

Seminar on
Indian Civil Aviation
– Long Term Perspective

AIRPORT DEVELOPMENT

By

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Change is perceptible

- Indian Civil Aviation - on the growth curve since 1991-92
- For the first time airport capacity is in place at most Metro & Non Metro airports - providing impetus to growth
- Airport infrastructure has changed in Size & Shape – more appealing and aesthetic.
- Impact of new and growing city facilities reflect on developments at airports and vice-versa
- Users expectations are more demanding

Passengers

- Last 5 years- passenger Traffic at Indian Airports

Year	2007	2008	2009	2010	2011	2007-11
Pax (m)	96.4	116.9	108.8	123.7	143.4	47.0
%Y oY		21.2	-6.9	13.6	15.9	10.5%

- Projected passenger traffic with Compound growth of 10.5%

2007	2011	2015	2020	2025	2030	2035
96.4	143.7	214.27	353.00	581.50	958.10	1,578.4
Increase	47.30	70.55	138.73	228.55	376.53	620.31

- June, 2011 Pax growth @ 22 Dom airports 27.6%, & overall June, 2011 Pax growth 22%
- Gear Up Airports - Challenges ahead are unprecedented.

Data Source : AAI website

- Last 5 years- Cargo Tonnage at Indian Airports

Year	2007	2008	2009	2010	2011	2007-11
Cargo ('000 MT)	1,551	1,714	1,697	1,957	2,348	797
%Y oY		10.5	-1.0	15.0	19.8	10.93%

- Projected Cargo Tonnage with Annual Growth of 10.90%

2007	2011	2015	2020	2025	2030	2035
1551	2,348	3,552	5,958	9,994	16,765	28,123
Increase	797	1,204	2,406	4,036	6,771	11,358

- Express Cargo Traffic (Courier Cargo/Mail) not accounted for - Needs a separate assessment

Aircraft Movements

- Last 5 years- Aircraft Movements at Indian Airports

Year	2007	2008	2009	2010	2011	2007-11
Acft Movements ('000)	1,078	1,308	1,306	1,331	1,394	316
%Y oY		21.3	-0.1	1.2	4.7	6.65%

- Projected Aircraft Movements with 6.65% Annual growth

2007	2011	2015	2020	2025	2030	2035
1,078	1,394	1,803	2,488	3,433	4,737	6,536
Increase	316	409	685	945	1,304	1,799

- April- June , 2011 the Aircraft Movements Grew by 10.3% Overall
- Growth % in aircraft movement lower than in Pax / Cargo due higher capacity aircraft.

Expected Infrastructure Requirements

- Based on the trends Indian Airports will have to DOUBLE infrastructure capacity every 6 to 7 years (10.5% Growth), if not every 5 years (15% growth)
- Frequent announcement in the aircraft , by the Pilot, of delays on ground before take off and holding in the air due to Air Traffic Control are symptoms of either CNS/ATC systems needing an upgrade or the ground infrastructure being inadequate.
- Having lived with capacity constraints, new infrastructure has given a feeling of “Job is Done” – airport operators, however, will need to provide for regular , may be faster, capacity enhancement (next 20-25 yrs)
- For Sustainable airport infrastructure, airports need to adopt “Green” / Eco friendly techniques, invest in R&D to reduce CAPEX / OPEX besides adopting processes for larger throughput & revenue enhancement

- This is really happening – it's not imagination !
- **Airlines ordering Aircraft**
 - Indigo / Go Air / Kingfisher / Air India orders known
- All airlines in ordering mode - retain market share.
- **Definite information available only for commercial aircraft**
 - General Aviation & Helicopters still not accounted for
- Domestic Cargo Airlines not a distant dream
- **Domestic Cargo Infrastructure - by airports ?**
 - Need a change in approach
- Express Cargo Growth un-assessed (Needs a Study)
- **Helicopters ? Expected growth rate higher ?**

Recent Published Airline Orders

- Recently published aircraft orders:
 - Indigo 100 (2005) + 180 (2011)
 - Go air 10 On Order 20+ 72= 92
 - Spice jet 26 + Order for 49 (34+15 Bombardiers)
 - Boeing & Airbus predict increased sales of higher capacity aircraft. These manufacturers project India to have 1050 - 1100 commercial Aircraft by 2020

Figures are based on orders and enquiries from airlines ? and traffic growth.
 - No published data on Indian needs for freighter aircraft
 - Night Parking bays need to be doubled soon
- It appears that the growth can only be higher !

Summing up - Projections, 2020

- Ground infrastructure will have to cope up with:
 - **1100 aircraft + General Aviation + Helicopters (parking ?)**
 - More Airports will need to become operational— Regional airports
 - Passenger Traffic expectations by 2020 is 2.5 times of today
 - Between 2015/2020 Plan for 228 Million Pax (Yr 2015 – Cap 214 m)
 - This will generate traffic for regional airports/ airstrips
- **It's a Wake up call**
 - Costs: Metro /Non Metro Costs Rs 300 Cr.(US\$ 66 m) for 1 million Pax
 - Additional Capacity Cost Rs 68,400 Cr (US\$ 15,048 million)
 - **Taking Cargo, CNS/ATM and associated infrastructure - add 40%, we need US\$ 21.0 Billion investment in Indian airport infrastructure in next 9 years or restrain growth**

What do Passengers Really Want ?

LinkedIn Professional Website Feedback
Airport Industry Professionals LinkedIn Group



High-quality signage, communications and staff have been identified as being a vital element of providing a positive passenger experience, while free WiFi is also high on the modern day passenger's wish list.

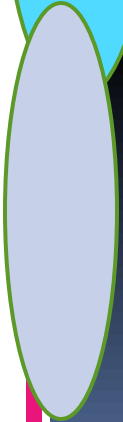
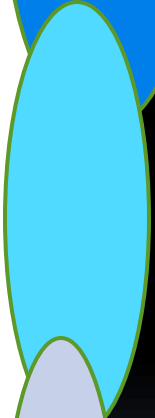
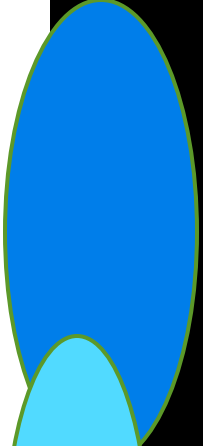
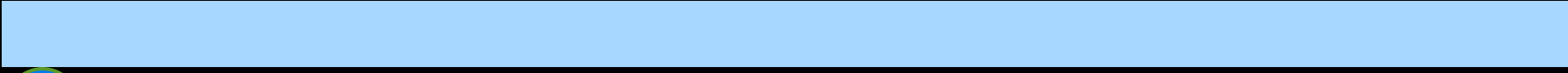
Airlines expect Process Improvement

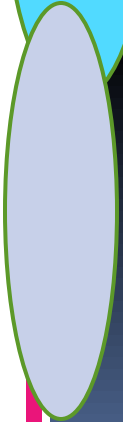
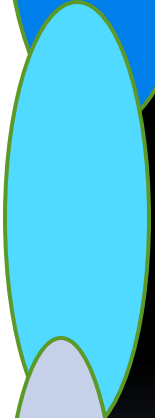
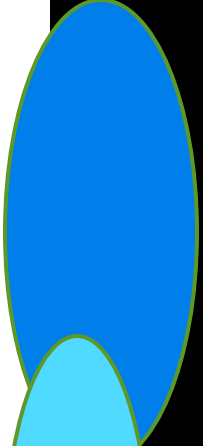
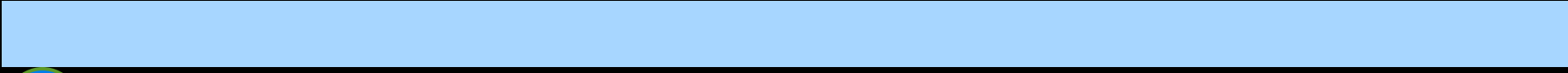
- More Check-in space – automation in check-in - Lounges
- Effective Utilization of Security Equipment
 - **Staff training to reduce personal physical frisking**
- Manned Counters - Uninterrupted Shift Changeover
- A Good FIDS (Multi-Lingual)
- Intelligible airport announcements (Multi-Lingual)
- Safe & Efficient Air side Services
- Efficient access to / fro city from airport

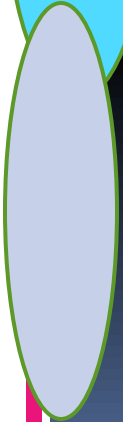
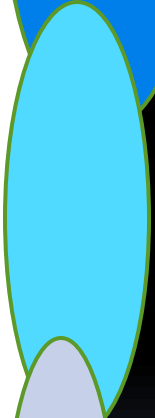
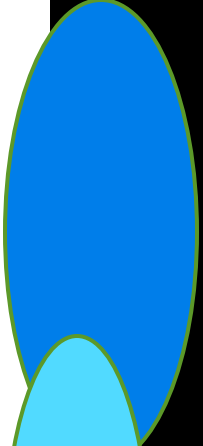
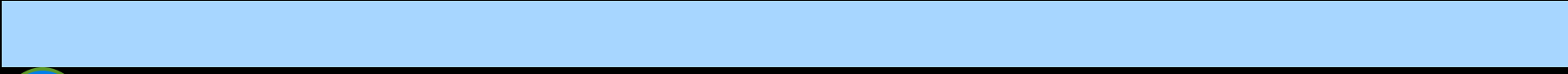
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Thank you

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CAAC upwardly revises 2010 PAX forecast again - to 270 million. 1.5 billion PAX by 2030

▪ 23rd December, 2010

- China has again upgraded its air passenger growth forecast for 2010, reflecting a better-than-expected recovery in international markets and sustained growth domestically. The CAAC is now predicting a 17.4% increase in total traffic in 2010 to 270 million passengers. IATA, meanwhile, forecasts worldwide passenger numbers this year to total 2.42 billion, meaning China traffic would represent 11% of total world passenger numbers in 2010, up from 10% of the total in 2009, based on the same calculations.

- from Internet

- Our experience in India have not been very different April - June, 2011 figures demonstrate this

Sustainable Growth Broadly Involves

- Green Technology Adoption – severing dependence on depleting fossil fuel energy.
- Adopting renewable energy resources, protecting damage to Environment and help stopping climate degradation by control of green house gases
- Preparing to meet challenges of growth and surmounting these
- Cost Reduction, both developmental costs and operating costs for sustained operations
- Revenue Enhancement - both Aeronautical & Non-Aeronautical

Sustenance by Costs Conservation

- One of the recent development in renewable energy deployment is
- **New Patented Technology - ZERO ENERGY Buildings**
 - 'Geo-thermi' & 'Solar Power' Technologies...
- The technology developed by the Patent Holder **does use geothermal energy** and the **solar energy**. But for air conditioning, it does not use any heat pump and no PV cells to generate electrical energy for operating the system. The system has the following advantages over the others:

Sustenance by Costs Conservation

- Use of renewable energy sources- Geothermal & Solar
 - Energy required to operate the system is minimal
 - Minimum maintenance
 - No refrigerant used – Green, Eco-friendly technology
 - Only fresh air circulated - no increase in CO₂ level inside as compared to conventional system
 - Practically no carbon emissions
 - Reduces Time of construction by almost 25 to 30%
-
- IAC&S can provide further details, if required

Sustenance-Process Improvement

- Increased Terminal Throughput - Short Airport Stay
(Adds 25-30% capacity & Lowers Operative costs)
 - Self check in facilities – hand baggage only
 - Check-in with baggage - Bag drop facilities
 - CUPPS-Common User Pax. Processing Solutions
 - Better airport signage
 - Clear / Multi Lingual Airport Announcements
 - Mechanized movement within airport for elderly, infirm & ladies with children as a facility for all.....
 - Special facilitation for physically challenged

GHS-Critical for Improved Throughput

Ground Handling Services

- Augmentation in resources
 - Manpower
 - Equipment
 - Systems for effective resource utilization together with ON -TIME operations
 - Competitive options to airlines
- Number of Agencies in G.H.S
- GPU, A/c - improve Ground Safety & Environment
 - Hydrant based services for Ground Safety
 - ATF , Water supply , Toilet cleaning etc by Hydrant system

Safety & Efficient Service Norms

Non Aeronautical Revenue

- Every Airport's USP – Committed Footfalls
- **Design/Redesign Pax Flow to Increase Retailing Area**
- Airport Outlets only for retailer with outlets in City
- **Retailer selection by Fixed lease + highest % of Turnover – Maintaining High Street prices**
- Airport space rental at par with the best in town
- **Centralize retail customer billing of all outlets**
- Food Courts with multiple cuisine
- **Bar facilities**
- Travelers rest rooms/Sleeping beds / Shower facility
- **Slot Machines, Golf Video Walls/Putting Hole/ Video Thrill Games for children etc.**

Non Aeronautical Revenue

- Multiple Money Changers, Banks, Travel Insurance
- **Body Shops /Cosmetics outlets / message parlors**
- Small gift shops / Indian handicrafts / Indian Tea & Coffee
- **Shopping walls for self service &**
- High end products - Watches, Personal Products
- **Pharmacy etc.**

ALL PRODUCTS AT HIGH STREET RATES - HIGHER SALES
LARGER REVENUE –**ENCOURAGE AIRPORT SHOPPING**
– MONITOR PER PASSENGER SPENDING