airport (aeronautical) charges levied by the Indian airports are reportedly stated to be the second highest amongst the Asian and Gulf countries, after Hong Kong. The airports / aeronautical charges include
  - Route Navigation Facility Charges (RNFC)
  - Landing, Housing and Packing Charges
  - User Development Fees ( in case of private airports)
  - Terminal Navigation Landing Charges
  - X-ray Baggage Charges
- The figure below illustrates the combined airport charges (landing charges, route navigation facility charges, terminal navigation landing charges) levied by airports in India vis a vis some of its international peers.

**Figure 7: Airports charges (landing charges, route navigation facility charges and terminal navigation landing charges) levied in various countries**



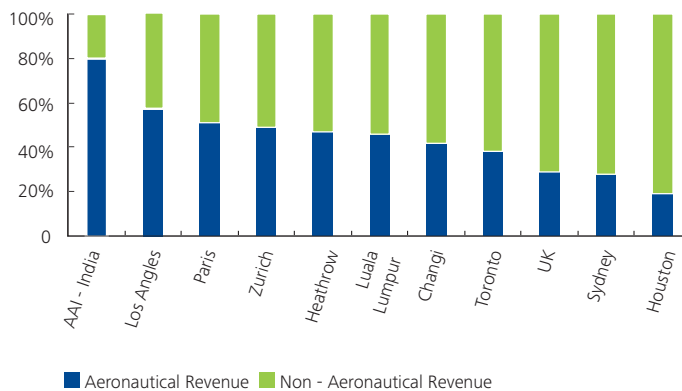
Source: IATA Airport and Air Navigation Charges Manual – March, 2006

**Analysis of issue**

**Low percentage of non-aeronautical revenue**

- Non-aeronautical revenue stream has not yet been fully tapped by the Indian aviation industry. Globally non aeronautical revenues contribute 50 to 70 percent of the total airport revenues, whereas in India these contribute to a mere 20 percent of total revenues. With the proportion of non-aeronautical revenue being very low, the airport operators are forced to levy higher aeronautical related charges on airlines.

**Figure 8: Global Aeronautical – Non aeronautical revenue pattern**



Source: Various

**Alternate secondary airports not available**

- Airline operators elsewhere in the world have the flexibility of using alternate or secondary airports where the airport charges are comparatively low. This option is not available in India.

<b>Options analysis</b>	<p><b>Tapping the potential of non-aeronautical revenue</b></p> <ul style="list-style-type: none"> <li>• Due to the low revenue accrual from terminal infrastructure facilities at India's airports, the airlines have been subjected to a high operational cost environment. Accordingly, there is a need to seek avenues for non-aeronautical revenues that would provide a means to increase airport profitability without increasing the cost of aeronautical related services.</li> </ul>
<b>Statement of issue</b>	<p><b>Shortage of technical manpower</b></p> <ul style="list-style-type: none"> <li>• The Civil Aviation Sector is facing acute manpower shortage, especially in the technical cadre. As per estimates of the Sub-Group on Human Resource Development for the Civil Aviation Sector, India would need 5,400 pilots by the end of the 2012.</li> <li>• Similarly the demand for Aircraft Maintenance Engineers and Air Traffic Controllers would rise with the increasing number of flights and the new airports. Given a population of more than one billion plus, the requirement for the technical manpower appears inconsequential, but the low supply churn out rate of quality technical grade personnel might perpetuate an undermanned Indian aviation sector.</li> </ul>
<b>Analysis of issue</b>	<p><b>Pilots</b></p> <ul style="list-style-type: none"> <li>• There are around 40 approved flying training institutes in the country out of which 17 are functional. The training of commercial pilot is a time consuming process. At present, only 100 pilots graduate from these flying schools every year. On the short term demand basis there would be a requirement of at least 150 pilots per year as replacements for retirements and normal attrition.</li> <li>• For the airlines, shortage of pilots would result in higher pilot salaries putting pressures on their revenue margins. Over the last two years, lured by lucrative opportunity that had opened up in the Indian skies, many rushed to get a commercial pilot licence (CPL). However out of 100 applicants, airlines barely get 15-20 pilots who meet their requirements. The rejection rate at the CPL level is high because most of the courses of pilot trainings institutes (both Indian and overseas) are not recognized by the Directorate General of Civil Aviation (DGCA).</li> <li>• Director General of Civil Aviation (DGCA) has permitted the foreign pilots to fly aircrafts on domestic circuits to mitigate the shortage of trained pilots in India. However, that is not the long term solution, given the growth of Indian aviation sector.</li> </ul> <p><b>Aircraft Maintenance Engineers / Technicians</b></p> <ul style="list-style-type: none"> <li>• There is also a shortage of flight engineers and technicians, with airlines resorting to poaching just as in the case of pilots. At present there are 45 DGCA approved training schools located all over India in the field of Aircraft</li> </ul> <p><b>Maintenance Engineering training</b></p> <ul style="list-style-type: none"> <li>• Though Aircraft Maintenance Engineers (AME) institutes produce about 5,000 students every year, they provide only basic training for issuance of the basic licence. These students are utilized as technicians as they do not have experience with heavy airplanes and do not have type rated licence. The candidates passing out of the AME institutes need to undergo a minimum one year experience on the heavy aero planes and pass DGCA examination to get type rated licence. Due to shortage of type rated licence holders, the aviation industry faces scarcity of engineers. Currently, foreign engineers are being inducted in Indian civil aviation to bridge this gap.</li> </ul> <p><b>Air Traffic Controllers</b></p> <ul style="list-style-type: none"> <li>• The Roy Paul Committee, which looked into air traffic management in 2005, reported over 200 ATC vacancies. Three years later, the gap has stated to be widened three times. Civil Aviation Training College (CATC) at Allahabad is the only such institute which imparts ATC training. The training at the Civil Aviation Training College, Allahabad, lasts six months. It has 12 simulators, each of which can train only 10 people at a time. So in a year, only around 300 can be trained, however the estimated shortfall is 600. The other constraint is the shortage of instructors at the training institute. The basic qualification for an ATC is B.Tech (telecom/electronics/radio engineering) or M.Sc. in electronics. There is a general shortfall of candidates since many aptly qualified engineers prefer other options in their technical field. In addition, initial attrition rate in this high-pressure job is pegged at 10-15%.</li> </ul>

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## Options Analysis

### Pilots

- There is an urgent need for enhancing the infrastructure and other requirements of training institutes. The training institutes should tie-up with various airlines and the Financial Institutions enabling the institutes to scale up operations and also to increase the absorption of the candidates for airline operations. India also needs to reassess the training period, modules and examinations; and bring these at par with international standards.
- In addition, Government has taken various steps, including
  - increasing the retirement age of pilots to 65 years
  - setting up of training institute in Maharashtra
  - upgradation and modernization of infrastructure at the India Gandhi Rashtriya Udaan Akademi to enhance its training capacity from 40 to 100 pilots and reduce the training period.

### Aircraft Maintenance Engineers / Technicians

- There is a need of type rated AME training institutes which at present are not in India. Hence it would be necessary to involve the technical training institutes like NITs / IITs to conduct aviation related courses such as Aircraft Maintenance to ensure that quality manpower is available to the aviation industry for maintenance of aircraft etc.

### Air Traffic Controllers

- To cater to the shortfall in the rising demand of trained ATCs, a new training academy has to be established on similar lines of the one existing in Allahabad.
- It would be prudent to re-assess the eligibility criteria and to allow science graduates to appear for the ATC as per the pattern followed in the European countries. This step would broadbase the number of candidates thus increasing the number of eligible candidates for the formal training.
- The government should also implement necessary measures for upgradation of the CNS/ATM that would be fully automated to reduce the controller interventions during all phases of the flight until unless is required. This will reduce the verbal communication between the pilots and ATCs (which can be misinterpreted). This step would facilitate to a certain level in reducing the stress factor faced by the ATCs.

### Fiscal incentives for aviation institutions

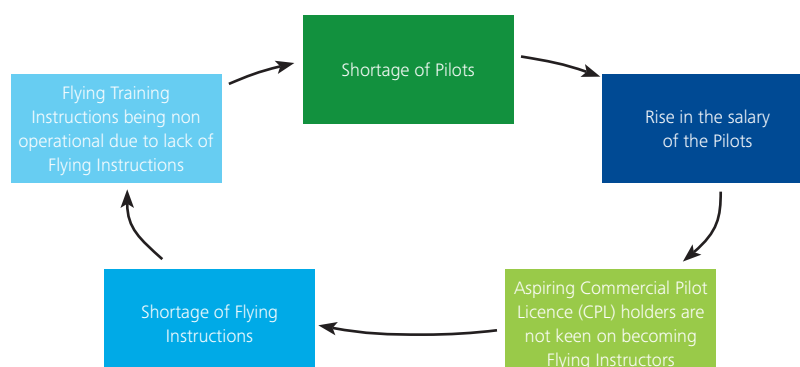
- To upgrade and encourage the blossoming of the technical and engineering academies for various aviation disciplines, it may be prudent to provide fiscal incentives like land at concessional rates, duty exemption in the import of training equipments, income tax holidays etc. to augment the necessary institutional infrastructure.

### Shortage of instructors

- Pilots and airline pilots in particular, need to be trained as older ones retire. However for training the pilots, there is an acute shortage of qualified Flying Instructors. The aspiring Commercial Pilot Licence (CPL) holders are not keen to opt for a career as flying instructors.

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**Figure 9: Pilots supply scenario impact due to shortage of flying instructors**



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**Options Analysis**

- This shortage of flight instructors would eventually feed into a shortage of pilots. The dearth of flight instructors is largely due to the relatively low paying nature of the job. To retain Flying Instructors at these flying schools, compensation and other benefits need to improve. Contracts associating the instructor and the academies for certain minimum years could be explored.
- To ensure that the flying institutes have access to competent instructors, the government may make it mandatory for every Indian commercial pilot to devote a certain percentage of his time (which would be remunerated) to provide training. The step can be implemented till the time , there is a shortage of pilots in the industry.
- The government may also consider increasing the age limit of the flight instructors (subject to medical fitness) till such time there is a shortage of pilots. This extension however should not entitle the person to fly commercial aircrafts.

**Government measures**

- DGCA on its part has undertaken certain measures to facilitate availability of more Chief Flight Instructors (CFI), Flight Instructor In-charge (FI) by redefining eligibility criteria and also by obtaining Qualified Flight Instructors from Defence. A Civil Aviation Requirement (CAR) has also been issued, which permits pilots holding Flight Instructor's Rating to impart training up to the age of 65 years. Flying requirements for issue of CPL has been reduced and the age of pilots, who can operate commercial aircraft has been increased from 60 to 65 years.
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**Statement of issue****Safety and security**

- India stepped up its airport security after the 1999 Kandahar hijacking. The Central Industrial Security Force, a paramilitary organisation is in charge of airport security under the regulatory frame work and instructions of the Bureau of Civil Aviation Security. CISF formed an Airport Security Group, which is dedicated to protect Indian airports. Each and every airport has now been given an APSU (Airport Security Unit), a highly trained unit to counter unlawful interference with civil aviation. Apart from the CISF every airline has a security force which is a separate department.
  - Given the high intensity serial bombings witnessed across several parts of the country in the past few months, there is a need to review and upgrade the nature of security and safety measures provided at the country's airports to mitigate against any drastic measures planned against Indian aviation sector by any form of terrorism.
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**Analysis of issue****Risk of terrorism / hijacking**

- Traditionally, most aircraft hijackings have been perpetrated for the purpose of using the passengers as hostages in an effort to either obtain political asylum/defection for the perpetrator, or to gain the release of terrorists being held in prison.
- In the 9/11 attacks, the use of hijacked planes as suicide missiles changed the way hijacking was perceived as a security threat. Terrorists could still attempt to hijack airplanes in order to force concessions, or to crash the planes into buildings, landmarks or infrastructure targets - such as refineries, chemical plants or nuclear power plants - with the purpose of causing the maximal number of casualties.

**Air cargo security**

- The air cargo system is a complex, multi-faceted network responsible for moving a vast amount of freight, express packages, and mail on aboard of passenger and all-cargo aircraft.
- Potential risks associated with air cargo security include introduction of explosive devices in cargo placed aboard aircraft; shipment of undeclared or undetected hazardous materials aboard aircraft; cargo crime including theft and smuggling; and aircraft hijackings and sabotage by individuals with access to aircraft.

**Bird hits**

- Bird strike (sometimes bird strike, bird hit, or BASH (Bird Aircraft Strike Hazard)) in aviation is a collision between an airborne animal (usually a bird) and a man-made vehicle, especially aircraft. It is a common threat to aircraft safety, and has caused a number of fatal accidents. Bird strikes happen most often during take off or landing, or during low altitude flight. Bird strikes can damage vehicle components, or injure passengers. Depending on the damage, aircraft at low altitudes or during take off and landing often cannot recover in time, and thus crash.
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**Land encroachment**

- Another problem that some airports face is the proliferation of slums around the airport boundaries in places like Mumbai and therefore the porosity of compound walls around the airports is a potential security threat.

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**Options Analysis****Periodic security audits**

- There is a need for surveillance, surprise checks, safety oversight audits, and enhanced accident prevention activity. The Airport Security Unit should undertake periodic review tests by using undercover agents to carry fake bombs/ parts in their carry on luggage and counting how many are successful with getting through security checkpoints.
- Covert tests may be undertaken at regular intervals to judge the alertness of the screener and when a screener misses an undercover agent carrying dangerous items, they should be immediately sent to remedial training.

**Risk of terrorism / hijacking**

- Preventive measures for plane hijacking include thorough physical security at the airport, evaluation of the psychological profile of the passenger at the time of his checking-in through carefully-framed questions; x-ray of the checked- in baggage and, if necessary, their identification by the passenger before they are loaded; ladder point checking by the airline staff to neutralize dangers due to negligence of the airport security staff or their complicity with the hijackers. Prevention of hijacking and terrorism would also lie in undertaking a periodic threat & risk assessment, developing tailored security plans and their prompt implementation.

**Air cargo / baggage security**

- Placing explosives in cargo requires co-operation of individuals who have access to aircrafts such as the cargo workers. Hence it is important to increase efforts to perform background checks of workers with access to aircraft and strengthen the physical security around air cargo operations to mitigate the threat of explosives. In addition, the use of hardened cargo containers capable of withstanding internal bomb blasts needs to be evaluated.
- Cargo crimes include theft of goods transported as cargo, smuggling of contraband, pirated goods through the cargo distribution network. Cargo thefts can be reduced by implementing effective cargo security technology including cargo tracking systems, tamper-evident and tamper-resistant seals, high-speed screening devices, and integration of security technology into supply chain management systems. This will also drastically reduce cases of lost baggages.

**Cameras / thermal cameras**

- While Closed Circuit cameras should be installed at the strategic locations for detecting any intrusion activities, the same should regularly monitored at the main monitoring cell. Adequate provisions must also be made for the storage and retrieval of old tapes of say 6 months in the event of review of any old footage. The security officials present in the surveillance room should be made responsible for a particular set of CCTVs.
- The manning of the surveillance job should be properly implemented. The security teams must work in shifts and should preferably be regularly transferred / rotated on jobs to disallow the element of boredom.

**Biometrics systems**

- To prevent unauthorized persons to gain access to important security risk designated areas of the airport, a proper identity management system should be in place. The identity management system could be preferably biometric system consisting of hardware and software to capture various human characteristics and to compare them to information stored in a database. By recognizing individuals based on physiological characteristics, biometrics provides a natural (i.e. non-invasive) method of accurately determining identity. This technology is already being tested at several airports across the world to identify airport workers.
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**Bird hits**

- One counter – measure for bird hits is by designing more bird resistant aircrafts.
- Airports also engage in bird management and control to reduce bird strikes on takeoff and landing. This includes changes to habitat around the airport to reduce its attractiveness to birds. Use of ultra-sound signals to scare off birds may be examined
- In addition, flight paths should avoid migratory routes, wildlife reserves, estuaries and other sites where birds may congregate.

**Security system design**

- In airports, security plans and measures should be implemented in a manner that requires minimum interference, inconvenience and intrusion of privacy for the passengers without compromising on the security aspects.

**Land encroachment**

- To eliminate the issue of encroachment, infrastructure projects needs to be insulated against political intervention.

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**Statement of issue****Land acquisition**

- Recent government initiatives of building greenfield, merchant, cargo and low cost airports and modernisation of existing domestic and international airports require huge tracts of land.
- Of late, a number of large projects are facing extreme opposition from landowners and the cumbersomeness of the land acquisition process has recently come to significant highlight. Delays have been witnessed in important projects and there have been controversies surrounding acquisition and transfer of land. In many cases, even though the land is owned by the government, there have been difficulties in using it for infrastructure projects due to encroachment upon them, typically by unauthorised slums

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**Analysis of issue****Poor coordination between central and state agencies**

- The coordination between administrative departments of the state and central government agencies plays a major role in the land acquisition process. It has been observed that the lack of coordination is the major cause of delay for the infrastructure projects. This becomes a critical issue when a project is sponsored/ awarded by a central government authority and needs the involvement of state government or district level administration. In case of PPP projects this issue becomes very challenging as the private developer is responsible for land acquisition for the project

**Poor land records in land deeds**

- Non availability of land deeds / poor land records tends to act as a bottleneck in the land acquisition process.

**Resettlement and rehabilitation issues**

- Need for rehabilitation and proper compensation for the stakeholders displaced have been a major factor behind the land acquisition issues. There have been issues of inadequate compensation which in turn led to mass protests thereby forcing the delay in the completion of the projects. The anomaly that the person who does not have to cede land benefits the most from a development project happening adjacent to his land encourages one to hold on to the land and refuse compensation, however attractive it may be.

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**Options analysis****Model concession agreement to support the concessionaire**

- The Government is on the verge of finalization of the model concession agreement for PPP concessionaire. The government would be required to incorporate suitable provisions facilitating a smooth land acquisition process without undermining any of the stakeholders concerned. The land should preferably be acquired in advance by the government before the contract is awarded to the concessionaire

**Initiating the land acquisition process at an early stage**

- Project implementing authorities must commence the land acquisition process at the planning stage of the project rather than at the implementation stage. This will also give a cushion for the land negotiation and purchases from the landowners directly.
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**Rehabilitation and compensation**

- Government may improve the mechanism in place to rehabilitate and compensate the stakeholders and ensure that project moves forward smoothly. It should be taken care that the stakeholders displaced get adequate compensation in line with the existing market prices of the land. Models may need to be worked out to provide sharing in the capital appreciation benefits to the displaced.

**R&R policy**

- The government has recently come up with the National Rehabilitation and Resettlement policy to address the interest of the land owners and others affected by land acquisition. The policy stresses on minimising displacement, land for land, making land owners stakeholders and a job per family of Project Affected People (PAP).

**Corporate social responsibility**

- The corporates must initiate community development programs to instil in PAPs, the necessary skill sets and to enable them to find employment in long run.

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**Statement of issue****Closure of old airports**

- With the commissioning of the new private airports at (BIAL) Bengaluru and (HIAL) Hyderabad, the old airports at HAL and Begumpet respectively had to be decommissioned.

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**Analysis of issue****Non-utilization of existing infrastructure**

- There would be a huge wastage of the existing infrastructure and if the infrastructure is not utilised for aviation related or ancillary activities, it would imply a colossal waste of public money.

**Connectivity to the new airports**

- Due to the land constraints in metros the new airports are constructed on the outskirts of the city. This has forced the governments to provide adequate connectivity to the airports. At present the connectivity to some of these airports is poor and requires high commuting time between the cities and the airports.

**User development fee**

- The new airports have been charging user development fee resulting in increase of fares which are already rather high.

**Losing advantage in the shorter duration**

- Locating the airports on the outskirts of the city has made the commuters to spend more time for travelling to the airports for the shorter duration routes. For example if the commuter has to travel from Hyderabad to Bangalore he ends up travelling almost 3 hours for the inland road travel and thereby giving up the advantage of travelling by flights. This has led to the commuters preferring rail /roads for the shorter routes.

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**Options analysis****Usage of the closed airport space for other activities**

- The closed airport space can be used for other facilities like MRO, aircraft parking and air taxi services. This will reduce the existing airspace congestion and terminal congestion of the metro airports.

**Concept of secondary airport / low cost airports**

- The closed airports can be used as secondary / low cost airports. These airports can be mainly used for short routes and mainly for the LCC aircrafts. This will help the LCC in having a quick turnaround time and thereby reducing their fuel cost, increasing their operating efficiency and revenue margins.

**Development of airport linkages / connectivity**

- The government should try to build proper airport linkages / connectivity like dedicated fast trains between the city center and airport. This will considerably reduce the travel time to the airports and improve the air travel experience.
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The Indian aviation growth trend has resulted in many lucrative business opportunities for players in the aviation industry.

# 4. Opportunities

The Indian aviation sector has witnessed outstanding growth amid fears of global slow down during the year 2007-08. The year has been full of activities wherein authorities have sought ways to sustain and maintain the growth rate on a long term basis and the market players to look for and appropriately respond to the opportunities which are coming up. The Indian aviation growth trend has resulted in many lucrative business opportunities for players in the aviation industry.

In spite of this, many of global aviation industry players have remained insular to being a part of India's aviation growth story. This has been largely on account of lack of proper market potential assessment, not being able to find the right business partners, not understanding the legal and policy implications or concern of continuity of growth of aviation sector.

In times of current US slowdown and fear of recession, the role of developing economies like India assumes greater significance with their thrust for capacity and capabilities enhancement and are looked upon as the prime movers of growth. The Indian government has initiated several reforms and steps to keep the momentum going. In view of the above, we present, in this section of the report, an overview of strategic assessment of the opportunities offered by Indian aviation growth.

## Aircraft manufacturers

Currently India has total of 1,123 aircrafts of different classes and sizes as shown in the table 4. There are at present 399 aircrafts (scheduled operations) and the number is expected to cross the 900 mark by 2012.

Based on the growth trend witnessed in Indian aviation industry, leading commercial aircraft manufacturers - Boeing and Airbus, expect to sell another 935 airplanes to India over the next twenty years. According to National Aerospace Laboratories (NAL), there will be requirement of 200 aircrafts having 50-70 seat capacity in India over the next five years and the demand will increase over the next 25 years

Despite the increased connectivity, frequency of flights and availability of seats between city pairs, only 45% of the major city pairs in India have direct connectivity via air. The situation is rather worse for tier II and tier III cities' pairs which needs to be addressed for sustaining the growth.

**Table 4 : Aircrafts in India (by class)**

Class	Number
Motor Glider	1
Ultra Light	33
Hang Glider	19
Experimental	6
Aircraft	806
Balloon	7
Glider	58
Helicopter	193

Source: Director General of Civil Aviation, India

The list below summarizes important facts which will fuel the demand for aircrafts in the country –

- Modernization of 35 non-metro airports coupled with development of greenfield airports, merchant, low cost and cargo airports in the country will open new routes for regional connectivity which in turn will result in demand for aircrafts especially regional jets (The government introduced a new permit category of Scheduled Air Transport (Regional) Services in 2007. So far five airlines have been granted no objection certificates for regional air transport service operations.) Allowing private operators to fly to six SAARC nations and enhanced traffic rights with countries like Singapore, Cambodia, Jordan, UAE, Kuwait, Uzbekistan, Malaysia, Chile and Hong Kong will result in more flights between India and these countries which will augment the demand aircrafts.
- With a view to enhance the connectivity of inaccessible and remote areas, the Civil Aviation Ministry has put special emphasis on augmentation of helicopter services and has declared year 2008 as the year of helicopter services. The government has approved many proposals for acquisitions of helicopters. Business for Air Charter services is burgeoning in India and number of air taxi operators has almost doubled in past 10 years and eventually the demand for 6-8 seater Very Light Jets (VLJs) is expected to grow.
- Industry analysts feel that the potential for regional jets is substantial in India. Bombardier and Embraer - leading manufacturers of the small aircrafts – having identified this big opportunity very early, have made

foray in the country. Domestic aircraft manufacturers Hindustan Aeronautics Ltd (HAL) and the National Aerospace Laboratories (NAL) are also upbeat about developing a 70-seater regional transport aircraft (RTA). To provide the platform for global aircraft manufacturers, Tamil Nadu plans to set up a 4,000 acres Aero Park in Chennai. The park will consist of manufacturing centre, engineering centre, R&D and test laboratories, aerospace and avionics facilities, design studio interiors among other things.

### Airport infrastructure

During the year 2007-08, the Civil Aviation Ministry has put infrastructure development on priority with a number of projects identified. The government has planned to take up projects worth Rs. 41,000 crore during the 11th five year plan (2007-2012) out of which government will fund Rs. 12,000 crore. Rest of the funds will be arranged by PPP mode. The table below summarizes the projects initiated by the ministry:

**Table 5 : Airport projects initiated by Civil Aviation Ministry**

Greenfield airports	<ul style="list-style-type: none"> <li>Government has planned to set up Greenfield airports at various parts of the country. The Greenfield projects at Bangalore and Hyderabad have been completed and Goa, Navi Mumbai, Pune, Greater Noida and Kannur are being considered at present for development.</li> </ul>
Ultra Light	<ul style="list-style-type: none"> <li>Merchant airports are airports wherein, the infrastructure will be developed entirely by the private sector with private resources and with absolutely no Government funding. However Government will be involved with regards to the safety and security at these airports.</li> <li>The Government would also have to provide a license for such airports to operate. These projects would also need clearances from various Central Government Ministries including Defence and Environment among others.</li> </ul>
Dedicated cargo airports	<ul style="list-style-type: none"> <li>The civil aviation ministry is seriously considering setting up dedicated cargo airports across the country. These airports will be able to solve the current problems of the cargo carriers like the slot availability and high rentals charged by the existing metro airports</li> </ul>
Low cost airports	<ul style="list-style-type: none"> <li>Various State Governments have identified nearly 25 Greenfield or unutilized airport projects in a bid to encourage regional airlines and to provide air links to small cities and towns. These are planned in tier-II or tier-III cities, and would be in addition to the Ministry of Civil Aviation's ambitious modernisation programme for 35 non-metro airports.</li> <li>A no-frill airport could be built at a minimum cost and would allow operation of small jets as well as slightly bigger aircraft like Boeing's B737 or Airbus A320. The investment in such an airport could range from Rs 40 crore to Rs 100 crore.</li> </ul>
Modernization of existing metro airports	<ul style="list-style-type: none"> <li>The Government plans to improve the conditions of the existing airports across the country via PPP route. The existing infrastructure at these airports is poor, characterized by inadequate parking space, insufficient terminal capacity, poor air traffic control systems and lack of facilities for passengers.</li> </ul>
Modernization of existing 35 non metro airports	<ul style="list-style-type: none"> <li>Ministry of Civil Aviation has proposed development of 35 non-metro airports, keeping in view the potential for traffic, tourism, business etc. The Ministry has proposed the development of these airports in three phases as follows:               <ol style="list-style-type: none"> <li>Phase-I (10 airports): Ahmedabad, Amritsar, Guwahati, Jaipur, Udaipur, Trivandrum, Lucknow, Goa, Madurai and Mangalore.</li> <li>Phase-II (15 airports): Agati, Aurangabad, Khajuraho, Rajkot, Vadodara, Bhopal, Indore, Nagpur, Vishakapatnam, Trichy, Bhubaneswar, Coimbatore, Patna, Port Blair, Varanasi.</li> <li>Phase-III (10 airports): Agra, Chandigarh, Dimapur, Jammu, Pune, Agartala, Dehradun, Imphal, Ranchi and Raipur. Additional airports will be taken up for development on need basis.</li> </ol> </li> <li>The project model would be such that all aeronautical activities at these airports would be handled by the AAI, while a public-private partnership (PPP) model would be followed for the development of non-aeronautical activities at the city side of these airports.</li> </ul>
North east airports	<ul style="list-style-type: none"> <li>Government is planning for development of Paykong airport in Sikkim, Chiethu airport in Nagaland and Itanagar in Arunachal Pradesh.</li> </ul>
Non-operational airports	<ul style="list-style-type: none"> <li>AAI is also planning to identify non operational airports that could be put into use to provide better air connectivity in the country. AAI is in the process of carrying out feasibility studies for this purpose.</li> </ul>

### Financing plan for airports

To accelerate and increase PPPs in infrastructure, some of the major initiatives that have been taken by the Government include :

- Provision of viability gap funding
- Setting up of a SPV, India Infrastructure Finance Company Limited (IIFCL) to meet the long term financing requirements of potential investors.
- India Infrastructure Initiative (US \$ 5 bn. Fund)
- Enhanced annual External Commercial Borrowing ceiling
- Permission to foreign financial institutions and multilaterals to raise rupee resources
- Encouraging development of new instruments such as grading of PPP projects/SPV rating by the major credit rating companies

The government, through a greenfield airport policy, has allowed development of private airports for both private (captive) and public use. With new policy in place, private airports for private use can now be developed without requiring the cabinet approval. There has been an overwhelming response to this decision and a number of corporate, realtors and flying academies have applied for private airports.

Besides, there are proposals from state governments for development of airports which are awaiting approvals. In addition, to match up with the growing demand for helicopter services, the government is considering plans to construct heliports in National Capital Region (NCR) and South Mumbai.

The proposed development, being taken up preferably via PPP route, showcases significant opportunities of long term revenues stream from the ownership and operations for the infrastructure developers.

### Airport and ground support equipment

Airport and ground support equipment segment presents another opportunity with estimated market size of US\$ 359 million in India for 2008 and expected to cross US \$ 400 million over next three years.

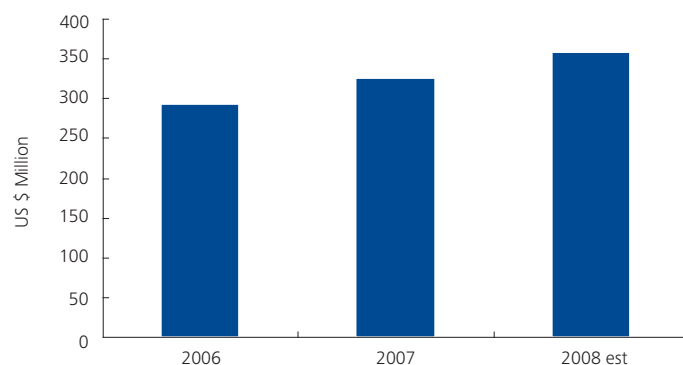
## The government, through a greenfield airport policy, has allowed development of private airports for both private (captive) and public use.

With up-gradation and modernization in place, demand for technology driven ground support equipments is set to grow. Needless to say, modernization of airports to world class standards in the country will make it imperative to equip airports with world class airport and ground support equipments.

Increased safety and security concerns and up-gradation of navigational aids, traffic control services and adoption of traffic management technology will further strengthen the demand. The systems for which demand is expected to rise include Dedicated Satellite Communication Network (DSCN), Automatic Message Handling System (AMHS), Flight Information Display System (FID), Aeronautical Telecommunication Network (ATN), Voice Communication and Control System (VCCS) among others.

India imports more than 60% of airport and ground handling equipments currently. The AAI alone has an annual budget of US\$ 60 million for

Figure 10 :Market size for airport and ground support equipment



Source: www.researchwikis.com

equipments purchase. A brief list of equipments which are required by various agencies and companies in aviation sector is indicated below.

#### Security services

- CCTV and microwave sensors
- Smart Cards and Biometrics systems
- Weapon, Explosive, Drug detection in air cargo shipments
- Baggage systems (colour X-ray and RFID baggage systems)
- Encrypted communication
- Fire and safety systems

#### Airport

- Airfield lighting systems
- Vehicle navigation systems
- Car parking management:
- GPS systems
- Self service kiosks
- Standby power systems
- Video monitoring
- Baggage handling systems:
- Access controls -Smart cards, biometric passenger checks
- Visitor management system
- Retail business management:
- Data management systems

#### Aircraft and airline

- On-board flight safety systems
- Flight Deck Avionics
- Flight Operations Support
- Maintenance Ops Support
- Precision Navigation

#### Air traffic management

- Precision landing system
- Radar video surveillance (RVS)
- Global navigation satellite system (GNSS)
- Instrument Landing Systems ( CAT II / CAT III)
- Satellite communication (SATCOM)
- Automatic dependence surveillance (ADS)
- Communication, Navigation surveillance (CNS)
- Air Traffic Network (ATN)
- Controller-Pilot Data Link Communication (CPDLC)
- Flight data processing system (FDPS)
- Advanced Surface Movement Guidance and Control Systems (A-SMGCS)
- Docking systems
- GPS Aided GEOS Augmented Navigation (GAGAN )

This represents a lucrative opportunity for suppliers of ground support equipments based on latest technology which increases efficiency and are cost effective in operations. Global manufacturers, by setting up manufacturing plants in India, can take advantage of lower input costs, lower labour rates and liberalized aviation policies and manufacture high technology equipment at relatively lower costs in India.

#### MRO facilities

Indian Maintenance, Repair and Overhaul (MRO) services market is estimated to be US\$ 800 million in 2007. MRO business in India has recorded around 15% growth rate during the year. Rising air traffic and fast fleet expansions are leading to a growing demand for MRO services.

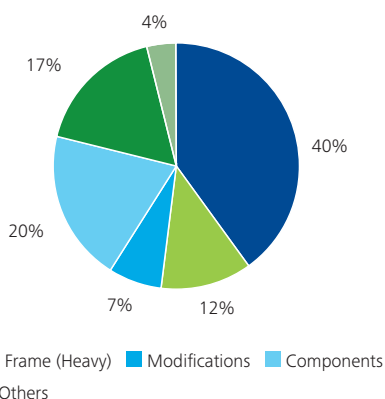
With continuing growth in aviation sector, particularly increased air traffic and the fleet expansion programmes of airlines, India offers long term prospects for MRO business. Again, India's lower labour cost advantage – roughly half of that in Europe and USA will make the MRO operations more profitable for service providers. At the same time it will result in cost saving (cuts in expenditure) for airlines in India on account of not being required to take the aircraft out of India for MRO services.

Looking at the need and potential there have already been initiatives from both public as well as private sector. National Aviation Corporation of India Limited (NACIL) has plans to set up separate MRO facilities in association with Boeing and Airbus. A satellite MRO centre is planned at Chennai Aero Park. Gujarat government is examining the prospects for developing MRO business and making Gujarat, a MRO hub in the region. Ahmedabad Aviation and Aeronautics (AAA), has drawn up plans to set up MRO business in Ahmedabad by end of 2009 as part of its Aviation City Project.

Major components of MRO services in India include engine overhaul and components. Together, these account for around 60% of MRO services business in terms of value.

Businesses that can provide required MRO service in India stand the chance to become strategic partners for operators as the latter's fleet expand.

Figure 11: Market break up for MRO services



Source: www.researchwikis.com.

### Ground handling services

Ground handling services business in India, as per industry sources, is estimated to be Rs. 3,000 crores and is expected to grow at 15% CAGR till 2011-12. The government has relaxed the norms for FDI in ground handling services business and has allowed 74% FDI through automatic route.

In India, ground handling services were mainly provided by airlines particularly Air India catering to 80% of handling services in the country, whereas internationally the services are outsourced to specialized agencies. While some airlines are not in a favour to implement the proposed GH policy due by January 2009, other airlines have already begun forming association with leading international ground handling services providers. In fact, ground handling agencies are entering in multiple joint ventures with airlines and local service providers.

Analysts believe that looking at the quantum of investment being made in Indian aviation sector, there will be abundant opportunities for ground handling services providers.

### Employment generation

There is a shortfall in the skilled manpower available in the country, to occupy the jobs which are available across the Aviation spectrum. This growing sector also gives India the opportunity to train and impart skills to its youth, providing them with a higher degree of

employability. The manpower category includes pilots, engineers, technicians, cabin crew, flight dispatchers, customer services, sales, marketing, HR, finance, IT, cargo and security.

Director General of Civil Aviation (DGCA) has permitted foreign pilots to fly aircrafts on domestic circuits to mitigate the shortage of trained pilots in India. However, that is not the long term solution, given the growth of Indian aviation sector. The imminent demand supply gap represents opportunities for aviation academies and flying schools to set up shops in India.

To cash in the opportunity presented by growth of aviation in India, new institutes have open up. The government has approved a proposal to set up National Flying Training Institute for training of pilots at Gondia, Maharashtra. International training institutes have shown interest in setting up of flying schools through association with private or public sector entities in India. As per industry sources, the components which can be outsourced to India include mainly engineering and production jobs. However, in view of India's own growth of aviation sector coupled with global dearth of trained aviation staff, all types of aviation and avionics personnel will be in demand. Air cargo hub India has a great potential for becoming an air cargo logistics hub triggered primarily by huge development across the country, impressive growth of various sectors of the economy, possible hub for SAARC and ASEAN countries

**Table 6 : Manpower estimation by AAI**

Year	No. of Aircrafts	Pilots / Co-Pilots	Aircraft Engineers	Cabin Crew	Other Airline Staff	Airport staff	Total No. of employees
2004-05 Base year	184	1,900	11,174	5,907	29,279	20,969	69,413
2005-06	221	2,280	13,409	7,088	35,135	20,969	79,102
2006-07	265	2,736	16,091	8,506	42,162	15,941*	85,700
2007-08	318	3,283	19,309	10,207	50,594	17,272	1,00,983
2008-09	382	3,940	23,170	12,249	60,713	18,737	1,19,190
2009-10	458	4,728	27,804	14,699	72,856	22,353	1,42,897
2010-11	549	5,673	33,365	17,638	87,427	24,120	1,68,773
2011-12	632	6,524	38,370	20,284	1,00,541	26,061	1,92,412

\*On 3rd May 2006, AAI's employees of Delhi and Mumbai airports, numbering 2431 and 2597, were transferred to Private Airport Operators. This table excludes the manpower of Delhi and Mumbai airports after their privatization.

Note: The figures across the columns above are cumulative figures.

Source: Airports Authority of India

and its strategic location as a transit destination connecting the eastern- western global corridors. The Civil Aviation Ministry has identified Nagpur as India's national cargo hub and has promised an aviation policy for providing significant concessions for air freighter operations out of Nagpur. There are also plans of creating a national grid for cargo hubs at various airports in India with cold storage and warehousing facilities.

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## The Government has chalked out various policies and plans for development of the air cargo infrastructure thereby providing opportunities to the various entities involved in the value chain.

The merger of Indian Airlines and Air India would be a significant step towards the hub concept as such a model requires a strong national carrier. Ensuring full gateway status to the international airports at the metropolitan cities should be a great step forward for enabling the emergence of India as a cargo hub destination. At present other than Mumbai and Delhi the other airports are unable to provide complete gateway facilities and procedures for transshipment, imports and exports.

For facilitating the development of India as an air cargo hub, there is a need to develop the concept of cargo village at selected international gateways. This step would act as a catalyst to compete with major international airports hubs like Dubai, Singapore, Bangkok etc. A cargo village is the concept of establishing an integrated cargo infrastructure comprising of airline terminals, forwarders bonded terminals, specialty centres for special cargo along with rationalized, streamlined and simplified procedures, documentation and charges. Each gateway airport and its cargo village would be most effective if it is seamlessly connected with road and rail and onward to seaports. This would

provide benefits to the hinterland accessing the gateway terminals.

In addition, the compatibility of the country's civil aviation regulations with international laws, convention and practices needs to be ensured. India should also focus on valuable cargo which contributes substantially to the country's foreign exchange earning. The need of the hour is for various stakeholders to integrate their objectives into implementable actions and position India as a major air cargo hub in the global aviation map. However the air cargo industry faces some challenges like infrastructure bottlenecks, reducing margin, support systems, lack of EDI, cumbersome procedures at the airport and lack of a coherent policy have to be addressed to sustain this impressive cargo growth.

The Government has chalked out various policies and plans for development of the air cargo infrastructure thereby providing opportunities to the various entities involved in the value chain. Civil Aviation Ministry proposal to set up dedicated cargo airports and Government's plan to allow cargo airports within 150 kms radius of existing airports through automatic routes are major steps taken to the cause of developing India as a cargo hub.

Some of the opportunities emerging from the growth in the air cargo segment include:

- Providing vendors and industry in the non-metro cities a speedy gateway to the world
- The rising cargo flows would also result in improved freight rates, which will further increase the demand for air freight
- The efficiency and the reach of the express cargo industry will further improve
- Being a bit late entrant in improving the airport infrastructure, the latest technologies and facilities can be incorporated for development of the air cargo terminals
- Indian companies can exploit their inherent IT capabilities to develop specific application systems to enable air cargo planning, movement, management and co-ordination
- Domestic airlines can leverage on the development of the Hub-and-spoke model for the country's cargo operations
- Opportunity for 3PL and 4PL operators to flourish in India by improving on the logistics efficiency
- High value industries like hardware peripherals,

pharma, biotechnology, automotive, consumer durables, floriculture, aquaculture, gems and jewellery may look forward to locate their units in the vicinity of cargo airports. This will provide these a competitive advantage by reducing their inland logistics cost and provide a faster turnaround time for their EXIM transactions.

- Establishment of transshipment free trade zones inside the airport

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## Fuel Hedging is a contractual tool used by some airlines to stabilize jet fuel costs.

### Fuel Hedging

Oil price increase has been the cause of apprehensions for the airlines around the world. While many airlines almost went into bankruptcy many others churned profits via fuel hedging. Fuel Hedging is a contractual tool used by some airlines to stabilize jet fuel costs. A fuel hedge contract commits an airline to pay a pre-determined price for future jet fuel purchases. Airlines enter into such contracts as a bet that future jet fuel prices will be higher than current prices or to reduce the turbulence of confronting future expenses of unknown size. If the price of jet fuel falls and the airline hedged for a higher price, the airline will be forced to pay an above-market rate for jet fuel.

Recently, the Indian Government has also allowed domestic airlines to hedge fuel risk. The Multi

Commodity Exchange of India (MCX) has introduced trading in ATF futures, which would help airlines to hedge physical requirement/positions on the exchange.

Fuel hedging is a specialist domain which requires expertise. As fuel hedging was not allowed in India till 2007 there has been lack of expertise in the field. This has forced the Indian airlines not to rely much on fuel hedging. The constantly increasing crude prices also make it difficult for the airlines to hedge. Selecting a good consultant / commodity brokerage firm is one of the solutions to hedging. Recently some Indian airlines have appointed specialist consultants in the area of fuel hedging.

### Aerotropolis

The term 'aerotropolis' means 'Airport City'. It is a city in which the layout, infrastructure and the economy are centered on a major airport. In its simplest form, the aerotropolis is an economic hub that extends from a large airport into an adjoining area that consists mostly of distribution centres, office buildings, light manufacturing firms, convention centres, and hotels, all linked to the airport via roads and rail lines. These aerotropolis would be the prime movers for promoting local economic development and a potential hub for sourcing foreign investments.

Unlike conventional airports, an aerotropolis is likely to generate simultaneous growth of other prominent sectors like real estate, hospitality, manufacturing industries etc. The most developed examples of aerotropolis are to be found in the rising economies of Asia - and typically in citystates such as Hong Kong, Singapore, and Dubai. They have attained global eminence due to their significant inroads in state of the art non-aeronautical commercial facilities and services.

The concept of aerotropolis or airport city, though at a nascent stage in India, is fast catching, primarily due to the concept being seen as a viable investment option as compared to stand alone airports. In an aerotropolis, a major share of revenue comes from non-aeronautical components such as real estate, hospitality, tourism which yield faster returns than the aeronautical components. In such a scenario, even though the aeronautical part has a long gestation period, the financial standing of the company is not affected due to returns from the allied/non-aeronautical developments.



Aerotropolis in India are set to flourish with the growing economy and impressive growth of the aviation sector. In future aerotropolis shall be vital centers of growth and development and shall become important business hubs. However getting clearances from government, land acquisition, difficulty in obtaining finances will pose as major challenges to the growth of aerotropolis.

Some of the opportunities emerging from the growth of aerotropolis are as follows

- The aerotropolis shall serve as a regionwide multi-modal transportation and commercial nexus, strings and clusters of airport-linked business parks, information and communications technology complexes, retail, hotel and entertainment centres, industrial parks, logistics parks, wholesale merchandise marts and residential developments formed along airport.
- In line with the time-sensitive goods processing industries, the service sector has increasingly found airport areas to be an attractive location.
- Aerotropolis shall act as hub of regional corporate headquarters, conference centres, trade representative offices and information-intensive firms that require executives and staff to undertake frequent long distance travel.
- Business travelers benefit considerably from quick access to hub airports, which offer greater choice of flights and destinations and more flexibility in rescheduling as well as often avoiding the costs of overnight stays.

#### Non-aeronautical revenues

The limited avenues of revenue generation from the aeronautical segment have forced many airports to relook at their business models and seek non-aeronautical revenues to stay profitable. This provides the airport operator a means to mitigate the rising costs. Mature international airports earn a high proportion of revenues from non-aeronautical revenues. The non-aeronautical revenues come from activities that are undertaken on top of this core business, such as retail, parking, other concessions and rentals.

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## The non-aeronautical revenues come from activities that are undertaken on top of this core business, such as retail, parking, other concessions and rentals.

The additional income from nonaeronautical revenue is a key component in enabling airports to generate funds for the significant investment they must undertake in terminal and airfield expansion. The commercial revenue stream is essential for positive credit ratings and the airport's ability to attract investors, private or public (and the associated financing of large infrastructure projects). Without this revenue, airports would be considered less attractive investments.



The classification of the airport revenues is depicted in the figure 12.

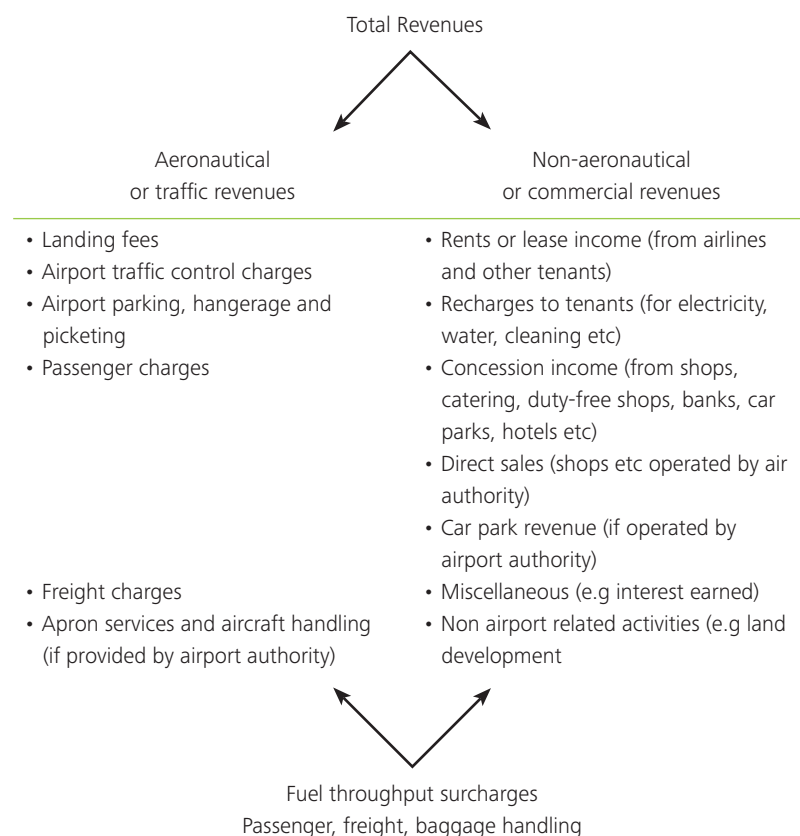
The relative affluence of the average air traveler makes airport a good destination for marketers selling high end products including fashion brands, electronic / personal computer related peripherals, eateries etc .

Airports are tapping into tourism, using their concession programs as platforms to showcase their communities, cuisine and educate travelers about their regions. Airports may also market the traditional advertisement sign boards within the terminal and also outside the airport. Another potential source of revenue for the airports is the conference market. This is very true especially for the new private airports which are located far from the main business centre.

An airport may choose to provide conference facilities either within its terminal buildings or renting out sites within its boundary to the conference organizers. Conference within the vicinity of the airport would greatly assist the business passengers in reducing travel time and would encourage more delegate participation. The local business communities, who may want to use the state-of-the-art technologies offered by an airport to host international meetings. The airport operator can also develop a state of the art shopping facilities on the unutilized land in the vicinity of the airport. The shopping facilities so developed would be accessible to the general public and thereby generate additional revenue. The airport passengers would be able to access the shopping facilities via a secure dedicated pathway.

On the regulatory front, the government has decided that the non-aeronautical service charges should not come under the purview of the proposed Airports Economic Regulatory Authority (AERA). But it has been planned that the revenue generated by an airport through non-aeronautical charges may be taken as a relevant factor in determining aeronautical services. The airport operator can if required crosssubsidise the aeronautical charges airlines pay from the non-aeronautical revenues. This process would ideally bring down the charges airlines have to pay to park and land aircraft etc.

**Figure 12: Classification of airport revenue sources**



Source : Doganis

The government  
has embarked on a  
mission to create  
infrastructure with  
ambitious projects.

# 5. Scaling new heights

India's strong economic performance over past couple of years has led to an impressive growth in aviation sector. The recent times have seen India being on radar of global aviation industry players. The growth story for Indian aviation, as experts believe, is going to continue over next decade. However, continuing this growth story would require many structural reforms and removing of bottlenecks from the system. Infrastructure in India still remains a major bottleneck and aviation sector is no different. To create world class infrastructure facilities for aviation industry, India would need gigantic investments to tune of US\$ 51 billion.

To make that happen, Indian government needs to formulate relevant policies, conducive regulatory mechanisms and provide a level playing field to all the players. This will create an environment which is conducive to business and to attract large investments from private sector in India as well as abroad. The Indian economy can capitalize on burgeoning opportunities in aviation sector if the current issues facing the industry are resolved appropriately.

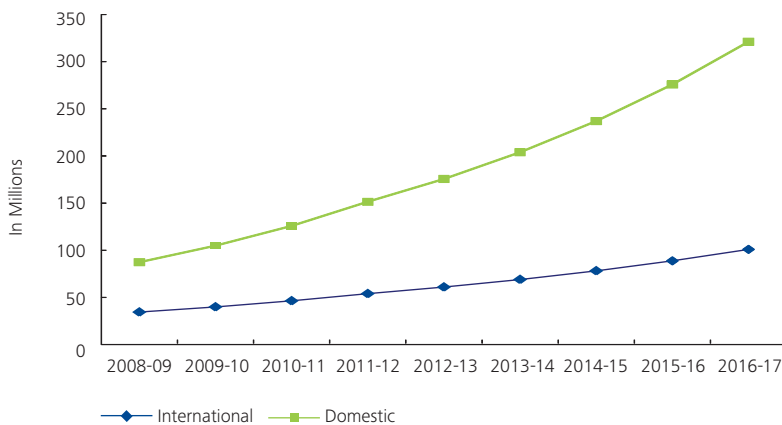
### Government's role

The government has taken steps in the direction of structural policy reforms and is coming out with new policies which are liberal and encourage public-private partnerships. The government has embarked on a mission to create infrastructure with ambitious projects. At this point, it is worth noticing that policy formulation is one aspect while smooth implementation of it is another. India has a history of having rules and regulations in place but not putting emphasis on implementation of the same which has impacted its own interests many a times. Routing development through public-private partnerships presents different challenges in terms of delineation of responsibilities, effective monitoring and evaluation procedure in place and final transfer of rights. The future plan of action would leverage on the past experience with a priority to upgrade the infrastructure to accommodate further expansion. Given the size and the population of the country, air travel penetration is relatively low, providing an opportunity to sustain the growth rate witnessed in the aviation sector over the past few years.

### Role of private sector

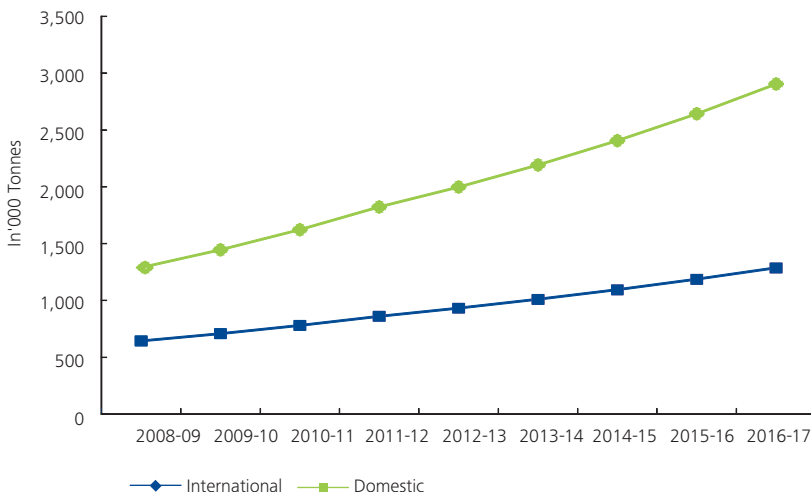
In India, due to policy changes and reforms, Public Private Partnerships (PPPs) have increasingly become the preferred mode for construction and operation of airport infrastructure. Private sector is presently actively involved in airlines and airports and their contribution are expected to rise substantially in the coming years. PPP offers a distinct possibility for increasing total investments by using a limited amount of public resources to leverage a much larger amount of private investment. Such PPPs accordingly could also increase economic efficiency and lower the capital requirement, provided that regulatory mechanisms are adequate.

Figure 13: Passenger growth forecast



Source: Airports Authority of India (AAI)

Figure 14: Air-cargo growth forecast



Source: Airports Authority of India (AAI)

PPPs can be undertaken through a range of alternatives such as BOT, BOOT etc, with the Model Concession Agreement (MCA) being used to provide a stable regulatory and policy framework. The MCA regulates the PPP contracts by defining the rights and obligation of all parties concerned. In case a project is not viable due to either long gestation periods or inadequate returns, the government is committed to provide up to 40% funding by way of grants in some cases, called viability gap funding.

The government has a non-interference approach on the commercial matters of the aviation sector. However in the future airports, where the competition is limited will come soon under the purview of AERA. With the number of PPP airports steadily increasing in India, the need of a regulator is felt necessary. The government on its part is continuing to provide a policy framework for the growth of the availability and accessibility of air travel.

#### Road map ahead

Successful and timely execution of the envisaged aviation infrastructure projects will require strong leadership and technical capabilities among the government functionaries. There will be a need for a specialized steering committee / expert technical advisory group for planning, formulating, executing and overseeing the implementation of such large size projects. India can take lessons from the successful practices adopted by other countries in aviation industry. Further, the government can seek participation of all the concerned stakeholders in policy formulation by inviting their views and addressing issues faced by them.

The need of the hour is to efficiently utilize the existing resources and at the same time commission the planned infrastructure in a timely manner to provide the end user a memorable travel experience. In addition, a collaborative effort must be initiated involving all the stakeholders concerned to chalk out a framework detailing the measures, the Indian aviation sector needs

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## The government on its part is continuing to provide a policy framework for the growth of the availability and accessibility of air travel.

to pursue in the next five – ten years. This framework would act as the platform to make India one of the leaders in the global aviation industry and to scale new heights. The framework would require the prioritization of the various issues indicated in the earlier sections on a high, normal or low basis. This would ensure a focused approach to understand the root cause of the issue and to address the same by taking necessary remedial actions. The framework would also provide a guiding light on the time line for the leveraging on the opportunities abound in the sector.



**Table 7: Road Map Framework**

<b>VISION 2020</b>	<b>To have world class aviation infrastructure providing services and amenities of global standards in a safe and secure environment fostering passenger and cargo growth</b>			
	<b>Infrastructure</b>	<b>Safety &amp; Security</b>	<b>Reliability of services</b>	<b>Cost factor</b>
End User experience	To have state-of-the-art airport infrastructure having aviation services and passenger facilities of global standards.	To enjoy safety and security at par with the highest international standards	To enjoy safety and security at par with the highest international standards	To avail value for money as well as luxury air travel options to every nook and corner of the country
Transition stage	<ul style="list-style-type: none"> <li>• De-bottlenecking land and air space</li> <li>• Modernisation of airports</li> <li>• Faster clearances (regulatory / environmental) for development of airports</li> <li>• Development of rapid exit taxiways</li> <li>• Increased capacity of quality training institutes</li> <li>• Facilitating financing mechanism</li> <li>• Development of India as an air cargo hub</li> <li>• Development of greenfield / low cost / merchant / dedicated cargo airports</li> <li>• Establishment of MRO facilities</li> </ul>	<ul style="list-style-type: none"> <li>• To establish a layered security solution at airports</li> <li>• Periodic security audits</li> <li>• Installing Biometrics systems</li> <li>• Effective cargo security technology</li> <li>• Hi speed screening devices</li> <li>• Integration of security technology to supply chain management systems</li> <li>• Adequate fire and safety systems</li> </ul>	<ul style="list-style-type: none"> <li>• Deployment of latest technology for air traffic management to reduce congestion</li> <li>• Deployment of airport equipment / navigational aids to facilitate all weather operations</li> <li>• Mechanism to ensure smooth information flow with passengers for any airline status development</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel hedging</li> <li>• Reducing the overall taxes on airlines</li> <li>• Tapping the potential of non-aeronautical revenues</li> <li>• Facilitating e-ticketing systems</li> <li>• Direct import of ATF by airlines</li> <li>• Maintaining uniformity of ATF taxes</li> </ul>
Present scenario	<ul style="list-style-type: none"> <li>• Inadequate runways</li> <li>• Inadequate parking bays</li> <li>• Congestion</li> <li>• Inadequate landing slots for air charters</li> <li>• Shortage of qualified pilots / AMEs / ATCs</li> <li>• Lack of passenger recreation facilities</li> <li>• Slow baggage retrieval systems</li> <li>• Inadequate warehousing facility for cargo</li> <li>• Inadequate MRO facilities</li> <li>• Insufficient R&amp;D infrastructure</li> <li>• Inadequate connectivity to Tier-II / Tier-III cities</li> </ul>	<ul style="list-style-type: none"> <li>• Hijacking/ terrorism risks</li> <li>• Air cargo security risk</li> <li>• Immigration / customs hassles</li> <li>• Land encroachment</li> <li>• Bird hits</li> </ul>	<ul style="list-style-type: none"> <li>• High probability of flight delays</li> <li>• Flight cancellations / diversion</li> <li>• Refund issues</li> <li>• Inadequate passenger information kiosks</li> </ul>	<ul style="list-style-type: none"> <li>• High fuel prices</li> <li>• High tax structure</li> <li>• Declining profitability of airlines</li> <li>• High airport charges</li> <li>• Increasing fare prices</li> <li>• Low percentage of nonaeronautical revenues</li> </ul>

Source: Deloitte Research

# 6. Abbreviations

All	Airports Authority of India	HACCP	HACCP Hazard Analysis and Critical Control Points
AERA	Airport Economic Regulatory Authority	HAL	Hindustan Aeronautics Limited
AMEs	Aircraft Maintenance Engineers	HIAL	Hyderabad International Airport Limited
AMHS	Automatic Message Handling System	IATA	International Air Transport Association
ASEAN	The Association of Southeast Asian Nations	IIFCL	India Infrastructure Finance Company Limited
ATC	Air Traffic Control	ISRO	Indian Space Research Organisation
ATF	Aviation Turbine Fuel	IT	Information Technology
ATM	Air Traffic Management	LCCs	Low Cost Carriers
ATN	Aeronautical Telecommunication Network	MCX	Multi Commodity Exchange of India Ltd
BIAL	Bengaluru International Airport Limited	MIAL	Mumbai International Airport Limited
CAGR	Cumulative Annual Growth Rate	MNC	Multinational Companies
CAT	Category	MRO	Maintenance Repair & Overhaul
CATC	Civil Aviation Training College	NACIL	National Aviation Company of India Limited
CCTV	Closed Circuit Television	NAL	National Aerospace Laboratories
CISF	Central Industrial Security Force	PAP	Project Affected People
CPL	Commercial Pilot Licence	PPP	Public Private Partnership
DGCA	Directorate General of Civil Aviation	RFID	Radio Frequency Identification
DRDO	Department of Defence Research and Development	RMS	Risk Management System
DSCN	Dedicated Satellite Communication Network	RNFC	Route Navigation Facility Charges
EDI	Electronic Data Interchange	RTA	Regional Transport Aircraft
EXIM	Export Import	SAARC	South Asian Association for Regional Cooperation
FBT	Fringe Benefit Tax	SPV	Special Purpose Vehicle
FDI	Foreign Direct Investment	UK	United Kingdom
FID	Flight Information Display System	USA	United States of America
FMCG	Fast Moving Consumer Goods	VCCS	Voice Communication and Control System
GDP	Gross Domestic Product	VLJ	Very Light Jet
GH	Ground Handling		

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