

ASEAN-INDIA AIR CONNECTIVITY REPORT



RIS

Research and Information System
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विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

AIC

ASEAN-India Centre at RIS

ASEAN-India Air Connectivity Report



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Contents

<i>Foreword by Ambassador Shyam Saran, Chairman, RIS</i>	v
<i>Preface by Prof. Sachin Chaturvedi, Director General, RIS</i>	vii
<i>Acknowledgements</i>	ix
<i>Abbreviations</i>	x
<i>Executive Summary</i>	xiii

Part I

Introduction	1
Why is Air Connectivity so Important?.....	7
Air Connectivity and Regional Integration: Stylised Facts	15
Trade between ASEAN and India: Trends and Compositions	23
Routes, Passengers and Cargo Flows between ASEAN and India	39
Airport Infrastructure, Performances and Challenges	89
Air Service Agreements (ASAs) between India and ASEAN	111
Summary and Recommendations.....	125
References.....	131
Appendices	133

Part II

Agenda – Roundtable on ASEAN-India Air Connectivity Study	151
Keynote Address by Ambassador Anil Wadhwa, Secretary (East), Ministry of External Affairs (MEA).....	153
Special Address by Ms. Pooja Kapur, Joint Secretary (ASEAN ML), Ministry of External Affairs (MEA).....	158
List of Participants	162
Summary of the Roundtable	166



Foreword

Amb. Shyam Saran

Chairman, RIS

Enhancing connectivity between ASEAN and India is the major thrust of India's Act East Policy. Connectivity in the form of road, rail, maritime, as well as air links is indispensable to achieving increased cooperation in trade, investment and strengthening people-to-people contacts between nations. Better connectivity would lower production costs and increase reliability of supply chain. In this context, air connectivity is an important mode of transportation to carry tourist and business travellers, high-value fragile goods and perishable commodities from one place to another at a shorter time.

With implementation of the India-ASEAN Free Trade Agreement in Services and Investments, ASEAN and India would likely to benefit from an extended market. Air connectivity will play a pivotal role not only in expanding trade and investments between them but also in strengthening services trade. The ongoing negotiations for the ASEAN Single Aviation Market (ASAM), which is the region's major aviation policy geared towards the development of a unified and single aviation market in Southeast Asia, would create a huge potential for India to integrate with ASAM. Air connectivity is, therefore, an important component of India's connectivity agenda with ASEAN.

ASEAN-India Air Connectivity Report, prepared by the ASEAN-India Centre (AIC) at RIS under the guidance of Prof. Prabir De, addresses the issues and challenges concerning the air connectivity between India and ASEAN, especially relating to air cargo that would help to unlock the trade potential of the region by removing constraints and bottlenecks to growth. It also provides a set of recommendations to strengthen air connectivity between India and ASEAN, and enhance economic integration between them. This Report provides important policy recommendations.

ASEAN-India Air Connectivity Report is an outcome of a series of ASEAN-India connectivity studies undertaken at the ASEAN-India Centre at RIS with financial support of the Ministry of External Affairs, Government of India. I am thankful

to Ambassador Preeti Saran, Secretary (East), Ambassador Anil Wadhwa, former Secretary (East) and Ms. Pooja Kapur, Joint Secretary (ASEAN ML) in the Ministry of External Affairs, Government of India for their continuous support to the ASEAN-India Centre. I wish to thank my colleagues at RIS including Dr. V.S. Seshadri, Vice-Chairman and the Director General, Prof. Sachin Chaturvedi, for their constant support and cooperation.

I trust that this Report will be a valuable reference for policymakers, academics and practitioners.



Shyam Saran

Preface

Prof. Sachin Chaturvedi

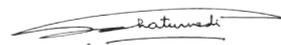
Director General, RIS

Since early nineties RIS has been entrusted with the responsibility to promote and strengthen ASEAN-India cooperation when India was admitted by ASEAN as a Sectoral Dialogue Partner. Prominent initiatives taken by RIS in this direction include launching of the India-ASEAN Eminent Persons' Lecture Series in 1996. The setting up of the ASEAN-India Centre (AIC) at RIS that way is a continuation of the RIS work programme for deepening ASEAN-India partnership.

Though ASEAN-India economic engagements are moving forward in the desired direction, yet there are certain challenges that call for policy interventions. The issue of enhancing air connectivity is one of them. The present publication entitled *ASEAN-India Air Connectivity Report*, brought out by the AIC at RIS, aims to giving impetus to the process of strengthening air connectivity between ASEAN countries and India.

This Report is coming out at a time when India has embarked on policy of "Make in India" and "Skill India" for which stronger air connectivity is essential and has become all the more important in the context of India's economic integration with Southeast and East Asia. The Report discusses in detail the major issues and challenges related to promoting air connectivity between ASEAN countries and India in the background of issues such as growing demand for air cargo services; facilitating business and leisure tourists by having more direct flights connecting Tier II and Tier II cities of India; India-ASEAN Single Aviation Market; India-ASEAN Free Trade Agreements in Services and Investments; Regional Comprehensive Economic Partnership (RCEP); need for a comprehensive ASEAN-India Air Transport Agreement; expanding scope of bilateral air services agreement (BASA); facilitating regional and global value chains; strengthening India's air links with CLMV countries; establishing an ASEAN-India School of Aviation; greater cooperation in aviation technology, logistics and infrastructure building; WTO Trade Facilitation Agreement (TFA); etc .

The Report recommends a series of measures to strengthen air connectivity between ASEAN countries and India. Since air connectivity is the main thrust of India's Act East Policy (AEP), we are sure the Report would be found a useful input coming from the AIC at RIS. I also take this opportunity to compliment my senior colleague Prof. Prabir De and his team for preparing this comprehensive and valuable Report.



Sachin Chaturvedi

Acknowledgements

The ASEAN-India Air Connectivity Report has been prepared by a research team headed by Prof. Prabir De (lead author of the Report). Dr. Durairaj Kumarasamy and Mr. Sunando Basu were the team members. Mr. Imdadul Halder, Research Associate, RIS and Ms. Opinder Kaur, Research Assistant, RIS extended research assistance at the later part of the Study.

We extend our sincere gratitude to Ambassador Shyam Saran, Chairman, RIS for his guidance, encouragement and sharing valuable thoughts. We are thankful to Ambassador V.S. Seshadari, Vice-Chairman, RIS and Prof. Sachin Chaturvedi, Director General, RIS for their support and encouragement. We are grateful to Ambassador Preeti Saran, Secretary (East); Ambassador Anil Wadhwa, former Secretary (East), Ministry of External Affairs (MEA); Ambassador Suresh Reddy, Indian Ambassador to ASEAN; and Ms. Pooja Kapur, Joint Secretary (ASEAN Multilateral), Ministry of External Affairs (MEA) for their support, advice and cooperation. We are grateful to Dr. Shefali Juneja, Director, Ministry of Civil Aviation (MoCA); Dr. Sanat Kaul, Chairman, International Foundation for Aviation, Aerospace and Development (IFFAAD), New Delhi; Mr. Satendra Singh, Former Director General, Directorate General of Civil Aviation (DGCA), New Delhi; and participants of the ASEAN-India Air Connectivity Roundtable for their valuable comments and suggestions on the Study. We are grateful to the representatives of airlines and aviation industry associations viz. Air India, Jet Airways, Spice Jet, IndiGo, Air Asia, CAPA, KPMG, Delhi International Airport Limited (DIAL), Air Cargo Association of India (ACAI) for their participation in the Roundtable and sharing valuable thoughts, which indeed had strengthened the quality of the Report. *ASEAN-India Air Connectivity Report* benefited from the work done in support by the RIS Administration, particularly Ms. Kiran Wagh. We are grateful to Mr. Sachin Singhal and Ms. Ruchi Verma for the production of the Report. In particular, we are grateful to Mr. Sachin Singhal for drawing the aviation maps in this Report. Views expressed in this Report are those of the authors and not the views of the Governments of India or ASEAN countries, Research and Information System for Developing Countries (RIS), ASEAN-India Centre (AIC) at RIS or ASEAN Secretariat. Usual disclaimers apply. For any further queries on the Report, please contact prabirde@ris.org.in

List of Abbreviations

AAI	Airports Authority of India
AASSC	Aerospace and Aviation Sector Skill Council
ACI	Airport Council International
ACLPB	Air Cargo Logistic Promotion Board
AEP	Act East Policy
AEC	ASEAN Economic Community
AFS	Air Freight Station
AIATA	ASEAN-India Air Transport Agreement
ALI	Air Liberalisation Index
ASA	Air Services Agreement
ASAM	ASEAN Single Aviation Market
ASAP	Air Service Agreements Projector
ASEAN	Association of South East Asian Nations
ASR	Air Shipping Ratio
ASRS	Automatic Storage and Retrieval Systems
ATAG	Air Transport Action Group
ATF	Aviation Turbine Fuel
ATWG	Air Transport Working Group
AWB	Airway Bill
BASA	Bilateral Air Service Agreement
BEC	Broad Economic Category
BIAL	Bengaluru International Airport Limited
BIMP-EAGA	The Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area
BTO	Build-To-Order
CAGR	Compound Annual Growth Rate
CBEC	Central Board of Customs and Excise
CLMV	Cambodia, Laos, Myanmar and Vietnam
DGCA	Directorate General of Civil Aviation

List of Abbreviations

DIPP	Directorate of Industrial Policy and Promotion
DOTS	Direction of Trade Statistics
DSM	Direct Sales Model
EDI	Electronic Data Interchange
ETA	Electronic Travel Authorisation
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
FYP	Five Year Plan
GAGAN	GPS Aided Geo Augmented Navigation
GDP	Gross Domestic Product
GHA	Ground Handling Agencies
GHAL	GMR Hyderabad International Airport Limited
GMS	Greater Mekong Sub-region
GOI	Government of India
HDD	Hard Disk Drive
HGA	Head Gimbal Assembly
HGST	Hitachi Global Storage Technologies
HSA	Head Stacked Assemblies
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IMF	International Monetary Fund
IMT-GT	Indonesia-Malaysia-Thailand Growth Triangle
ISRO	Indian Space Research Organisation
JIT	Just in Time
MAAS	Multilateral Agreement on Air Services
MAFLAFS	Multilateral Agreement on the Full Liberalisation of Air Freight Services
MAFLPAS	The Multilateral Agreement for the Full Liberalisation of Passenger Air Services
MMT	Million Metric Tonne
MOCA	Ministry of Civil Aviation
MRO	Maintenance, Repair and Operation
NCAP	National Civil Aviation Policy
NAU	National Aviation University
OMD	Operation, Maintenance and Development

PCB	Printed Circuit Boards
PPP	Public Private Partnership
RCEP	Regional Comprehensive Economic Partnership Agreement
RCS	Regional Connectivity Scheme
RFID	Radio Frequency Identification Devices
RIATS	Roadmap for Integration of Air Travel Sector
RMS	Risk Management System
SAARC	South Asian Association for Regional Cooperation
UNCTAD	United Nations Conference on Trade and Development
VGF	Viability Gap Funding
WMS	Warehouse Management System
WTO	World Trade Organisation

Executive Summary

- Air connectivity is an important mode of transportation to carry tourist and business travellers, high-value fragile goods and perishable products from one place to another in the shortest time. Besides, it also provides significant social benefits by facilitating communication between different parts of the world and by providing greater access to remote areas.
- Enhancing connectivity between ASEAN and India is the major thrust of India's Act East Policy (AEP). With the Free Trade Agreement (FTA) for trade in goods between India and ASEAN in effect from 1 January 2010, and the Services and Investment Agreement of 2014, ASEAN-India Strategic Partnership has assumed greater depth. In 2014-15, two-way trade between ASEAN and India crossed US\$ 76.53 billion, with India contributing US\$ 31.81 billion, and ASEAN US\$ 44.7325 billion. Given the potential benefits of greater economic integration for both ASEAN and India, it is highly important to develop an appropriate strategy to enhance the connectivity between them. At the same time, enhancing connectivity requires strong institutions to build and manage the cross-border infrastructure. Besides, growing importance of global and regional value chains would require efficient transportation (minimising both time and transportation costs) for sustenance and smooth functioning of production networks.
- With signing of the ASEAN-India Agreement in Services and Investments, ASEAN and India are likely to benefit from an extended market, where the air connectivity aims to play a pivotal role not only in expanding trade and investments between them but also in strengthening services trade in which India has comparative advantages. The negotiations for the Regional Comprehensive Economic Partnership (RCEP) are under way, and to effectively implement it, connectivity in all forms is essential, in which air connectivity would bring much value addition in terms of building supply chain in technology-intensive products. Liberalising air connectivity between ASEAN and India, especially in air cargo, would help unlock the potential of the region by removing constraints and bottlenecks to enhance the trade flow between them.
- In view of the "Make in India" initiative and rising e-commerce business, the Government of India is keen to promote the air cargo, and has proposed several initiatives in the Draft of National Civil Aviation Policy (2015), particularly to address the factors that have been affecting cost and time, and to improve the quality of air cargo services. More airlines in air cargo

service would, therefore, boost trade between ASEAN and India and beyond. Stronger air connectivity with Southeast and East Asia would also provide great fillip to India's "Make in India" and "Skill India" initiatives. Air connectivity is, therefore, an important component of India's connectivity agenda with Southeast and East Asia. Besides, air services facilitate larger number of tourists between the countries. This includes business as well as leisure tourists. The spending of these tourists can support a wide range of tourism related businesses such as hotels, restaurants, theatres, car rentals, etc. There is a considerable interest from the Southeast and East Asian countries to visit India and vice versa for the tourism purpose.

- In this context, *ASEAN-India Air Connectivity Report* addresses various issues and challenges concerning the air connectivity between India and ASEAN, especially relating to air cargo that would help to unlock the economic potential of the region by removing constraints and bottlenecks to growth. This Report also provides a set of recommendations to strengthen air connectivity between India and ASEAN, and to enhance economic integration between them.

Major Findings of the Study

- India is among the five fastest growing aviation markets globally with 275 million new passengers travelling and will displace the United Kingdom as the third largest in 2026. Domestic air passenger flow was 81.09 million in 2015, compared with 67.38 million in 2014, witnessed a growth of 20.34 per cent on Y-o-Y basis, which is highest among the top seven domestic airline markets in the world, outpacing China.
- ASEAN constituted about 16 per cent of international passenger flow from and to India in 2015. However, the distribution of passengers between ASEAN countries and India is skewed. Flow of ASEAN passengers coming to India has been much lower than the Indian passengers going to ASEAN or transit through ASEAN. Hubs like Bangkok, Singapore and Kuala Lumpur equipped with bigger and performing airlines continue to attract passengers and air cargos from India. Today, out of 10 ASEAN countries, only five ASEAN countries like Malaysia, Myanmar, Singapore, Vietnam and Thailand have direct flights with India and vice versa. For the rest five ASEAN countries (Cambodia, Indonesia, Lao PDR, the Philippines, Brunei), there is no direct flight but have inter-connection from other airports, of which Indonesia and the Philippines are two prominent ASEAN countries with which India has substantial business and tourism interests.
- All goods are not transported by air. Goods that are high in value and low in volumes are most likely to be transported by air. Besides, goods that are time

sensitive with higher opportunity cost of time in transport, intermediate products and final retail products are normally transported through air transport. ASEAN constitutes about 18 per cent of international freight flow from India and about 11 per cent international freight flow to India. Except Thailand, all ASEAN countries recorded freight deficit with India in 2015, suggesting that India exports more 'weights' than what it imports from ASEAN, and naturally is paying more towards freight. This Study also shows that China and Vietnam have high growth and high volume trade by air, and ASEAN countries like Singapore, Malaysia, Thailand, the Philippines; ASEAN+ countries except New Zealand; and South Asian countries like Sri Lanka, Nepal and Bangladesh have high volume but low growth in parts and components trade. Therefore, strengthening air services with these countries on priority basis would facilitate the regional and global value chains.

- India's airlines such as Air India, Air India Express, Jet Airways, IndiGo and Spice Jet carry on average 37 per cent of the total international passenger flows from and to India, out of which, about 5.5 per cent of passengers are carried between India and ASEAN countries. Airlines from ASEAN countries carry twice the size of international passengers from and to India, compare to the passengers carried by all Indian airlines together. In ASEAN countries, airlines are mostly from Singapore (Singapore Airlines, Silk Air and Tiger Airways), Malaysia (Air Asia, Malaysia Airlines and Malindo Airways) and Thailand (Thai Airways and Bangkok Airways).
- Airlines having direct flights between Bangkok, Kuala Lumpur and Singapore and Indian metro cities have reasonably higher frequencies, compare to Tier I cities. However, Tier I cities in southern part of India are relatively better connected with Singapore and Kuala Lumpur, mostly by ASEAN airlines. Therefore, seat capacity utilisation is strongly in favour of ASEAN airlines of about 80-90 per cent, whereas utilisation rate of Indian airlines is about 43-45 per cent each between India and Singapore and India and Bangkok. Poor utilisation rate of about 3.48 per cent seat capacity has been witnessed between Indian cities and Kuala Lumpur.
- It is in our interest to ensure that air connectivity between ASEAN and India keep up with soaring traveller demand. With more flights to more destinations, business people will travel more, and so will tourists. As passenger traffic goes up, business will increase and investments will follow in that cyclical order. Our airlines will, therefore, have to be ready to serve the rising demand of air services between India and ASEAN.
- The air traffic, both passenger and cargo, between ASEAN and India has been governed by respective bilateral air services agreement (BASA) signed

between India and her partner countries over time. Till December 2015, India has signed BASA with all the ASEAN countries with latest being with Lao PDR. Airlines of ASEAN countries, mainly Thailand, Singapore and Malaysia, have been flying to major Indian cities like Mumbai, Chennai, Kolkata, Delhi, Hyderabad and Bengaluru. India has offered 18 additional points to ASEAN without any restriction as to frequency or aircraft and without being subject to any commercial agreement. The entitlements and offers vary across BASA partners. ASEAN countries like Singapore, Thailand and Malaysia fly to 12 cities in India from their capital cities. On one hand, seats and frequency of air linkages with the Malaysia, Singapore and Thailand are over-utilised, the same with CLMV, on the other, is largely under-utilised. Therefore, we are yet to witness ASEAN airlines to fly to India's Tier II and III cities. Indian airlines also do not connect them either. This imbalance needs to be corrected through greater cooperation not only at the government level but also through private sector collaboration.

Selected Recommendations

- Emerging global and regional value chains increase the growing demand for on-time air cargo services. Though, the entry of leading private air cargo companies has brought in a wave of increasing automation, mechanisation and process improvement initiatives at major air cargo terminals in India, the share of air cargo compared to other modes of cargo transportation is fairly low in India. Therefore, we may attract more cargo airlines from Southeast and East Asia to boost the trade not only between India but also with rest of the world.
- Air services could facilitate larger number of tourists between India and ASEAN countries. On Buddhist circuit, there is considerable interest from the ASEAN countries to visit India. To promote tourism, we shall propose new routes to facilitate operation of more flights particularly connecting Tier II or Tier III cities of India. The new routes may be negotiated with ASEAN under the BASA or through the proposed ASEAN-India Air Transport Agreement.
- Although the ASEAN Open Skies Policy in part came into effect on 1 January 2015, it is yet to be fully operational. The ASEAN Single Aviation Market (ASAM) will lead to growth and development as it opens up the market to more competition. Greater connectivity between aviation markets arising from ASAM will encourage higher traffic flow and improve service quality, while lowering air fares. The most important aspect of liberalising aviation markets is the guarantee of third, fourth, fifth, and seventh freedoms of the air. If the additional air freedom right is given, opening of ASAM would be advantageous to Indian carriers to fly to Southeast Asia on a larger scale.

- A comprehensive ASEAN-India Air Transport Agreement (AIATA) is needed to expand tourism and trade between ASEAN and India. India has Open Sky Policy in air cargo for a long time. We want ASEAN carriers to serve Tier II and Tier III cities. We expect that ASEAN should allow Indian carriers with fifth freedom to connect important destinations. This would be possible when ASEAN becomes a single aviation market and we introduce a competition policy for airlines. In addition to air service liberalisation, we should also aim to improve aviation safety, aviation security, air traffic management, civil aviation technology, and air transport regulatory frameworks. However, to develop a strong aviation industry, India needs to stabilise pricing and capacity. While passenger growth is itself a positive sign, airlines require undertaking capital restructuring in order to reduce interest costs and net losses.
- India and ASEAN shall have more cooperation for building new airports, aviation technology, safety and security, warehouse management, sharing of cargo resources and logistics know-how. This is an area where both will have 'win-win' opportunities. More cooperation between cargo and airlines industry associations between ASEAN and India will strengthen the institutional links. Indian airlines association or air cargo associations may consider signing cooperation agreements with their counterparts in ASEAN countries.
- We need to strengthen infrastructure facilities and offer investment opportunities in logistics sector, particularly in air cargo industry, to tap the potential of e-commerce and 'Make in India' initiative. Some of the ASEAN countries which are world class logistics service providers such as Singapore can be tapped for air cargo services as well as technology. As market expands, joint venture prospect in logistics, retailing and electronic transactions between India and ASEAN also grows high. India-ASEAN services trade and investment agreement may play a facilitating role in air cargo and logistics services between ASEAN and India.
- We also have to strengthen India's air links with CLMV countries. India's proactive role in economic integration with CLMV region in terms of trade and investment would support the regional value chains (RVC) between India and CLMV. Tourism between CLMV and India is another area which offers high economic integration opportunities. Currently, India has air connectivity with Yangon in Myanmar and Ho Chi Minh City in Vietnam. There is no direct air links between India and Cambodia or India and Lao PDR. Therefore, better air links should be developed between India and CLMV.

- An ASEAN-India School of Aviation in India or anywhere in ASEAN would be an excellent project to start with. Besides, institutional level exchange programme to share the knowledge and technical skills would strengthen the technical cooperation between ASEAN and India in the aviation sector.
- We have to improve air cargo logistics sector to reduce transportation costs and improve air connectivity. India and most of the ASEAN and East Asian countries are members of the WTO Trade Facilitation Agreement (TFA), and have either ratified the Agreement or in the process of ratification. The WTO TFA is a legally binding agreement that expects better connectivity and faster and efficient logistics services. Therefore, by facilitating air linkages among ASEAN, East Asia and India, we may not only comply with the TFA obligations but also successfully connect Asia that all nations can live with.

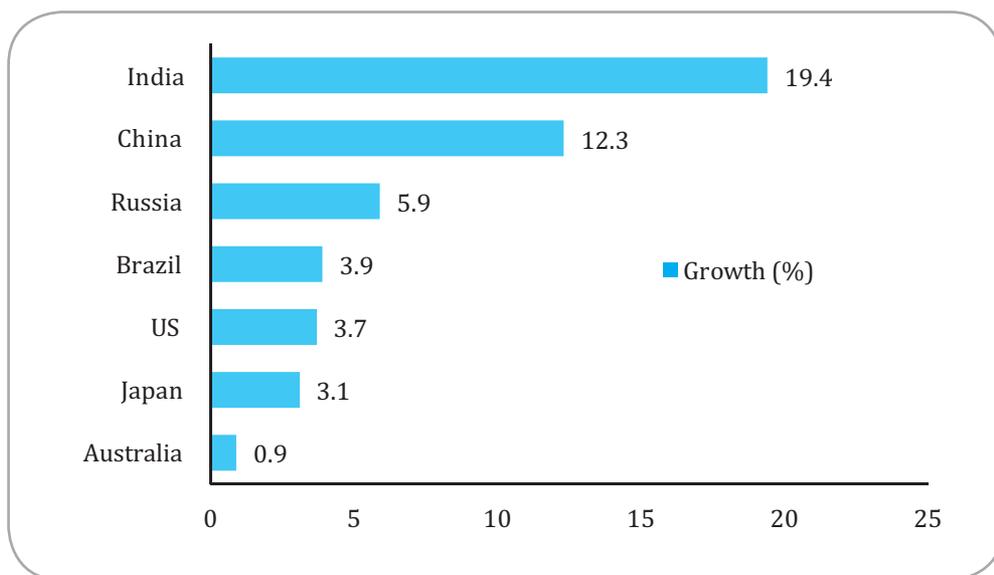
1

Introduction

- 1.1 Connectivity is one of the main thrusts of India's Act East Policy (AEP). Air connectivity is the key to sourcing goods and services in Just-in-Time, which feed into the production process and transportation of finished goods to its ultimate destination. It is an important mode of transportation for carrying passengers, high-value fragile goods and perishable commodities from one place to another in the shortest time. Air transportation promotes trade and tourism, generates employment, and increases government revenue. Apart from economic benefits, air transportation also provides significant social benefits by facilitating communication between different parts of the world and by providing greater access to remote areas.
- 1.2 Enabling effective and efficient infrastructure for connectivity would strengthen inter- and intra- regional integration¹. Improved connectivity is essential for a region's prosperity, growth, and, most importantly, for reducing the poverty. As distance is one of the major determinants of a region's trade prospects, better connectivity would lower production costs and increase reliability of supply chain. Therefore, adequate connectivity would generate enormous opportunities for the dynamic growth of a region.
- 1.3 India's air traffic, both passenger and cargo, has come back on a rising track as the country enters into a higher growth path in recent months. The steady increase in air passenger flow is a sign of a growing economy. According to the International Air Transport Association (IATA), India is among the five fastest growing aviation markets globally with 275 million new passengers travelling and will displace the United Kingdom as the third largest in 2026.² Air traffic in India has grown 19.4 per cent between January and December 2015, highest amongst top seven domestic airline markets in the world, outpacing China (see Figure 1). According to the Directorate General of Civil Aviation (DGCA), domestic air passenger

flow in India was 81.09 million in 2015, compared with 67.38 million in 2014, witnessed a growth of 20.34 per cent on Y-o-Y basis.³ Dubey (2016) claimed that part of this growth can be attributed to spectacular revival of SpiceJet from near-death; restoration of India’s category-I status by the US Federal Aviation Administration; continued slide in oil prices; reduction in ATF taxes; and IndiGo placing a heading grabbing order for 25 aircrafts.⁴ There is a consensus that competition in the market leads to improve performance of air carriers, where market share depends on the performance of carriers, *ceteris paribus*. The case in point is IndiGo Airlines, which, with a fleet size of 100 aircrafts, has captured almost 37 per cent market share of domestic air passengers, followed by Jet Airways (19.2 per cent) and Air India (16.4 per cent) (Figures 2(a) and 2(b)). In terms of passenger load factor, Spice Jet tops the ranks by filling almost 90 per cent of seats with domestic market share of 11.6 per cent, whereas Air India, Jet Airways, IndiGo and Go Air have passenger load factor of 80 per cent to 83 per cent, respectively. These are the airlines, which presently connect India with Southeast and East Asia.

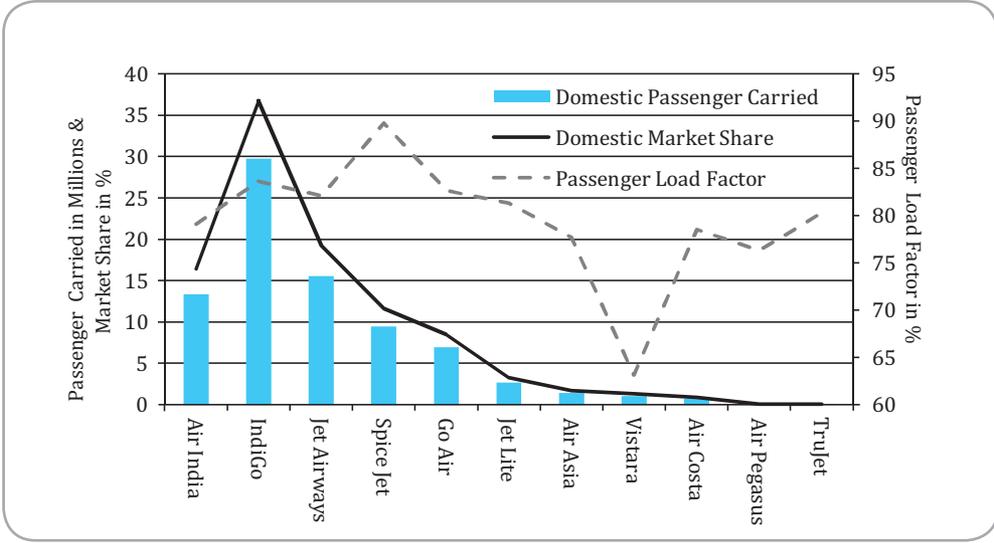
Figure 1: Air Traffic Growth in World’s Top Seven Large Economies (January-December 2015 vis-a-vis January – December 2014)



Note: Growth is measured in revenue passenger km, an airline industry indicator of passenger demand or growth.

Source: Drawn based on International Air Transport Association (IATA).

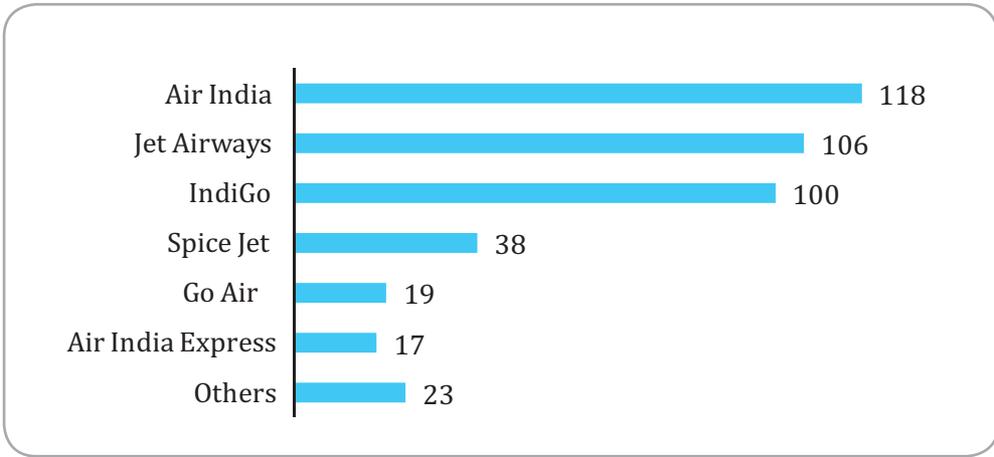
Figure 2(a): Airline-wise Domestic Passenger Carried, Domestic Market Share and Passenger Load Factor



Note: As on January 2016.

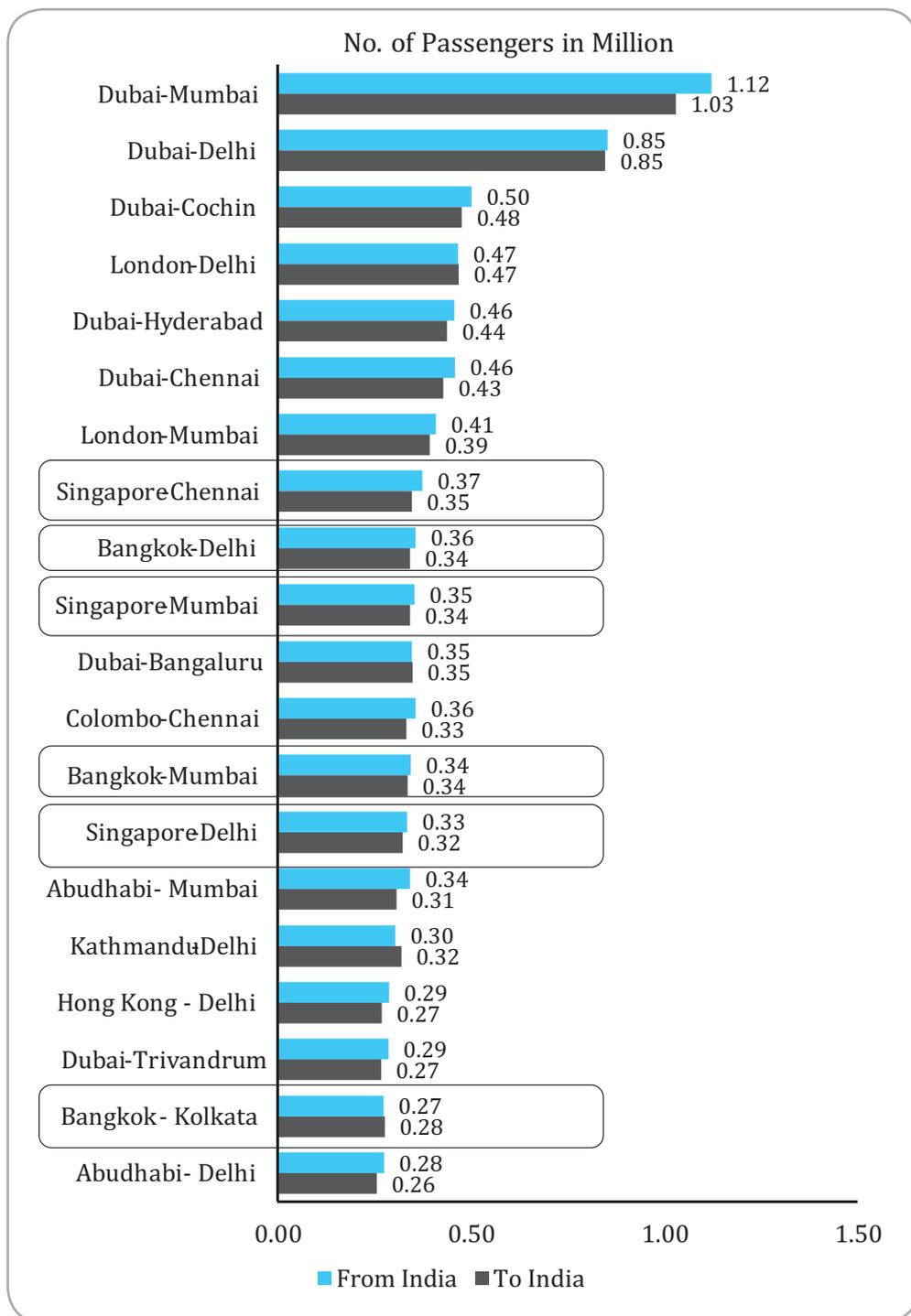
Source: Calculated based on DGCA Statistics.

Figure 2(b): Fleet Size (as on 2 January 2016)



Source: Calculated based on DGCA Statistics.

Figure 3: Top 20 City-Pairs with Highest International Air Traffic in 2015



Source: Calculated based on DGCA.

- 1.4 While number of air passengers has grown much faster in India in recent years, India's busiest sectors are in the west, mainly the routes connecting London and Dubai. Illustrated in Figure 3, which presents top 20 city-pair wise international air traffic routes in 2015, only six routes fall between India and ASEAN, connecting Delhi, Mumbai, Chennai and Kolkata with Singapore and Bangkok, respectively, thereby showing high potential of air passenger flows between Southeast and East Asia and India.
- 1.5 With the Free Trade Agreement (FTA) for trade in goods between India and ASEAN in effect from 1 January 2010, and the Services and Investment Agreement of 2014, ASEAN-India Strategic Partnership has assumed greater depth. In 2014-15, two-way trade between ASEAN and India crossed US\$ 76.53 billion, with India contributing US\$ 31.81 billion, and ASEAN US\$ 44.725 billion.⁵ ASEAN-India bilateral trade has the potential to achieve US\$ 200 billion target by 2022.⁶ Given the potential benefits for both ASEAN and India, it is highly important to develop an appropriate strategy to enhance the connectivity between ASEAN and India. At the same time, enhancing connectivity requires strong regional institutions to build and manage the cross-border infrastructure. Liberalising air connectivity between ASEAN and India, especially in air cargo, would help unlock the potential of the region by removing constraints and bottlenecks to trade and economic growth. Given the importance of global and regional value chains, minimising the time and transportation cost is certainly essential for the sustenance and smooth functioning of stronger production network, that would, however, enhance the trade flow between ASEAN and India.
- 1.6 The impact of air liberalisation, however, extends to air services for the passengers as well. Air services facilitate large number of tourists between countries. This includes business as well as leisure tourists. The spending of these tourists can support a wide range of tourism related businesses such as hotels, restaurants, theatres, car rentals, etc. There is considerable interests from the Southeast and East Asian countries to visit India and vice versa.
- 1.7 In view of the above, the *ASEAN-India Air Connectivity Report* presents an overview of air connectivity between ASEAN and India, and recommends a series of measures to facilitate air transportation between them. Rest of the Report is arranged as follows. Chapter 2 discusses the significance of air connectivity between ASEAN and India in terms of strengthening the economic relations. Chapter 3 presents the background literature on air

connectivity and regional integration. Chapter 4 briefly analyses the trends and patterns of bilateral trade between ASEAN and India, particularly with respect to air transportation. Air routes between ASEAN and India are then discussed in Chapter 5. Chapter 6 explains the role of infrastructure of Indian airports and investment plans. Chapter 7 presents some insights of the proposed Air Services Agreement (ASA) between India and ASEAN. Finally, conclusions and recommendations to enhance air connectivity between ASEAN and India are drawn up in Chapter 8.

Endnotes

- ¹ Refer, for example, AIC-RIS(2016).
- ² Refer IATA, available at <http://www.iata.org/publications/economics/Pages/index.aspx>
- ³ Refer, for example, DGCA (2015).
- ⁴ Refer, for example, Dubey (2016).
- ⁵ Sourced from the Export – Import Databank, Department of Commerce, Government of India.
- ⁶ Refer, for example, Press Information Bureau (2015).

2

Why is Air Connectivity so Important?

- 2.1 Countries in Southeast and East Asia are seeking greater linkages, particularly with India, to enhance economic, social and cultural integration. At the 17th ASEAN Summit in 2010, the Leaders adopted the *Master Plan on ASEAN Connectivity*, which identifies key strategies and actions to enhance the region's connectivity in three dimensions: physical, institutional, and people-to-people. It shows the way ahead for Asia in regional integration. Asia's aim for a single market would depend on the existence of a seamless, flexible and efficient logistics and transportation system.
- 2.2 Air transportation is an important mode to carry passengers, high-value fragile goods and perishable commodities from one place to another in the shortest time. Industries that rely mostly on air transport for their international freight shipments include high growth sectors such as pharmaceuticals, office equipment and electronic equipment besides those that have high value-to-weight products. Therefore, high growth sectors in emerging markets are also among the most heavily dependent on the services of the aviation industry. Owing to the technological advancement, air transportation is recognised for its ability to multiple business activities and to stimulate growth.
- 2.3 In the last two decades, India has experienced a gradual structural shift towards the services sector that has contributed about 55 per cent to GDP in 2013-14 (Table 1). At the same time, services sector's share in country's total export has increased from 28 per cent in 1999-2000 to 33 per cent in 2013-14. At the sectoral level, India has emerged as the largest exporter of information technology services in the world. Besides, services sector has generated huge employment.

2.4 Given the comparative advantage of the services sector that India has, promoting liberalisation of services trade, particularly air cargo services, would facilitate trade at the national and international levels. At the same time, air transportation has been facing a number of challenges. New markets are emerging and the need of existing markets has been changing. Due to growing population and shift towards the middle income class, and with advanced aviation technology, air transportation would help multiply economic wealth in India. Global comparison of air travel penetration shows that India (at 0.04 air-trips per capita per annum) stands far behind the developed countries like the USA and Australia (2 air-trips per capita per annum).¹ China's domestic traffic is five times the size of India's despite having a population of just 10 per cent larger². Therefore, there is significant growth potential for the Indian aviation sector as economy grows, disposable income rises and the value of time becomes more precious.

Table 1: Sectoral Share, Employment and Services Exports

(%)

Year	Agriculture		Industry		Services		Share of Services Exports in Total Exports
	Share in GDP	Share in Employment	Share in GDP	Share in Employment	Share in GDP	Share in Employment	
1993-94	26.64	61.1	24.62	16.1	40.74	22.9	18.83
1999-00	21.83	58.5	24.61	16.8	45.19	24.7	28.24
2004-05	17.95	54.5	25.72	19.5	47.99	26.1	32.94
2009-10	14.20	51.6	26.79	21.8	53.12	26.6	30.27
2011-12	13.77	47.1	26.42	24.4	52.80	28.5	31.08
2013-14	13.30	-	24.34	-	54.82	-	32.61

Sources: Economic Survey 2014-15, Ministry of Finance, Government of India; and UNCTADStat, United Nations Conference on Trade and Development (UNCTAD).

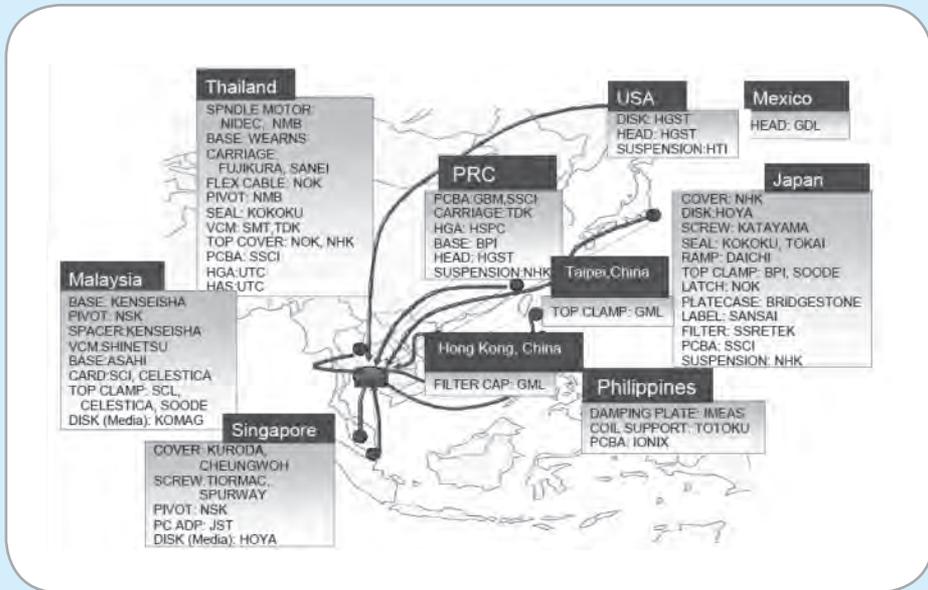
2.5 Studies show that integration is the resultant of reduced costs of transportation in particular and other infrastructure services in general. Jones and Kierzkowski (2005) argued that rise in world incomes and the reductions of service link costs encourage fragmentation of production across borders as part of an international production network. They also indicated that rapid advances and innovations in communication and transportation had facilitated the development of services links that combine the fragmented production blocks and leads to sub-division of tasks and reorganisation, resulting in economies of scale. As production is increasingly shared or fragmented across borders, simplification of

Box 1: Case Study of HGST Production Network for HDD

Hitachi Global Storage Technologies (HGST) is the finite example of how the production process of Hard Disk Drive (HDD) is carried out by procuring parts and components from major HDD assembles through air cargo service and Just-in-Time (JIT) warehouse system. HDDs and their constituent components are compact and lightweight, that uses the air cargo service efficiently and effectively at lower transportation cost and timely delivery. Due to the low cost of transportation, the HDD industry has developed a system of production fragmentation, where the production process is divided into several discrete stages and the separate production blocks are located in different countries. In this system intermediate goods are traded for final products.

Hitachi acquired IBM's HDD operation in 2003 and renamed it Hitachi Global Storage Technologies (HGST). HGST Thailand employs the just-in-time (JIT) warehouse system to provide services to deliver intermediate components and parts from overseas suppliers. The arrival time at the airport varies from good to good because the departure and arrival times are fixed by the air carrier. Therefore, when many intermediate goods are procured from overseas, a warehouse is required to store them for JIT delivery. HGST Thailand has outsourced all of their logistical services so that all components and parts are picked up from both domestic and international suppliers and temporarily stored at the JIT warehouse, which is located near of HGST Thailand; and delivered by JIT delivery to the assembly plant.

Figure 4: International Procurement: A HDD Assembler in Thailand



Box 1 continued...

Box 1 continued...

For instance, Figure 4 shows how HGST Thailand procured components and parts from a number of countries (Indonesia; Hong Kong, China; Japan; Malaysia; Mexico; the Philippines; the People's Republic of China; Singapore; Taipei, and the US). Most suppliers are arm's-length suppliers located in neighbouring Indonesia, Malaysia, the Philippines, and Singapore. This close proximity makes it possible not only to provide overnight delivery services to customers, but also minimises losses incurred from defective units. Besides, HGST Thailand sourced the same components and parts from multiple suppliers located in different countries, in order to encourage competition between suppliers, and more importantly, it reduces the risk of issues arising from components being unavailable due to accidents or political incidents. Finally, the HGST group is engaged in producing the core components of the head-related core components. For example, HGST head office located in San Jose, USA, produces silicon wafers for HDD heads and suspension. HGST Mexico fabricates thin chip sliders from the wafers. Heads and suspension made in the US and thin chip sliders fabricated in Mexico are sent to HGST PRC and HGST Thailand for assembly into Head Gimbal Assemblies (HGA) and Head Stacked Assemblies (HSA). HGAs are composed of a head and suspension, and HSAs are attached to an actuator with HGAs. HGST Thailand procured HGAs and HSAs from the PRC and the US on an intra-firm basis.

Source: Hiratsuka (2011).

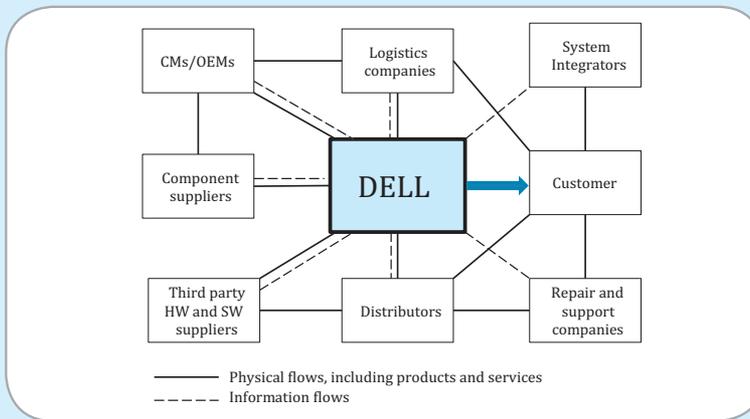
trade process and procedures would help improve the time and costs associated with logistics. One of the keys to attract fragmented production blocks is to reduce the cost of service links that connect remotely located production blocks by improving trade and transport facilitation (Kimura and Kobayashi, 2009). Higher trade costs along with inefficient services may discourage fragmentation of production. Therefore, as world trade continues to grow, air freight transportation is also expanding rapidly, in addition to the increasing division of labour and the shifts of manufacturing locations. Strengthening air transportation is therefore essential to expand trade. In particular, there is a growing demand of air freight transportation for high-value and small-volume products like electronic products.

- 2.6 Southeast and East Asia have recorded high intra-regional trade shares owing to their rapidly expanding intra-regional trade in parts and components. For instance, Hitachi Global Storage Technologies (HGST) explored the production process of Hard Disk Drive (HDD) by procuring parts and components from major HDD assembling countries through air cargo service and Just-in-Time (JIT) warehouse system (Box 1). Exporting products which are part of cross-border production process across ASEAN witnessed over 60 per cent of total exports of manufacturing goods in the last decade (Athukorala, 2010). A great deal of literature indicates that East Asian regionalism is market-driven and to a great extent is based on fragmentation of production, where the efficiency of the services sector has been playing an important role in raising the trade growth and internal demand (Ando and Kimura, 2009). Similarly,

Box 2: Case Study of Dell's Build to Order

Dell's Build-to-Order (BTO) is the finite example of how high value, low weight products are air transported from different manufacturing units to the in-house production unit for final assembly and then again air transported to the final customers across the countries. Dell's model has led it to adopt a new organisational structure that participate in the global value chain network, lowers transportation cost and improves the efficiency of timely delivery. Dell coordinates a global production network that spans the Americas, Europe and Asia, combining in-house final assembly with heavy reliance on outside suppliers and contract manufacturers close to the in-house production unit. Dell's location is mostly driven by the need to minimise costs while extending the BTO, direct sales model (DSM) around the world (see Figure 5).

Figure 5: Dell's Value Web Model



Given the need to have production and support capabilities in the major markets, Dell selects specific locations based on a combination of factors including labour costs, transportation and information infrastructure, market access, proximity to markets and government incentives. For instance, Dell opened its first manufacturing center in the Asia-Pacific region in 1996 in Penang Malaysia. Malaysia was chosen for its central location in the region, proximity to suppliers, reasonable wage rates and attractive incentives.

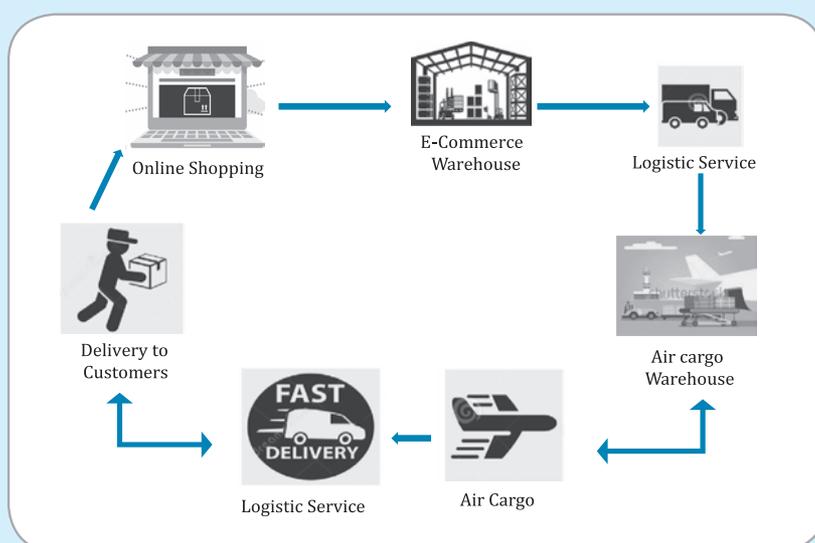
Dell's BTO model does not require higher value components to move closer, nor do very low value components such as power supplies and keyboards need to move closer. It's the mid-level components such as box builds, motherboards and other Printed Circuit Boards (PCB) assemblies that seem to be moving closer to Dell's assembly plants. This is particularly the case for large, bulky items such as box builds (nearly complete systems) that would be expensive to ship by air to meet volatility in demand, and at the same time are too expensive to risk holding in inventory. Although light in weight, motherboards tend to be assembled locally because the BTO model does not allow sufficient time for them to be assembled in Asia and then shipped. However, baseboards for PCB assemblies are manufactured in Asia and shipped in by air to the in-house production unit. The BTO model is strategic to the Dell Company, therefore, final assembly/configuration for different markets and customers takes place in in-house production unit to maintain the control of the complex and proprietary parts of the process and deliver to the customer across the countries by air.

Source: Kraemer and Dedrick (2002).

Box 3: Booming e-Commerce and Rise of Air Cargo in India

E-commerce is one of the fastest growing segments in India. Rapidly growing market, huge penetration of internet users for a population of 1.2 billion, and growing information technology clusters have given the rise of e-commerce in India. E-commerce provides huge opportunities for the logistics industry, particularly the air cargo sectors to deliver the online purchase in the shortest possible time (see Figure 6). At the same time, e-commerce faces several challenges such as inadequate warehouses, poor tracking systems, limited cargo options which pose as obstacles to its growth. In particular, delivering the product to the customer on time is a big challenge for virtual stores. Up to 90 per cent of goods ordered online in India are moved by air, which pushes up delivery costs by around half.³ Only a few airports in India are equipped to handle large volumes of express delivery parcels. Nevertheless, the emergence of e-commerce has opened up huge opportunities for logistics companies, especially for the air-cargo services.

Figure 6: E-Commerce and Air Cargo Web Model



The size of air cargo industry in India is expected to rise by manifold since the rise in e-commerce and the Make in India programme begin to flourish. It is expected that e-commerce would grow from US\$ 10 billion in 2014 to US\$ 250 billion in 2024 with the reach of digital network to the rural areas.⁴ Indian e-commerce industry may likely to invest around US\$ 2 billion by 2020 on logistics, infrastructure and warehousing for better speed, efficiency and growth of supply chains.⁵ The major e-commerce companies like Amazon, Flipkart, Snapdeal, Myntra, Jabong, etc., are partnered with leading logistic companies. For instance, Blue Dart is India's only domestic jet freighter-express air and integrated transportation and distribution company, which currently provides a network payload of about 300 tonnes across 60 routes connections each day. Due to booming e-commerce, the e-tailing deliveries has grown from less than 1 per cent in 2010 to 25 per cent in 2014 and it is expected to grow 52 per cent from

Box 3 continued...

Box 3 continued...

2014 to 2020.⁶ Similarly, Gati air cargo service has entered into e-commerce delivery business since 2010 having partnered with e-commerce players.⁷ Patel Integrated Logistics Ltd. is planning to expand its network to cater to the growing needs of the e-commerce and manufacturing sectors. It has been on a nation-wide expansion to strengthen its presence in Tier-II and Tier-III cities.⁸ Tapping the potential of growing e-commerce and 'Make in India' initiative, low cost carrier like Spice Jet and Jet Airways are also planning to add domestic air-cargo service. The emerging e-commerce market in India also offers investment opportunities in logistics sector. Some of the ASEAN countries which are world class logistics service providers such as Singapore can be tapped. As market expands, joint venture prospect in logistics, retailing and electronic transactions between India and ASEAN also grows high. India-ASEAN services trade agreement is likely to play much needed facilitating role in building networks and innovations between ASEAN and India.

Source: Various media.

Mishra *et al.* (2011) suggested that increasing sophistication in service exports carries important implications for countries in Asia, those stuck in a middle-income trap (Malaysia, Vietnam, etc.), or for countries that wish to sustain their rapid growth (India, Sri Lanka, etc.). Logistics services efficiency is one of the key drivers for attaining such services sophistication. The process of fragmentation has risen in recent decades; this is in part owing to technological changes in service industries, where more rapid and effective transportation and communication has been a precondition for reducing the costs of final products produced in several stages across countries. For instance, Dell desktop and laptop computers are manufactured in different units in different countries, and finally brought to in-house production unit for final assembly. Following, Dell's build to order (BTO) strategy, the final goods are air transported to the final customers across the countries (see Box 2).

- 2.7 The emerging e-commerce market in India would bring huge opportunities to logistics sector, particularly to air cargo industry. Several e-commerce companies are partnered with logistic companies for better and efficient delivery to the consumers and accelerate the growth of e-commerce market. In case of air cargo industry, several leading logistics companies like Blue Dart, Gati, Patel Integrated Logistics are investing in air cargo sector to accommodate the growing e-commerce market (see Box 3). In view of the "Make in India" initiative and emerging e-commerce business, the Government of India is keen to promote the air cargo, and has proposed several initiatives in the Draft of National Civil Aviation Policy (2015)⁹ to address the factors that affecting cost and time, and improve the quality of air cargo services.

Endnotes

- ¹ Refer, MOCA (2011).
- ² Refer, for example, Planning Commission (2011).
- ³ Refer, "E-commerce and logistics – A symbiosis or challenge?" *India & You*, Media India Group, September - October 2014.
- ⁴ Refer, "E-commerce Market in India likely to reach \$100 billion by 2020." *IBNLive*, 9 December 2015.
- ⁵ Refer, "E-Tailers to Invest Generously in Logistics and Warehousing." *CXOtoday*, 9 November 2015.
- ⁶ Refer, "Blue Dart Delays Additional Freighter." *Air Cargo News*, Vol. 14, No. 92, 12 November 2015.
- ⁷ Refer, "How logistics start-ups are delivering success for the e-commerce boom." *The Financial Express*, 14 July 2015.
- ⁸ Refer, "Patel Integrated Logistics plans share sale", *The Hindu*, 20 November 2015.
- ⁹ Refer, MoCA (2015).

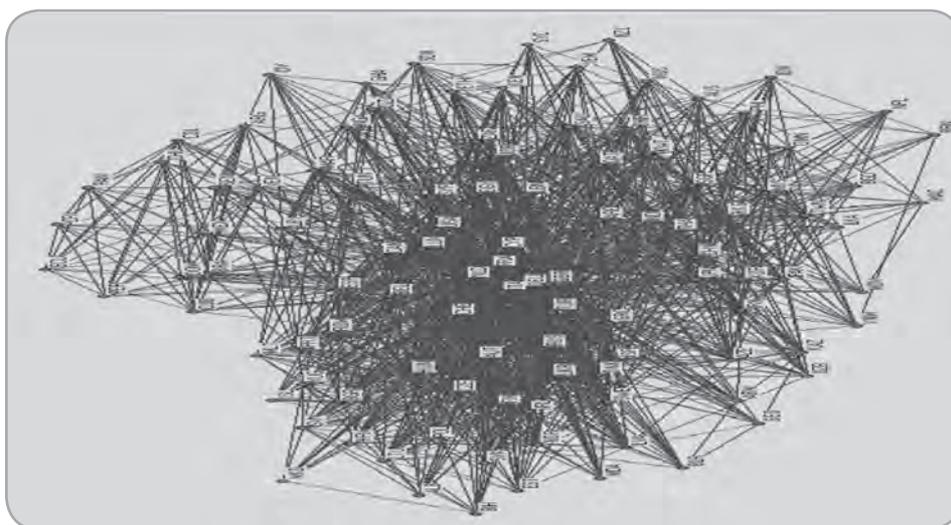
3

Air Connectivity and Regional Integration: Stylised Facts

- 3.1 Economic theory suggests that economic liberalisation will lead to greater competition in the market, which will help in rise in volume of operations and decrease in prices. Besides, in the long run, liberalisation will improve efficiency and stimulate development of new practices in the market. Therefore, in the air transportation services market, it has been viewed that liberalisation would lead to lower airfares and higher volumes of passenger and cargo traffic, followed by systematic increases in efficiency, technological spillovers and improved business practices.
- 3.2 Arvis and Shepherd (2011), based on 211 countries and territories data for 2007, constructed a measure of connectivity in global air transport network called Air Connectivity Index (ACI). ACI captures interaction between all the network nodes even in the absence of direct air links between them. Figure 7 depicts the graphical representation of the global air transportation network. ACI has strong correlation with liberal air service regime and trade in parts and components. The study found that the United States, Canada, and Germany are the best connected networks, whereas the overall connectivity follows a distribution consistent with hub-and-spoke nature of global air transportation system.
- 3.3 Hummels (2007) explained the role of air transportation in reducing the trade cost, compared to sea transportation. According to him, the heaviest goods travel via ocean, while a fall in the weight/value ratio of trade leads to use of air transport on account of a higher marginal fuel cost of lifting a 100 kg package into the air than the cost of floating it on water, and of consumers being more sensitive to changes in the delivered price of merchandise than transportation price. Also, the gains from employing air rather than surface shipping are more pronounced on longer routes.

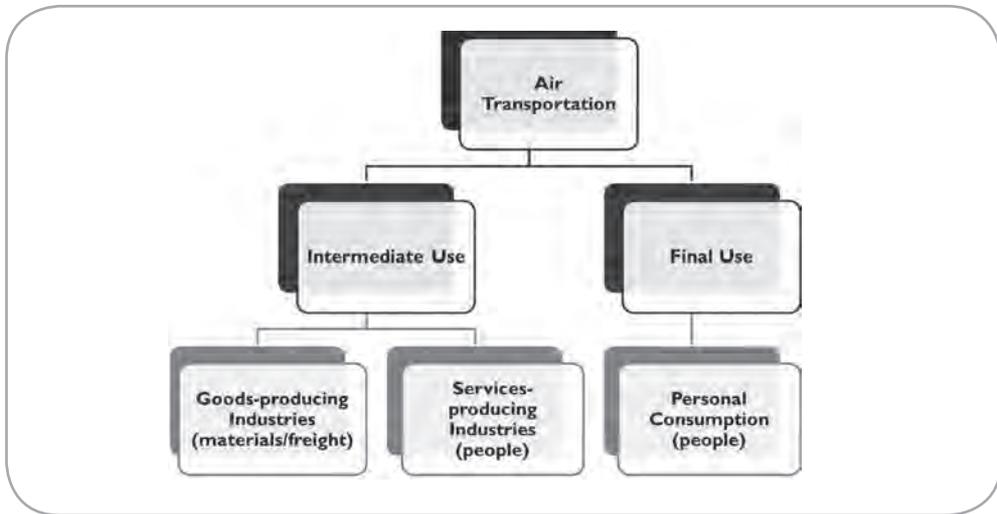
Once changes in the trade partner and product mix have been taken into account, ad-valorem air transportation costs are increasing in the weight/value ratio of the good, jet fuel expenses, and the distance shipped, such that the effect of distance is steadily eroding over time. Ocean shipping costs are increasing the shipment's weight/value ratio, fuel costs, and distance shipped. As the relative price of air/ocean shipping falls, goods at the margin shift from ocean to air shipping.

Figure 7: Global Air Transport Network



Note: Nodes are based on unweighted closeness centrality with less than 20 connections excluded.
Source: Arvis and Shepherd (2011).

- 3.4 Stilwell and Hansman (2013) studied the impacts of air transportation on US economic productivity as well as market access and business location. They illustrated the primary use of air transportation (Figure 8). It is apparent that intermediate use of air transportation suggested a natural split between those industries, which are primarily goods-producing and those which are primarily services-producing. In particular, goods-producing industries tend to use air transportation more for moving materials and other freight, while services-producing industries primarily use air transportation for moving people. Among final uses of air transportation, personal consumption accounts for the vast majority of use.

Figure 8: Primary Use of Air Transportation

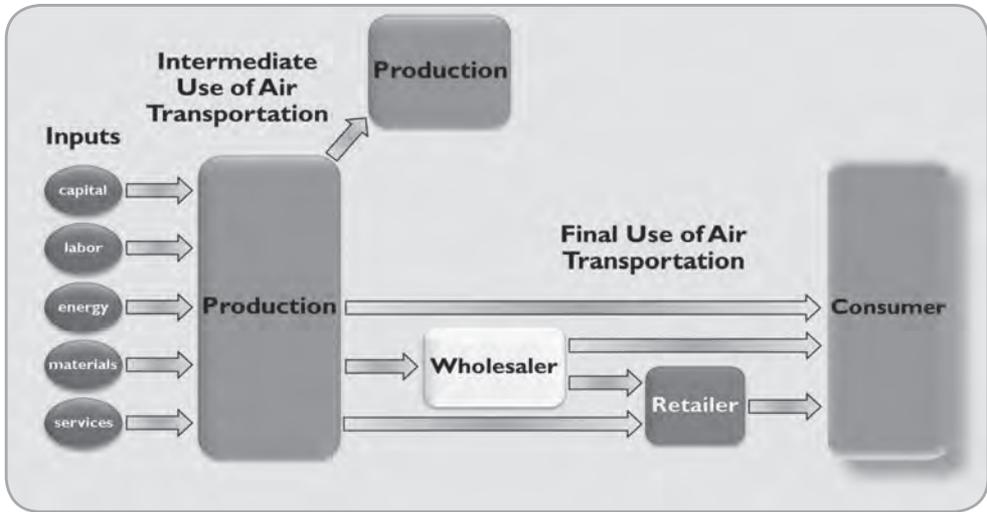
Source: Stilwell and Hansman (2013).

3.5 Stilwell and Hansman (2013) also presented the model of economic production that incorporates air transportation using intermediate and final uses of production and how it finally reaches the consumer using air transportation (see Figure 9). Inputs to production include capital, labour, energy, materials, and services (particularly, air transportation), which are utilised by industries to create output that is then either transported to market as a finished good, or sent as another input to a different industry's production processes. Since many goods do not pass directly from the factory to the consumer, transportation also plays a key role as a final use in moving products from production through wholesale and retail trade channels. Finally, a consumer might purchase a good that is then shipped by air to him or her. The cost of shipping by air in this case is accounted as final use of air transportation. They also found that high-value economic sectors are more concentrated near hub airports than other industry for which air transportation adds less value.

3.6 Grancay (2009) categorised the liberalisation impacts in air service market into four types, namely direct, indirect, induced and catalytic impacts. Direct impacts are primarily air business centered and include immediate changes in employment, total production, etc., attributable to increased air traffic. Indirect impacts act along the whole supply chain of businesses performing the air service activities, which include fuel suppliers, infrastructure contractors, airport shops, hotels, etc. Induced impacts cover the increased spending through the multiplier effects, while catalytic impacts cover a wide variety of effects – change in travel patterns,

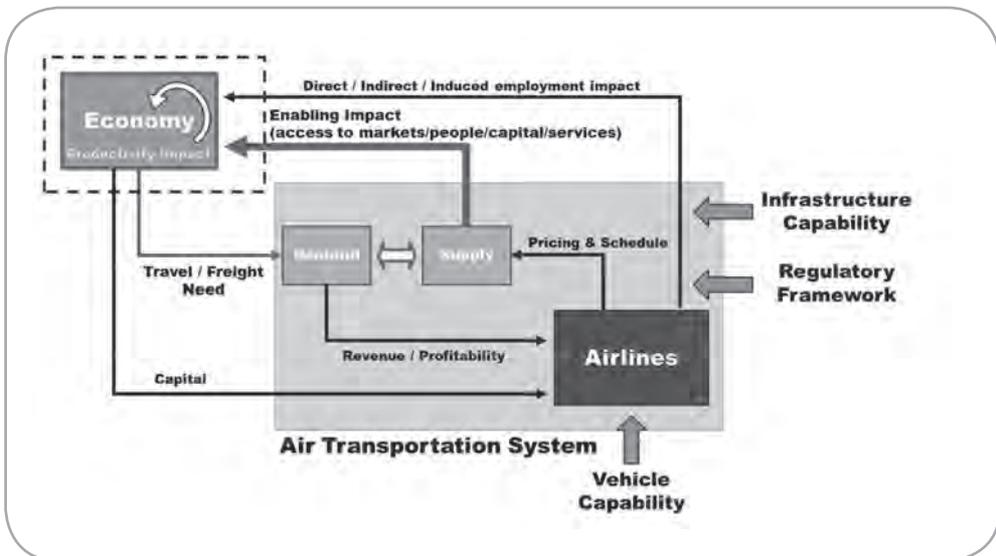
expansion to new markets, labour market effects, increased productivity, structural effects, etc. As illustrated in Figure 10, enabling impacts drive greater economic activity, creating the potential for productivity and quality of life improvements. This demand impact subsequently stimulates the supply of more air transportation and drives additional enabling impacts.

Figure 9: Model of Air Transportation in the Production Process



Source: Stilwell and Hansman (2013).

Figure 10: Feedback-based Model of Air Transportation in the Economy



Source: Ishutkina and Hansman (2009).

- 3.7 In line with Grancay (2009) model, Air Transport Action Group (ATAG) (2008) study had shown that the estimate of all impacts for the total air transportation contribution to global GDP was worth US\$ 3.6 trillion or 7.5 per cent of the global GDP in 2006. The study found that the catalytic impacts were twice as high as all other impacts, and these were dominated by the catalytic impacts on trade.
- 3.8 The link between liberalisation of a country's air service agreements (ASAs) and the price and volume of its air traffic flows has been well documented in the literature. Doove *et al.* (2001) showed that restrictive ASAs are associated with higher passenger airfares, while Micco and Serebrisky (2006) had shown that ASA liberalisation increases the share of imports arriving by air. Kasarda *et al.* (2004) showed that the number of ASAs is positively related to the volume of air cargo. Achard (2009) demonstrated the positive impact of air traffic liberalisation on air cargo flows. Piermartini and Rousova (2008) concluded that bilateral passenger traffic is significantly affected by ASA liberalisation, with positive effects from the length of time that the ASA has been in operation. They also showed that combining several liberal provisions in an ASA has an increasingly positive and significant effect on passenger flows. Using gravity model, Boileau and Vesselovsky (2013) investigated the link between ASAs and Canadian trade and also evaluated the potential effect of air traffic liberalisation on Canadian merchandise and service trade. His results had shown a strong link between air service agreements and Canadian trade. Besides, signing of an ASA has a positive and significant impact on Canadian merchandise trade.
- 3.9 In a similar vein, InterVISTASga (2006) found that liberalisation of the EU market has doubled the rate of growth in air traffic in the EU. They found a positive relation on the volume of international air services to economic growth, employment, consumer surplus and tourism. They had also tabulated the literature on the economic impact of ASA's liberalisation (Table 2).
- 3.10 Geleso Grosso (2010) found a positive and significant relation between a more liberal bilateral air service regime and air passenger flow using gravity model. At the most conservative estimate, he found that if APEC economies double the Air Liberalisation Index (ALI) with their counterparts, air traffic flow increases by 4.5 per cent. With more countries moving towards a competition regime, protection of air transport sector thus falling. In this context, he argued that a coordinated and plurilateral approach will yield most fruitful effects of liberalising the air transport sector. Similarly, Geleso Grosso and Shepherd (2011) found a strong and

significant positive relation between more bilateral air service regime and cargo trade in the Asia-Pacific region. Their result was sensitive to the nature of goods and in particular holds for trade in manufactured and time sensitive products and parts and components. Using gravity model, their baseline estimate had shown that one point increase in ALI results in 4 per cent increase of trade in parts and components. The effect is greater for countries with direct air link, but significant for others as well. Their findings suggest liberal air transport regime can significantly affect the integration of emerging economies with international production networks.

Table 2: The Economic Impact of Air Service Liberalisation

City-Pair	Service	Liberalisation Event	Increase (%)
Vancouver-Phoenix	America West 1995	1995 Canada-U.S. Bilateral	146.4
Toronto-Minneapolis	Air Canada 1995, Northwest	1995 Canada-U.S. Bilateral	55.3
Toronto-New Orleans	Air Canada 1998	1995 Canada-U.S. Bilateral	41.2
Ottawa-Chicago	Air Canada/American 1995	1995 Canada-U.S. Bilateral	109.7
Montreal-Atlanta	Delta 1995	1995 Canada-U.S. Bilateral	55.5
Atlanta-San Jose CR	Delta 1998	1997 U.S. – Costa Rica	118.5
Chicago-Hong Kong	United 1996	U.S. – Hong Kong Bilateral	21.1
Chicago-London	United 1995	U.S. – U.K. Mini Deal, 1995	42.1
Chicago-Sao Paulo	United 1996	U.S. – Brazil, 1996	80.4
Houston-Sao Paulo	United 1997	U.S. – Brazil, 1997	120.5
Atlanta-Guadalajara	Continental 1999	U.S. – Mexico, 1991	169.5
Detroit-Beijing	Delta 1999	U.S. – China, 1995	174.3
Houston - Tokya	Continental 1998	1998 U.S. – Japan	116.6
Atlanta - Rome	Delta, 1999	1998 U.S. – Italy	110.8
Dallas/Fort Worth-Zurich	American 2000	1995 Open Skies	115.3

Source: The Economic Impact of Air Service Liberalisation, InterVISTAS-ga, June 2006.

3.11 Hashim (2004) examined the characteristics of production technology in the Indian Airlines by utilising the feature of duality between production and cost functions. He suggested that competition would be good with few large firms. Besides, his analysis based on structure of production technology, stressed a need and scope for improving the performance of the Indian Airlines and improvement of overall management. He concluded that the consumers would benefit more from proper management of the Indian Airlines than from intense competition.

- 3.12 The Ministry of Civil Aviation (MoCA), Government of India had set up a working group on Air Cargo Logistics in India and submitted a Report in May 2012. This Study has recommended a set of policy initiatives on the long term growth potential in India. The Report provides a series of recommendations to strengthen the air cargo industry in India. Some of the major policy recommendations suggested by the working group are as follows: (i) provide industry status to air cargo logistics sector to encourage private equity funds participation, (ii) augmentation of airport cargo logistics facilities, (iii) maintain a service standards for key performance indicators in respect to cargo handling and movement and for the stakeholders to improve the quality of the air cargo services, (iv) promote gateway airports as cargo transshipment hubs, (v) promote dedicated freighter operations, (vi) 24x7 operations of air cargo complexes, (vii) promote air cargo educational and professional training programmes for capacity building, (viii) improve the air cargo infrastructure development at airports, among others.
- 3.13 Gonenc and Nicoletti (2000) argued that regional Air Service Agreements (ASAs) and open sky agreements play important but only limited role in air service liberalisation. In most of the OECD countries and international routes, air service is dominated by a national carrier, followed by an alliance among incumbents, making entry difficult for private airlines. Cross-country and cross-route estimates suggest that effective competition reduces airfare, controlling for market size, route length, technological and economic characteristics. Airport congestion and dominance increases airfare in time-sensitive market segment. Therefore, most of the literature suggests that ASA liberalisation leads to lower prices, and higher volume of air traffic (both passenger and cargo) has positive impacts on trade, employment, tourism and economic growth, and it's welfare improving for the economy as a whole.

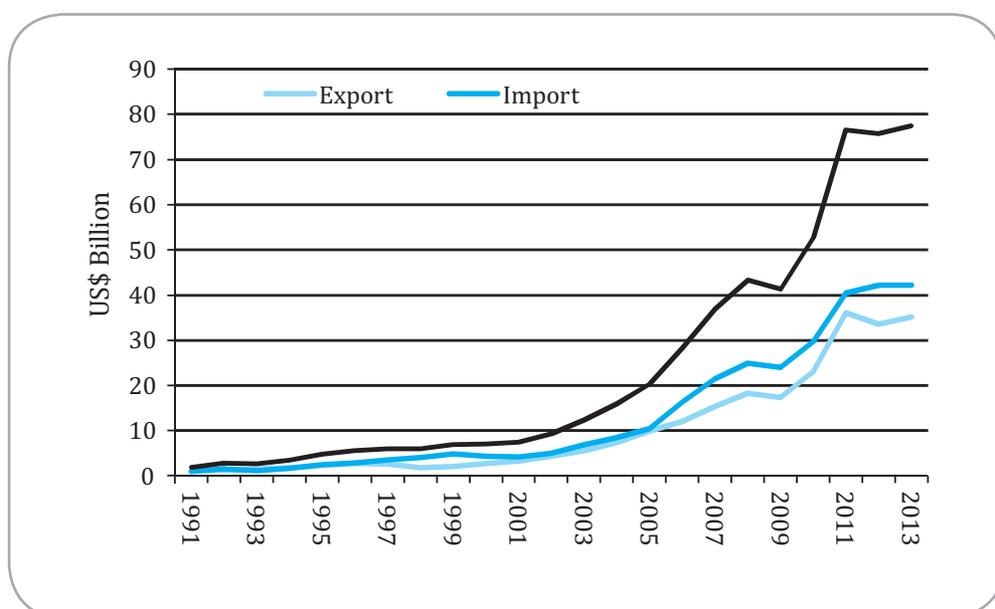


4

Trade between ASEAN and India: Trends and Compositions

- 4.1 ASEAN has become India's one of the largest trading partners in recent years. India's trade with ASEAN has increased from US\$ 7.13 billion in 2000 to US\$ 77.40 billion in 2013 (Figure 11). The share of India's export to ASEAN is presently about 11.71 per cent of India's global export, compared to 6.45 per cent in 2000, and the value of India's export to ASEAN had grown at 22 per cent in the last decade (i.e., US\$ 2.75 billion in 2000 to US\$ 35.18 billion in 2013). India's export to ASEAN+6 countries increased from less than US\$ 6.20 billion in 2000 to over US\$ 63.04 billion in 2013, registered a CAGR of about 20 per cent in the last decade, which is perhaps the fastest growth ever witnessed by India with any economic bloc in the world in the last decade. Today, ASEAN+6 countries contribute 20 per cent of India's global export, thus emerging as India's largest trading partner in the world. However, this growth in trade varies across countries within ASEAN (Table 3). For instance, most of the India's exports to ASEAN countries have been directed to Singapore, Malaysia, Indonesia, Thailand and Vietnam, respectively.
- 4.2 India's import from ASEAN has been growing slightly faster than her export to ASEAN. In 2013, India's import from ASEAN was US\$ 42.22 billion, whereas the export to ASEAN was US\$ 35.18 billion (Tables 3 and 4). India's import from ASEAN had grown at about 19 per cent per annum in recent years, increased from US\$ 4.38 billion in 2000 to US\$ 42.22 billion in 2013. Among ASEAN countries, India's import is mostly sourced from Indonesia, Singapore, Malaysia and Thailand. Among ASEAN+6 countries, India's import from China had increased from US\$ 1.45 billion in 2000 to US\$ 51.46 billion in 2013, witnessed a CAGR of 31.60 per cent per annum. Today, with a share of 4.6 per cent in India's global export and 11 per cent in India's global import, China has become India's largest trading partner. At the same time, India's trade with Indonesia, Malaysia, Singapore, Japan and Korea has also grown rapidly.

Figure 11: Trends of Indian Export to and Import from ASEAN



Source: Direction of Trade Statistics (DOTS), IMF.

Table 3: Indian Export to ASEAN+6

Country	1991		2000		2013		CAGR	
	Value	Share in the world	Value	Share in the world	Value	Share in the world	1991 -2000	2000 -2013
	(US\$ Billion)	(%)	(US\$ Billion)	(%)	(US\$ Billion)	(%)	(%)	(%)
Brunei	0.00	0.00	0.00	0.01	0.04	0.01	19.35	21.95
Cambodia	0.00	0.00	0.01	0.02	0.12	0.04	94.32	23.45
Indonesia	0.15	0.81	0.39	0.91	5.20	1.65	11.48	22.15
Lao PDR	0.00	0.00	0.01	0.01	0.05	0.01	71.00	18.52
Malaysia	0.20	1.13	0.57	1.33	5.05	1.60	12.13	18.31
Myanmar	0.00	0.02	0.05	0.11	0.67	0.21	32.41	22.52
Philippines	0.06	0.36	0.19	0.44	1.37	0.43	12.64	16.50
Singapore	0.39	2.16	0.83	1.94	13.48	4.28	8.81	23.96
Thailand	0.20	1.11	0.51	1.20	3.91	1.24	11.03	16.95
Vietnam	0.01	0.07	0.21	0.49	5.30	1.68	36.16	28.29
ASEAN	1.02	5.68	2.75	6.45	35.18	11.16	11.71	21.66
Australia	0.20	1.14	0.41	0.95	2.21	0.70	7.99	13.94
China	0.05	0.27	0.76	1.78	14.52	4.61	35.80	25.49

Table 3 continued...

Table 3 continued...

New Zealand	0.02	0.14	0.06	0.15	0.27	0.08	11.32	11.68
Japan	1.65	9.25	1.77	4.15	6.76	2.15	0.74	10.88
Korea	0.24	1.35	0.46	1.07	4.10	1.30	7.36	18.38
ASEAN+6	3.19	17.83	6.20	14.55	63.04	20.00	7.68	19.53
World	17.87	100.00	42.63	100.00	315.13	100.00	10.14	16.64

Source: Direction of Trade Statistics (DOTS), IMF.

4.3 Compared to major ASEAN and ASEAN+6 countries, India's trade with Cambodia, Lao PDR, Myanmar and Brunei had started picking up from 2010 onwards. The trend indicates further scope for trade expansion with these countries in coming years. The current trends of ASEAN-India trade suggest that India could become an increasingly important market for ASEAN's exports and ASEAN as a market for Indian exports.

Table 4: Indian Import from ASEAN+6

Country	1991		2000		2013		CAGR	
	Value	Share in the world	Value	Share in the world	Value	Share in the world	1991 -2000	2000 -2013
	(US\$ Billion)	(%)	(US\$ Billion)	(%)	(US\$ Billion)	(%)	(%)	(%)
Brunei	0.00	0.00	0.00	0.00	0.73	0.16	5.62	89.54
Cambodia	0.00	0.00	0.00	0.00	0.01	0.00	-	21.27
Indonesia	0.07	0.34	0.92	1.83	15.23	3.26	33.77	24.07
Lao PDR	0.00	0.00	0.00	0.00	0.11	0.02	-	-
Malaysia	0.39	2.00	1.39	2.76	9.06	1.94	15.12	15.52
Myanmar	0.05	0.26	0.18	0.36	1.37	0.29	14.93	16.96
Philippines	0.03	0.16	0.06	0.12	0.41	0.09	7.69	15.68
Singapore	0.31	1.59	1.48	2.94	7.00	1.50	18.93	12.68
Thailand	0.05	0.25	0.34	0.67	5.45	1.17	23.90	23.93
Vietnam	0.04	0.20	0.01	0.02	2.84	0.61	-11.99	52.09
ASEAN	0.94	4.82	4.38	8.70	42.22	9.02	18.66	19.04
Australia	0.56	2.87	1.07	2.12	11.09	2.37	7.41	19.73
China	0.02	0.11	1.45	2.88	51.46	11.00	60.09	31.60
Japan	1.36	6.99	2.02	4.00	10.54	2.25	4.43	13.57
Korea	0.31	1.61	0.99	1.96	12.45	2.66	13.60	21.52
New Zealand	0.07	0.35	0.08	0.17	0.63	0.14	2.26	16.85
ASEAN+6	3.27	16.75	9.99	19.84	128.40	27.44	13.22	21.71
World	19.51	100.00	50.34	100.00	467.95	100.00	11.11	18.71

Source: Direction of Trade Statistics (DOTS), IMF.

4.4 Tables 5 and 6 present India's top 15 export and import items to and from ASEAN, respectively. India's imports from ASEAN are relatively more diversified than its exports to ASEAN countries. India's major exports to ASEAN in 2013-14 were petroleum oils and oils obtained (29.08 per cent), meat (7.54 per cent), diamonds (3.01 per cent), cyclic hydrocarbons (2.76 per cent), etc. On the other, India's imports from ASEAN in 2013-14 were coal briquettes ovioids (16.63 per cent), palm oil (15.77 per cent), petroleum (6.13 per cent), telephone (3.45 per cent), etc. The bilateral trade between ASEAN and India has been transforming from trade in commodities to processed manufactures. With the implementation of the ASEAN-India trade in goods agreement, most of these goods have been granted duty-free entry to the markets of the partner countries in the ASEAN region as well as in India.

Table 5: India's Top 15 Exports to ASEAN

HS Code	Commodity	Value 2012-13 (US\$ Million)	Share* 2012-13 (%)	Value 2013-14 (US\$ Million)	Share* 2013-14 (%)
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 percent or more by weight of these oils	10025.76	30.37	9636.72	29.08
0202	Meat of bovine animals, frozen	1617.39	4.90	2498.53	7.54
7102	Diamonds, whether or not worked, but not mounted or set	937.37	2.84	998.53	3.01
2902	Cyclic hydrocarbons	863.62	2.62	913.17	2.76
1005	Maize (corn)	1042.64	3.16	702.81	2.12
8905	Light-vessels, fire-floats, dredgers, floating cranes, and other vessels the navigability of which is subsidiary to their main function; floating docks; floating or submersible drilling or production platforms	776.2	2.35	669.22	2.02

Table 5 continued...

Trade between ASEAN and India: Trends and Compositions

Table 5 continued..

3004	Medicaments (excluding goods of heading 3002, 3005 or 3006) consisting of mixed or unmixed products for therapeutic or prophylactic uses, put up in measured doses (including those in the form of transdermal administration)	482.89	1.46	538.45	1.63
0306	Crustaceans, whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; crustaceans, in shell, cooked by steaming or by boiling in water, whether or not chilled, frozen, dried, salted or in brine	162.13	0.49	533.33	1.61
0303	Fish frozen excluding fish fillets and other fish meat of heading no 0304	329.02	1.00	457.06	1.38
7208	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated	351.81	1.07	443.61	1.34
8901	Cruise ships, excursion boats, ferry-boats, cargo ships, barges and similar vessels for the transport of persons	285.73	0.87	437.47	1.32
1202	Ground-nuts, not roasted or otherwise cooked, whether or not shelled or broken	649.43	1.97	429.31	1.30
5201	Cotton, not carded or combed	310.02	0.94	379.28	1.14
8708	Parts and accessories of the motor vehicles of headings 8701 to 8705	400.81	1.21	367.52	1.11
8906	Other vessels, including warships and lifeboats other than rowing boats	106.84	0.32	361.58	1.09
	Total	33008.21	100.00	33133.55	100.00

Note: *Share in total exports to ASEAN.

Source: Export Import Data Bank, Department of Commerce, Government of India.

Table 6: India's Top 15 Imports from ASEAN

HS Code	Commodity	Value 2012-13 (US\$ Million)	Share* 2012-13 (%)	Value 2013-14 (US\$ Million)	Share* 2013-14 (%)
2701	Coal briquettes ovoids and similar solid fuels manufactured from coal	6095.98	14.22	6862.59	16.63
1511	Palm oil and its fractions, whether or not refined, but not chemically modified	8061.67	18.81	6508.47	15.77
2709	Petroleum oils and oils obtained from bituminous minerals, crude	2591.90	6.05	2531.12	6.13
8517	Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication	1388.90	3.24	1422.13	3.45
4403	Wood in the rough, whether or not stripped of bark or sapwood, or roughly squared	1358.51	3.17	1278.08	3.10
2902	Cyclic hydrocarbons	851.80	1.99	1118.81	2.71
8471	Automatic data processing machines and units	927.67	2.16	1003.69	2.43
2603	Copper ores and concentrates	821.60	1.92	873.35	2.12
4001	Natural rubber latex, whether or not pre-vulcanized	773.19	1.80	857.19	2.08
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 percent or more by weight of these oils	1163.29	2.71	847.08	2.05
8528	Monitors and projectors, not incorporating television reception apparatus; reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording	688.17	1.61	661.41	1.60
0713	Dried leguminous vegetables, shelled, whether or not skinned or split	662.45	1.55	625.35	1.51
8542	Electronic integrated circuits; parts thereof	706.68	1.65	546.84	1.32

Table 6 continued...

Table 6 continued...

8905	Light-vessels, fire-floats, dredgers, floating cranes, and other vessels the navigability of which is subsidiary to their main function; floating docks; floating or submersible drilling or production platforms	792.7	1.85	522.18	1.27
8473	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines of headings 8469 to 8472	506.36	1.18	431.63	1.05
	Total	42866.36	100.00	41278.09	100.00

Note: *Share in total imports from ASEAN.

Source: Export Import Data Bank, Department of Commerce, Government of India.

Trade between ASEAN and India by Air: An Assessment

4.5 It is evident from the Tables 3 and 4 that India's trade with ASEAN countries has grown at 20 per cent per annum in the last decade and reached US\$ 77.40 billion in 2013. One of the major factors that has facilitated the bilateral trade is the level of connectivity between ASEAN and India. With respect to ASEAN and India, most of the trade has been occurring through ocean, and very less trade (almost insignificant) has been happening through land border in the Northeastern Region of India, and the rest of the trade has been carried by air. To know how much of the trade is taking place by air, we have calculated the Air Shipping Ratio (ASR). ASR provides the relative importance of air transport in the international trade. It is defined as V_{ijk}^{Air} / V_{ijk} , where V_{ijk} is the value of export of k^{th} good from country i to country j , and the superscript *Air* indicates value of the export through air transport. The idea of computing ASR is to show how much potential trade can be made through air transportation between ASEAN and India, for that we have selected the possible tradable items, which are lighter and smaller relative to their volume based on 4-digit HS code (1996) of 134 groups.

4.6 Tables 7 and 8 present the ASR for India's export and import to and from ASEAN, ASEAN+6 and other Asian countries respectively. In Table 7, where we present ASR for India's export to ASEAN, we have found that the percentage change in ASR between 2000 and 2013 is interestingly higher for the countries like Vietnam, Brunei, Myanmar, Cambodia and the Philippines, compared to other major trading partners like Singapore, Malaysia, Indonesia and Thailand. In the case of ASEAN+5 and other Asian countries, except Australia all other countries had shown declining

trend from 2000 to 2013. Table 7 draws two important implications: first, India has very high potential in exporting goods by air to Vietnam, Brunei, Myanmar, Cambodia and the Philippines; with an increasing trend from 2000 to 2013, and second, India has to strengthen air cargo transportation with all the ASEAN countries. It also indirectly suggests that there is further scope for bridging the aviation gap between ASEAN and India with more airlines linking the areas underserved.

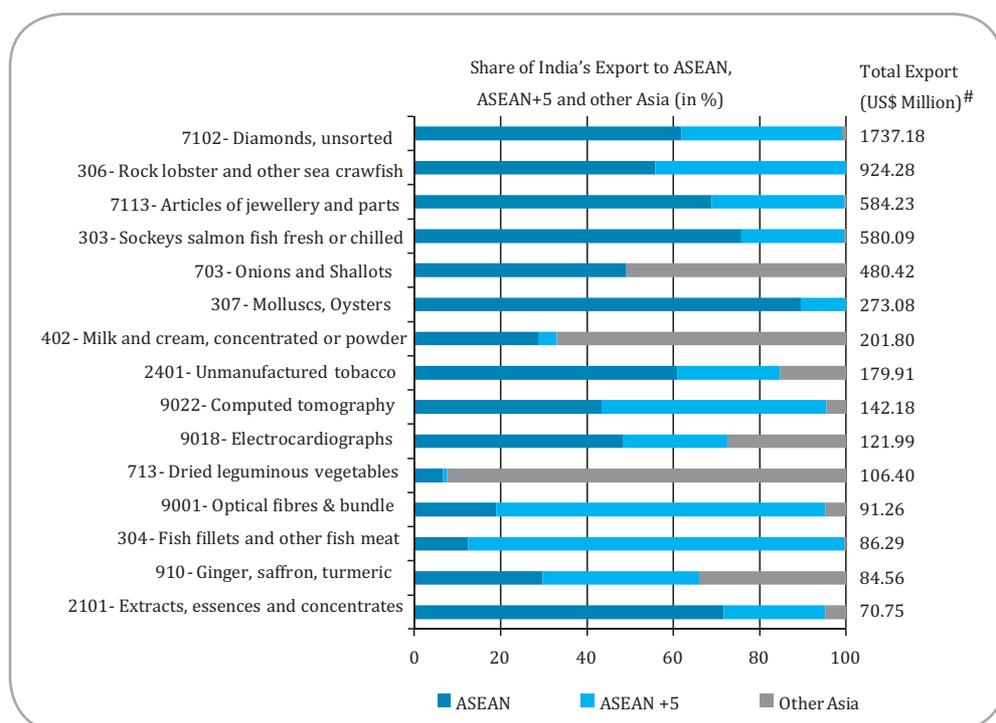
Table 7: Air Shipping Ratio (ASR) for India's Export to ASEAN, ASEAN+6 and Other Asian Countries

Partner	AS 2000 (US\$ Million)	ASR 2000 (%)	AS 2013 (US\$ Million)	ASR 2013 (%)	ASR 2013 - ASR 2000 (%)
ASEAN					
Vietnam	10.55	5.40	1050.89	17.55	12.15
Brunei	0.48	15.68	9.20	22.84	7.17
Myanmar	0.27	0.63	32.17	4.33	3.70
Cambodia	0.00	0.02	1.44	1.05	1.03
Philippines	8.26	4.74	75.03	5.11	0.36
Indonesia	13.59	3.48	139.87	2.52	-0.96
Malaysia	57.74	10.87	486.17	8.84	-2.03
Lao PDR	0.36	10.37	0.15	0.24	-10.13
Singapore	173.36	22.03	1024.75	7.22	-14.81
Thailand	225.12	42.86	983.34	23.39	-19.47
ASEAN+5					
Australia	45.90	11.55	451.51	18.83	7.28
Korea	15.85	3.61	176.47	3.93	0.32
New Zealand	7.15	11.71	31.75	10.72	-0.99
China	121.91	16.59	514.23	3.13	-13.46
Japan	966.48	52.88	874.62	11.94	-40.94
Other Asia					
Pakistan	2.60	1.58	166.38	7.64	6.06
Nepal	8.50	6.08	147.86	4.66	-1.42
Bangladesh	89.39	11.52	351.99	5.87	-5.65
Sri Lanka	59.41	10.00	190.15	4.00	-6.00
Bhutan	0.29	26.39	3.75	2.32	-24.07

Source: Direction of Trade Statistics (DOTS), IMF.

Figure 12 shows top 15 items of India's export (at HS 4 digit) by air to ASEAN, ASEAN+5 and other Asian countries. From Figure 12, we have found that among top 15 items, nearly 50 per cent of top 10 items are exported to ASEAN countries and the rest are mostly exported to ASEAN+5 countries and few to other Asian countries, which include gems and jewellery (particularly diamonds), marine products (fish, crustaceans and molluscs), unmanufactured tobacco, manufacturing (apparatus based on the use of X-ray, Instruments and appliances and optical fibres and parts and components), spices (ginger, saffron and turmeric), dairy products (milk and cream) and edible vegetables (onion, garlic and dried seeds like pulses and bean).

Figure 12: India's Top 15 Export (at HS 4-digit) Products Transported by Air to ASEAN, ASEAN+5 and Other Asian Countries (2013)



Note: # Total export is India's Exports to ASEAN, ASEAN+5 and other Asian countries in the respective items (at HS 4 digit).

Source: Calculated based on UNCOMTRADE.

4.7 In the case of ASR for India's import from ASEAN and other Asian countries, the percentage change in ASR between 2000 and 2013, is almost similar except the Philippines and Malaysia (see Table 8). With respect to ASEAN+5, Australia and for other Asian countries, it shows 10 per cent rise in ASR from 2000 to 2013, respectively. From the

Table 8, it is also evident that India has been importing increasing volume of goods by air from these countries over the last decade.

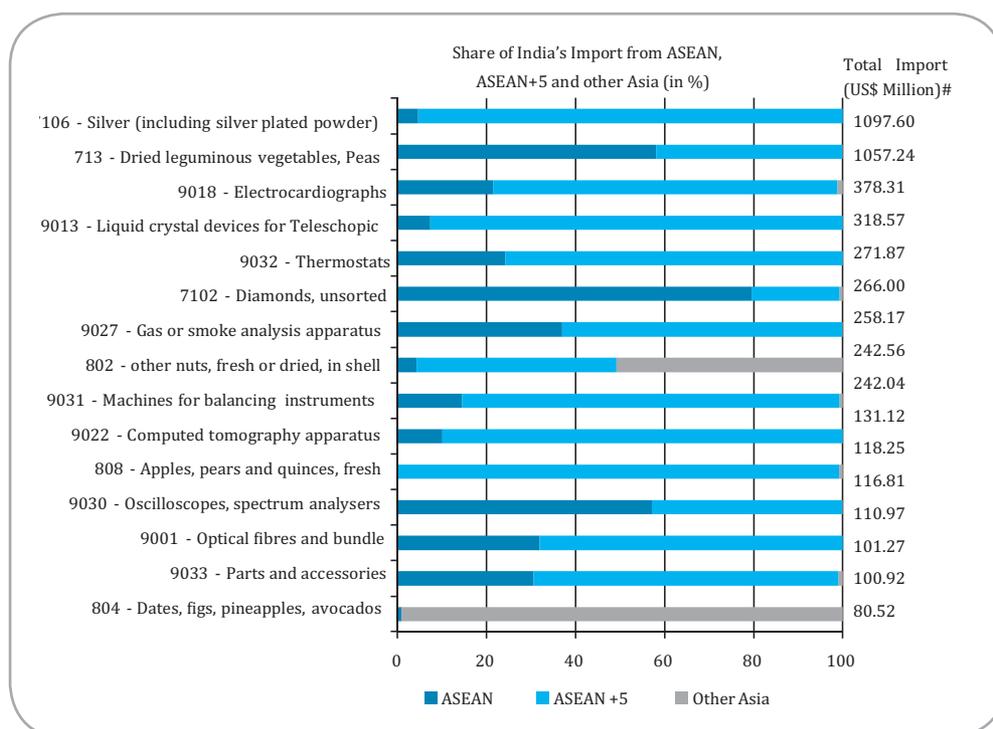
Figure 13 shows top 15 items of India's import (at HS 4-digit) by air from ASEAN, ASEAN+5 and other Asian countries. We have found that among top 15 items, nearly 60 per cent of top 12 items, are imported from ASEAN+5 countries and the rest are mostly imported from ASEAN countries, that include gems and jewellery (diamonds and silver), edible fruit and nuts (such as apple, dates, figs, pineapples, avocados) and manufacturing (instruments and apparatus for physical and chemical analysis, liquid crystal devices and parts and components).

Table 8: Air Shipping Ratio for India's Import from ASEAN, ASEAN+6 and Other Asia

Partner	AS 2000 (US\$ Million)	ASR 2000 (%)	AS 2013 (US\$ Million)	ASR 2013 (%)	ASR 2013 - ASR 2000 (%)
ASEAN					
Philippines	0.80	1.17	27.55	6.74	5.57
Malaysia	10.65	0.81	176.18	1.89	1.08
Singapore	101.99	7.28	549.19	7.82	0.54
Cambodia	0.00	0.14	0.04	0.30	0.16
Lao PDR	0.00	0.00	-	0.00	-
Vietnam	0.15	1.12	30.16	1.07	-0.05
Thailand	26.87	7.92	336.11	6.14	-1.78
Indonesia	20.93	2.12	46.62	0.31	-1.81
Myanmar	31.06	17.40	-	0.00	-
Brunei	0.18	100.00	-	0.00	-
ASEAN+5					
Australia	54.09	5.15	1851.27	17.03	11.88
China	44.84	3.03	2201.14	4.26	1.23
Korea	32.30	3.95	602.75	4.85	0.90
Japan	151.23	6.82	611.79	5.83	-0.98
New Zealand	16.02	18.66	34.02	5.36	-13.30
Other Asia					
Nepal	18.54	7.17	74.77	19.85	12.67
Sri Lanka	1.47	3.68	11.56	2.24	-1.43
Bangladesh	4.11	4.63	14.06	2.65	-1.98
Pakistan	30.01	43.11	113.56	29.95	-13.16
Bhutan	18.33	100.00	2.22	1.62	-98.38

Source: Direction of Trade Statistics (DOTS), IMF.

Figure 13: India's Top 15 Import (HS 4-digit) Products Transported by Air from ASEAN, ASEAN+5 and Other Asia (2013)



Note: #Total import is India's imports from ASEAN, ASEAN+5 and other Asian countries in the respective items (at HS 4-digit).

Source: Calculated based on UNCOMTRADE.

What are the Goods Transported by Air?

4.8 All goods are not transported by air. Goods that are high in value and low in volume are most likely to be transported by air. Besides, goods that are time sensitive with higher opportunity cost of time in transport, intermediate products and final retail products normally tend to choose faster mode through air transport (Nordas *et al.* 2006). Therefore, to understand how much of goods that are transported by air, we have selected a set of goods based on the Broad Economic Categories (BEC), particularly parts and components such as under the codes 1 (food and beverages), 111 (primary goods), 121 (processed goods), 4 (capital goods and parts and accessories), 5 (transport equipment and parts and accessories) and 6 (consumer goods). In our analysis, we describe the selected BEC commodities as *AirBEC* (see Table 9).

Table 9: Selected List of Major Commodities from the Broad Economic Categories (BEC) Group Transported by Air (*AirBEC*)

Classification by Broad Economic Categories	Basic Classes in the System of National Accounts (SNA)
1 Food and beverages	
111 Primary	Consumption/ Intermediate
121 Processed	Consumption/ Intermediate
4 Capital goods (except transport equipment), and parts and accessories thereof	
41 Capital goods (except transport equipment)	Capital
42 Parts and accessories	Intermediate
5 Transport equipment and parts and accessories thereof	
53 Parts and accessories	Intermediate
6 Consumer goods not elsewhere specified	
61 Durable	Consumption
62 Semi-durable	Consumption
63 Non-durable	Consumption

Note: Author's Selection of commodities from the Classification of Broad Economic Categories (BEC) by UN.

- 4.9 Table 10 shows that India's share in exports of capital goods, intermediate goods and consumer goods to ASEAN countries was relatively higher for the year 2000, compared to the year 2013. In the year 2000, countries like Brunei, Cambodia, Lao PDR, Myanmar and Malaysia had the share of *AirBEC* in the range of 40 to 70 per cent, whereas, in the case of countries like Singapore, the Philippines, Vietnam and Indonesia, the share of *AirBEC* was in the range of 20 to 35 per cent, respectively. In the year 2013, the share of *AirBEC* was reduced (between 20 and 30 per cent) significantly for most of the ASEAN countries, except Myanmar. It is apparent that the CAGR of BEC goods are growing relatively lesser than that of CARG of all goods together. In the case of ASEAN+5 and other Asian countries, the share of *AirBEC* goods for the year 2000 and 2013, are almost remained the same.

Table 10: Share of Export to ASEAN, ASEAN+5 and Other Asian Countries by BEC

Partner	AirBEC 2000	Share of AirBEC 2000	AirBEC 2013	Share of AirBEC 2013	CAGR of AirBEC 2000-2013	CAGR of Total Export 2000-2013
	(US\$ Million)	(%)	(US\$ Million)	(%)	(%)	(%)
ASEAN						
Brunei	1.67	55.25	6.47	16.20	10.95	21.94
Cambodia	5.44	69.30	55.32	40.45	19.52	24.58
Indonesia	90.00	23.23	1187.25	21.83	21.95	22.53
Lao PDR	2.05	58.58	12.40	20.23	14.84	24.63
Malaysia	218.49	41.64	1192.25	21.96	13.94	19.69
Myanmar	21.45	50.38	391.55	53.02	25.03	24.54
Philippines	56.39	32.52	509.20	35.84	18.44	17.56
Singapore	272.81	35.36	2193.17	15.49	17.39	25.09
Thailand	42.34	8.10	940.24	22.60	26.93	17.31
Vietnam	56.02	28.72	564.22	9.56	19.44	30.00
ASEAN+5						
Australia	203.21	52.78	1207.00	50.52	14.69	15.08
Japan	307.35	16.95	1138.69	15.83	10.60	11.18
China	76.98	10.49	1296.72	7.92	24.26	26.99
Korea	82.54	18.89	663.38	15.10	17.39	19.43
New Zealand	31.69	53.91	144.93	49.05	12.40	13.22
Other Asia						
Bangladesh	166.20	21.70	1362.51	23.35	17.57	16.91
Bhutan	0.10	9.70	21.72	14.58	50.78	46.13
Nepal	59.40	43.33	756.66	23.94	21.62	27.30
Pakistan	45.33	27.93	264.66	12.22	14.54	22.06
Sri Lanka	184.04	31.19	1017.18	21.56	14.06	17.34

Source: Direction of Trade Statistics (DOTS), IMF.

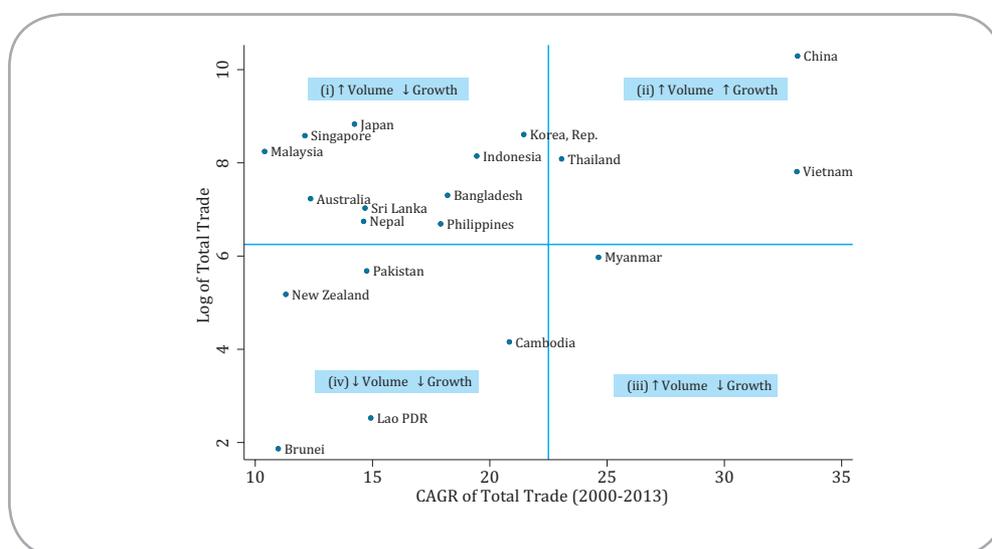
4.10 In Table 11, the share of India's imports of capital goods, intermediate goods and consumer goods from ASEAN countries has raised significantly from 2000 to 2013. In the year 2000, the shares of *AirBEC* of countries like Malaysia, the Philippines, Singapore, Thailand were in the range of 50 to 70 per cent, whereas, for Indonesia and Vietnam, it was about 30 per cent, and for the rest of ASEAN countries it was less than 5 per cent. In the year 2013, the share of *AirBEC* had witnessed an increasing trend for most of the ASEAN countries. For instance, for countries like Cambodia, the Philippines and Vietnam, the share of *AirBEC* increased to 70 per cent. In terms of growth, the CAGR of *AirBEC* goods between 2000 and 2013

has performed well, compared to total goods. In the case of ASEAN+5 and other Asian countries, the share of *AirBEC* goods for the years 2000 and 2013 has shown mixed response. Except, Australia and New Zealand, the CAGR of *AirBEC* goods and total goods are almost growing at the same rate.

Table 11: Share of Import from ASEAN, ASEAN+5 and Other Asian Countries by BEC

Partner	AirBEC 2000	Share of AirBEC 2000	AirBEC 2013	Share of AirBEC 2013	CAGR of AirBEC 2000-13	CAGR of Total Export 2000-13
	(US\$ million)	(%)	(US\$ million)	(%)	(%)	(%)
ASEAN						
Brunei	0.00	0.00	0.00	0.00	-	89.94
Cambodia	0.02	1.82	8.60	67.26	57.71	19.45
Indonesia	252.46	26.03	2261.87	15.10	18.37	23.44
Lao PDR	0.00	-	0.11	0.10		-
Malaysia	832.18	63.66	2610.20	28.02	9.19	16.31
Myanmar	0.98	0.55	1.18	0.09	1.43	16.95
Philippines	38.27	56.45	296.22	72.67	17.05	14.80
Singapore	933.86	67.49	3143.75	44.97	9.79	13.27
Thailand	176.22	52.12	2304.56	43.83	21.87	23.50
Vietnam	4.06	30.00	1905.06	69.49	60.50	50.46
ASEAN+5						
Australia	100.75	9.63	175.47	1.62	4.36	19.73
China	408.24	27.91	28357.06	57.66	38.57	31.05
Japan	1136.30	55.52	5545.94	53.78	12.97	13.25
Korea	355.14	44.39	4809.73	39.56	22.20	23.28
New Zealand	12.40	14.46	32.47	5.12	7.69	16.63
Other Asia						
Bangladesh	2.86	3.30	123.26	23.70	33.59	14.79
Bhutan	0.01	0.04	0.01	0.01	-0.11	16.73
Nepal	84.79	32.86	93.13	25.19	0.72	2.80
Sri Lanka	6.26	15.80	112.20	22.44	24.86	21.53
Pakistan	3.72	5.37	28.74	7.62	17.03	13.91

Source: Direction of Trade Statistics (DOTS), IMF.

Figure 14: Scatter Plot of Trade by Air

Note: Log of total trade of selected BEC items in 2013 and CAGR of total trade of selected BEC items between 2000 and 2013.

4.11 To better understand the market potential, Figure 14 exhibits the scatter plot of log of total trade of selected BEC items with the CAGR of total trade of selected BEC items between 2000 and 2013.¹ Figure 14 illustrates what are the potential countries that are trading goods, especially, parts and components, by air. The scatter plot is divided into four equal segments: (i) top left are high volume and low growth; (ii) top right are high volume and high growth; (iii) below right are high growth and low volume; and (iv) below left are low volume and low growth. Ideally, the countries which are placed in group (ii) are high potential countries trading parts and components by air. This analysis shows that China and Vietnam offer high growth and high volume trade by air with India. Similarly, the countries that are placed in group (i) show high volume of trade but low growth. For instance, ASEAN countries like Singapore, Malaysia, Thailand, the Philippines; ASEAN plus countries except New Zealand; and South Asian countries like Sri Lanka, Nepal and Bangladesh have high volume but low growth in parts and components trade. Therefore, to facilitate the trade in parts and components, it is recommended that air services with countries falling under (i) and (ii) segments must be strengthened.

Endnote

¹ The scatter plots for log of export and log of import with respect to CAGR of exports and CAGR of imports are given in Appendix 2



5

Routes, Passengers and Cargo Flows between ASEAN and India

- 5.1 Air transportation has significantly contributed to the growth of India's international trade in recent decades by offering a reliable and faster mode of transportation services to move products and personnel across long distances. The total freight traffic was 2.2 million tonnes in 2013-14, grown at a CAGR of 6.07 per cent since 2008-09. Domestic and international freight traffic had grown at a CAGR of 8.82 per cent and 4.66 per cent, respectively (Table 12). Industries that rely heavily on air transportation for their international freight shipments include high growth sectors such as pharmaceuticals, office equipment and electronic equipment, besides those that have high value to weight products such as gems and jewellery. In emerging markets, the high growth sectors are heavily dependent on the services of the aviation industry. Increased air connectivity enables manufacturing enterprises to exploit the speed and reliability of air transport to ship components across firms that are based in different and distant locations thereby minimising the inventory cost. Countries with higher connectivity in general are stated to be more successful at attracting foreign direct investment (FDI).
- 5.2 In addition, air transport is crucial for the development of tourism industry. Tourism makes a large and growing contribution to the Indian economy. The international air passengers to and from India had grown at a CAGR of 9.20 per cent during 2008-09 to 2013-14 (Table 12). The Government of India has been supporting the development of the aviation sector and planning to develop 100 low cost airports in the country. Further reforms in the aviation sector have also been initiated including the introduction of National Civil Aviation Policy 2015. It has allowed 100 per cent FDI under the automatic route for greenfield projects and 49 per cent FDI for foreign carriers.¹

Table 12: Trends of Aircraft Movements, Passenger Flow and Freight Carried in India

	2008-09	2013-14	CAGR
	Aircraft Movements (million)		(%)
International	0.27	0.34	4.44
Domestic	1.04	1.20	3.00
Total	1.31	1.54	3.31
	Passengers (million)		
International	31.57	46.61	8.10
Domestic	77.29	122.41	9.63
Total	108.86	169.02	9.20
	Freight (million tonne)		
International	1.14	1.44	4.66
Domestic	0.54	0.84	8.82
Total	1.69	2.28	6.07

Source: Air Transport Statistics, DGCA.

Country-wise International Passenger Flow to and from India

5.3 Table 13 shows the country-wise international passenger flow to and from India. Among the South Asian countries, Sri Lanka has witnessed the highest inflow of 954,000 and outflow of 920,000 passengers to and from India, which is almost 50 per cent of South Asian total passenger flow from and to India. The rise in air passenger traffic could be due to Sri Lanka's location. People in Sri Lanka may prefer to travel through air rather than sea. Second and third highest flow of passengers have been registered in Nepal and Bangladesh, respectively. Among the Southeast Asian countries, Singapore and Thailand show the highest passenger movement from and to India, followed by Malaysia. The passenger flow is almost balanced except for the case of Singapore, where passenger from India exceeds with 54,000 passengers. Compared to South Asia (8 per cent of total passenger flow) and Southeast Asia (16 per cent of total passenger flow), the passenger flows from and to India with rest of Asia (5 per cent of total passenger flow) such as China, Hong Kong, Japan, Korea and Taiwan are relatively low. Almost 70 per cent of total passenger flows is from non-Asian countries (see Figure 15).

Table 13: Country-wise International Passenger Flow in 2015

(Numbers in'000)

Country	Passenger from India	Passenger to India	Surplus / Deficit
Afghanistan	102.24	115.27	-13.04
Bangladesh	317.77	298.53	19.24
Bhutan	34.85	36.59	-1.73
Maldives	115.17	108.50	6.67
Nepal	378.71	392.60	-13.89
Pakistan	25.51	13.14	12.37
Sri Lanka	954.37	920.43	33.93
South Asia	1928.61	1885.06	43.55
Burma	22.34	22.69	-0.36
Malaysia	980.07	984.15	-4.08
Singapore	1698.48	1639.14	59.34
Thailand	1262.84	1261.07	1.76
Vietnam	4.35	6.27	-1.91
Southeast Asia	3968.07	3913.32	54.76
China	252.66	246.52	6.14
Hong Kong	715.65	700.53	15.13
Japan	144.18	128.43	15.75
Korea	78.19	73.24	4.96
Taiwan	28.56	10.21	18.35
Rest of Asia	1219.25	1158.92	60.33
World	24858.96	23781.64	1077.32

Source: DGCA, MoCA.

5.4 Table 14 shows the country-wise international freight flow from and to India. Among South Asian countries, Sri Lanka has the highest freight flow. Sri Lanka's freight flow from India is almost twice than freight flow to India. In the case of Southeast Asia, except Thailand, other countries like Malaysia, Singapore, Vietnam and Myanmar shows freight surplus. In the case of rest of Asia, China, Hong Kong, Japan and Taiwan show a deficit in freight flow, although Hong Kong's flow is substantially higher than the other Southeast Asian countries (see Figure 15).

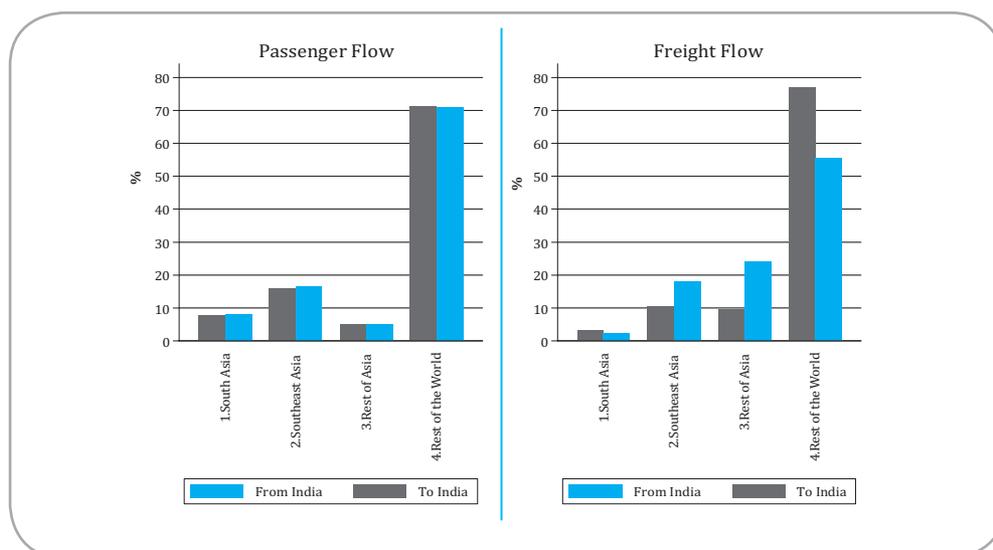
Table 14: Country-wise International Freight Flow in 2015

(Numbers in tonnes)

Country	Freight from India	Freight to India	Surplus / Deficit
Afghanistan	2460	594	1865.48
Bangladesh	4133	2606	1527.00
Bhutan	54	4	50.31
Maldives	1755	35	1719.97
Nepal	1532	908	624.44
Pakistan	380	87	293.31
Sri Lanka	17973	9278	8695.29
South Asia	28287	13512	14775.80
Myanmar	55	1	53.98
Malaysia	18457	14297	4160.34
Singapore	49422	47697	1725.72
Thailand	25156	38040	-12884.34
Vietnam	233	3	229.89
Southeast Asia	93323	100037	-6714.41
China	7752	14768	-7015.96
Hong Kong	66437	109235	-42798.59
Japan	7232	8585	-1352.48
Korea	2634	2199	435.19
Taiwan	554	1079	-524.26
Rest of Asia	84610	135866	-51256.10
World	887775	560737	327038.14

Source: DGCA, MoCA.

Figure 15: Region-wise Share of Passenger and Freight Flow in 2015



Source: DGCA, MoCA.

City-wise International Aircraft Movements

5.5 The total number of aircraft movements has increased steadily from 1.31 million in 2008-09 to 1.54 million in 2013-14, grown at a CAGR of 3.31 per cent. Compared to domestic aircraft movement (CAGR of 3 per cent), the number of international aircraft movement has grown at CAGR of 4.44 per cent (Table 12 and Figure 16). Almost two-third of the international aircraft movements are in major metropolitan cities like Delhi, Mumbai, Chennai, Bengaluru, Kolkata, Cochin and Hyderabad, followed by other major tourist destinations like Goa, Trivandrum, Mangalore and Tiruchirappalli. The CAGR of international aircraft movements in all the metropolitan airports were about 7 per cent, except Chennai, where the corresponding growth was at 3 per cent during 2008-09 to 2013-14 (Table 15).

Table 15: City-Wise International Aircraft Movements

(Numbers in '000)

Sl. No.	Airport	2008-09	2013-14	CAGR (%)
(A) 16 international airports				
1	Chennai	30.45	35.26	2.98
2	Kolkata	11.13	15.96	7.47
3	Ahmedabad	5.63	7.54	6.00
4	Goa	2.74	4.43	10.08
5	Trivandrum	13.04	14.15	1.70
6	Calicut	16.86	13.53	-4.34
7	Guwahati	0.10	0.49	37.64
8	Lucknow	-	2.92	-
9	Srinagar	0.17	0.13	-5.66
10	Jaipur	2.95	2.04	-7.16
11	Coimbatore	-	0.95	-
12	Mangalore	-	4.17	-
13	Amritsar	-	2.51	-
14	Tiruchirappalli	-	7.03	-
15	Varanasi	0.32	1.16	-19.90
16	Port Blair	-	-	-
Total		88.15	112.28	4.96
(B) 6 JV International Airports				
17	Delhi	59.49	86.19	7.70
18	Mumbai	65.57	72.36	1.99
19	Bengaluru	13.92	19.31	6.76
20	Hyderabad	12.14	16.82	6.74
21	Cochin	19.06	23.14	3.95

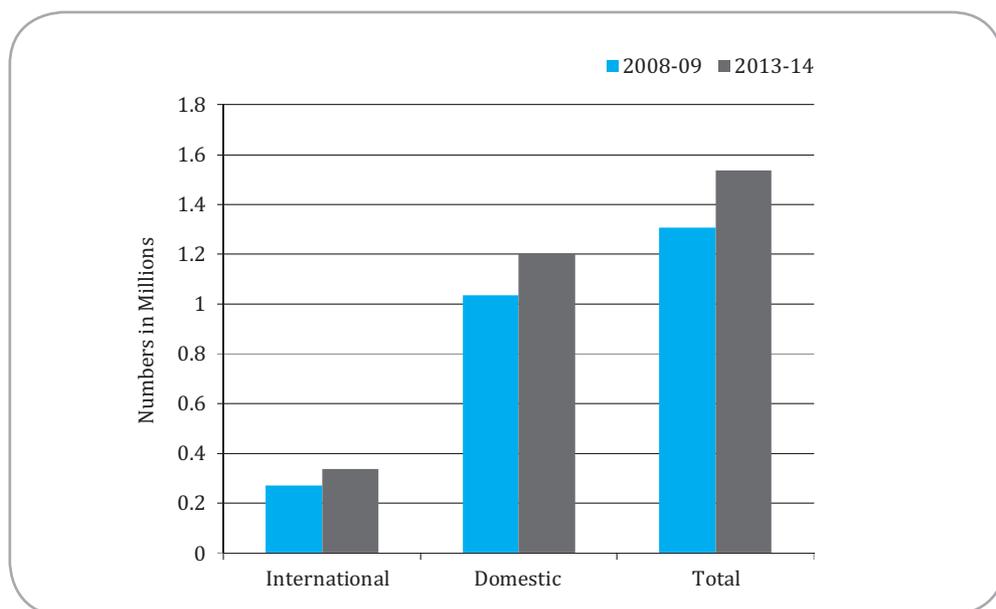
Table 15 continued...

Table 15 continued...

22	Nagpur	-	0.48	
Total		170.18	218.29	5.11
(C) 7 Custom Airports				
23	Pune	0.70	1.03	5.41
24	Visakhapatnam	-	1.12	-
25	Patna	0.01	0.02	9.86
26	Chandigarh	-	0	-
27	Bagdogra	-	0.63	-
28	Madurai	-	1.37	-
29	Gaya	0.76	0.96	5.00
Total		1.47	5.13	
(D) 17 Domestic Airports		82.00	184.00	17.54
(E) Other Airports		46.00	62.00	6.15
Grand Total (A+B+C+D+E)		270.40	335.95	4.44

Notes: 1. Lucknow, Varanasi, Tiruchirappalli, Mangalore and Coimbatore Airports are declared as International Airports as on 22 October 2012 by the Ministry of Civil Aviation, Government of India.
 2. GMR Hyderabad International Airport Limited (GHIAL) started its operation from 23 March 2008.
 3. Bengaluru International Airport Limited (BIAL) started its operation from 24 May 2008.
Source: Airports Authority of India.

Figure 16: Aircraft Movement in India

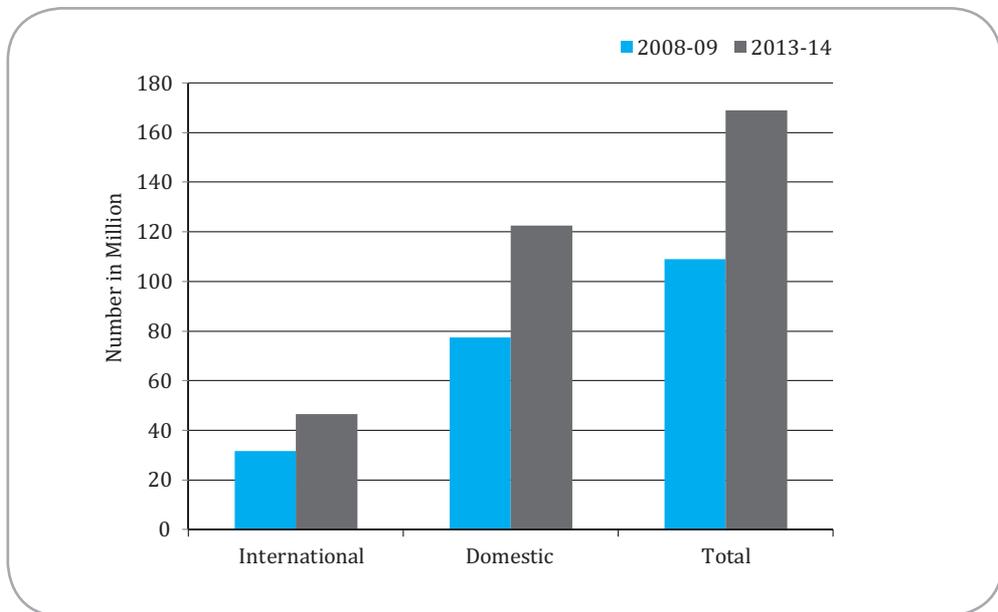


Source: Air Transport Statistics, DGCA, New Delhi.

City-wise International Passengers Travelled to and from India

5.6 In terms of passenger flows, the total number of passengers travelled by air has increased from 108.86 million in 2008-09 to 169.02 million in 2013-14, with the annualised growth rate of 9.20 per cent; out of which, almost 70 per cent of the passengers were domestic travellers and the rest 30 per cent international passengers (Table 12 and Figure 17). Almost all the metro airports (Delhi, Mumbai, Bengaluru, Chennai, Kolkata and Hyderabad) and most of the Tier 1 city airports (Ahmedabad, Goa, Guwahati, Thiruvananthapuram) have been growing at the annualised growth rate of 10 per cent, followed by Pune at 30 per cent and Gaya at 9.88 per cent, respectively (Table 16). There has been a steep rise in passenger flows between the years 2008-09 and 2013-14. Going by the trend, international passengers to and from India are likely to rise across all the airports in coming years.

Figure 17: Total Passengers Travelled by Air in India



Source: Air Transport Statistics, DGCA, New Delhi.

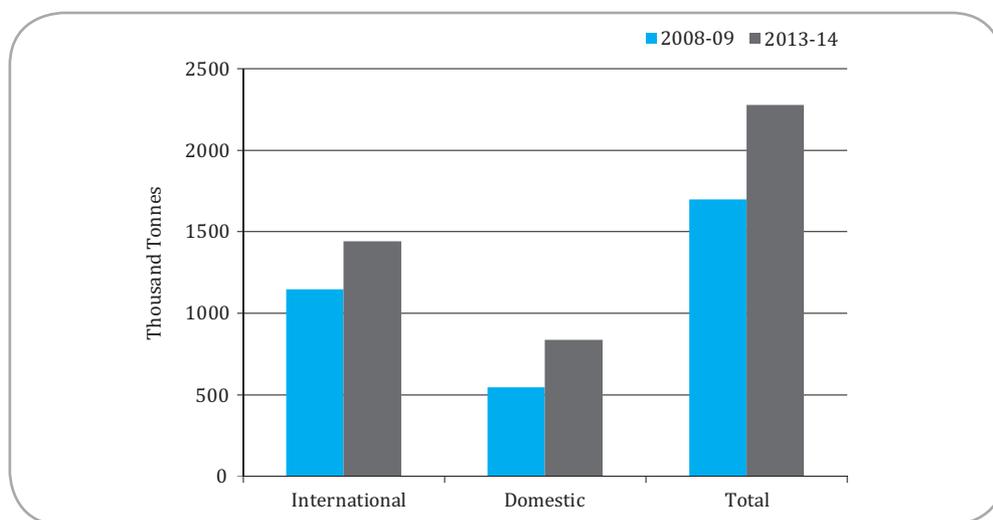
Table 16: City-Wise International Passengers Travelled

(Numbers in '000)

Sl. No.	Airport	2008-09	2013-14	CAGR (%)
(A) 16 international Airports				
1	Chennai	3663.91	4537.67	4.37
2	Kolkata	1002.17	1765.01	11.99
3	Ahmedabad	684.33	997.77	7.83
4	Goa	389.70	736.34	13.57
5	Trivandrum	1473.83	1948.55	5.74
6	Calicut	1516.11	2179.20	7.53
7	Guwahati	7.28	24.63	27.60
8	Lucknow	-	440.15	-
9	Srinagar	16.25	17.38	1.35
10	Jaipur	221.71	258.69	3.13
11	Coimbatore	-	119.56	-
12	Mangalore	-	442.29	-
13	Amritsar	438.83	307.48	-6.87
14	Tiruchirappalli	-	896.31	-
15	Varanasi	-	90.73	-
16	Port Blair	-	-	-
Total		9500.52	14761.78	9.21
(B) 6 JV International Airports				
17	Delhi	7769.31	12681.31	10.30
18	Mumbai	8118.91	10340.71	4.96
19	Bengaluru	1641.71	2634.73	9.92
20	Hyderabad	1566.87	2442.98	9.29
21	Cochin	2009.55	3272.35	10.24
22	Nagpur	-	43.58	-
Total		21106.35	31415.66	8.28
(C) 7 Custom Airports				
23	Pune	27.52	101.14	29.73
24	Visakhapatnam	-	72.07	-
25	Patna	-	-	-
26	Chandigarh	-	-	-
27	Bagdogra	-	33.93	-
28	Madurai	-	133.88	-
29	Gaya	47.54	76.14	9.88
Total		961.58	417.18	-15.38
(D) 17 Domestic Airports		4.43	21.48	37.12
(E) Other Airports		2.46	1.27	-12.36
Grand Total (A+B+C+D+E)		31575.36	46617.37	

Notes: 1. Lucknow, Varanasi, Tiruchirappalli, Mangalore and Coimbatore Airports are declared as International Airports as on 22 October 2012 by the Ministry of Civil Aviation, Government of India. 2. Greenfield airport at Hyderabad (GHIAL) started operation from 23 March 2008. 3. Greenfield airport at Bengaluru (BIAL) started operation from 24 May 2008.

Source: Airports Authority of India.

Figure 18: Total Fright Cargo Carried in India

Source: Air Transport Statistics, DGCA, New Delhi.

5.7 In the case of air freight carried, the growth of total freight carried has been lower than that of passenger flow. Although 50 per cent of the freight has been carried internationally, its annual growth of 4.66 per cent remains lower than domestic freight movement, which was about 8.82 per cent (see Table 12 and Figure 18). In terms of city-wise international air freight carried, among the major metro airports, Mumbai, Bengaluru, Hyderabad, Cochin had grown at the CAGR of around 10 per cent between 2008-09 and 2013-14. Whereas the international air freight carried at Chennai, Delhi and Kolkata airports had grown in range of 0.08 to 2.23 per cent, their combined share in total freight carried was almost 50 per cent in 2013-14 (Table 17).

Table 17: City-Wise International Air Freight

(Numbers in '000 tonne)

Sl. No.	Airport	2008-09	2013-14	CAGR (%)
(A) 16 international Airports				
1	Chennai	219.56	220.40	0.08
2	Kolkata	40.74	45.48	2.23
3	Ahmedabad	10.29	15.71	8.82
4	Goa	0.68	2.02	23.99
5	Trivandrum	30.17	27.28	-1.99
6	Calicut	12.56	22.70	12.58
7	Guwahati	0.002	0.04	78.26
8	Lucknow	-	1.15	-

Table 17 continued...

ASEAN-India Air Connectivity Report

Table 17 Continued...

9	Srinagar	-	-	-
10	Jaipur	0.340	0.24	-6.34
11	Coimbatore	-	0.96	-
12	Mangalore	-	0.08	-
13	Amritsar	1.79	1.48	-3.74
14	Tiruchirappalli	-	4.75	-
15	Varanasi	-	-	-
16	Port Blair	-	-	-
Total		316.37	342.31	-
(B) 6 JV International Airports				
17	Delhi	378.61	389.85	0.59
18	Mumbai	297.93	467.64	9.44
19	Bengaluru	99.69	150.73	8.62
20	Hyderabad	29.66	49.28	10.68
21	Cochin	25.22	42.79	11.16
22	Nagpur	-	0.42	-
Total		831.12	1100.72	
(C) 7 Custom Airports				
23	Pune	-	0.01	-
24	Visakhapatnam	-	-	-
25	Patna	-	-	-
26	Chandigarh	-	-	-
27	Bagdogra	-	-	-
28	Madurai	-	0.001	-
29	Gaya	-	-	-
Total		-	0.011	-
(D) 17 Domestic Airports		-	-	-
(E) Other Airports		-	-	-
Grand Total (A+B+C+D+E)		1149.35	1443.04	4.66

Notes: 1. Lucknow, Varanasi, Tiruchirappalli, Mangalore and Coimbatore Airports are declared as International Airports as on 22 October 2012 by the Ministry of Civil Aviation, Government of India. 2. Greenfield airport at Hyderabad (GHIAL) started operation from 23 March 2008. 3. Greenfield airport at Bengaluru (BIAL) started operation from 24 May 2008.

Source: Airports Authority of India

Air Traffic Forecast of Indian Aviation Sector

- 5.8 To better understand the likely increase in the capacity, both by air passenger and air cargo, this section discusses the air traffic forecasts carried out by the Directorate General of Civil Aviation (DGCA) of the Ministry of Civil Aviation (MoCA).² Effective air traffic forecast viz., passengers and cargo would help in taking strategic decisions and efficient resource allocation.³
- 5.9 Table 18 presents the estimated air passenger traffic by Five Year Plan (FYP) segments, both for domestic and international traffic. Domestic air passenger traffic that would be carried by scheduled carriers in India in 2026-27 is set to cross 291.3 million passengers as against 122.41 million in 2013-14, suggesting a growth of approximately two times the present traffic in twelve years. International passengers to and from India by 2026-27 would be 160.8 million, implying a growth of about 3.4 times the traffic of 46.61 million in 2013-14. Forecast for 2031-32 suggests that domestic air passengers to be carried in India would be 448 million. For the same year, international passengers would be 248.8 million.

Table 18: Forecast of Air Passenger Traffic

	Domestic (Millions)	International (Millions)*	Total (Millions)
Forecasted value given as Five Year Plan Period			
12th Plan (2016-17)	102.4	69.4	171.8
13th Plan (2021-22)	177.8	104.9	282.7
14th Plan (2026-27)	291.3	160.8	452.1
15th Plan (2031-32)	447.7	248.8	696.4
CAGR (%)			
12th Plan (2016-17)	11.7	10.1	11.1
13th Plan (2021-22)	11.7	8.6	10.5
14th Plan (2026-27)	10.4	8.9	9.8
15th Plan (2031-32)	9.0	9.1	9.0
2010-11 to 2020-21	11.4	9.5	10.7
2010-11 to 2031-32	10.6	9.3	10.1

Notes: Resultant CAGR refers to Compounded Annual Growth Rates for the period from 2010-11 to the terminal years for which forecast is made. *International passengers include transshipment passengers as well.

Source: DGCA estimates.

- 5.10 Over the period from 2010-11 to 2031-32, the rate of growth of total traffic would be 10.1 per cent, where the domestic traffic would be growing at 10.6 per cent higher than international traffic for the next 20 years. It shows that the domestic passenger traffic will push the overall passenger traffic in comparison to the international passenger traffic in India.
- 5.11 Table 19 also shows the forecast of air cargo by Five Year Plan segments, both for domestic and international traffic. Both domestic and international cargoes are set to grow in the range of 10-11 per cent from 2010-11 to 2031-32. Domestic cargo in 2031-32 is set to cross 3.7 million tonnes as against 0.8 million tonnes in 2013-14, suggesting a growth of approximately 4.6 times the present traffic in almost twenty years. Similarly, international cargo to and from India by 2031-32 will be 12.2 million tonnes, implying a growth of about 8.7 times the traffic of 1.44 million tonnes in 2013-14. Higher domestic cargo traffic is also indicative of the general health of the economy, indicating greater final consumption, better performance of domestic manufacturing and services sector.

Table 19: Forecasted Cargo Traffic

	Domestic (MMT)	International (MMT)	Total (MMT)
Forecasted value given as Five Year Plan Period			
12th Plan (2016-17)	0.9	2.6	3.5
13th Plan (2021-22)	1.6	4.7	6.2
14th Plan (2026-27)	2.5	7.8	10.3
15th Plan (2031-32)	3.7	12.2	15.9
CAGR (%)			
12th Plan (2016-17)	11.8	13.4	12.9
13th Plan (2021-22)	11.3	12.6	12.3
14th Plan (2026-27)	9.9	10.9	10.7
15th Plan (2031-32)	8.4	9.4	9.2
2010-11 to 2020-21	11.4	12.9	12.5
2010-11 to 2031-32	10.4	11.7	11.3

Note: International freight carried includes transshipment cargo as well.

Source: DGCA, MoCA estimates.

Air Links between ASEAN and India

- 5.12 The air traffic, both passenger and cargo, between ASEAN and India are governed by respective bilateral air services agreement (BASA) signed by India and partner countries over time.⁴ Till August 2015, India has signed BASA with all the ASEAN countries with latest being Lao PDR. Table 20 presents an overview of the BASA in terms of entitlements and offers.

Airlines of ASEAN countries, mainly Thailand, Singapore and Malaysia, have been flying to major Indian cities like Mumbai, Chennai, Kolkata, Delhi, Hyderabad and Bengaluru. India has offered 18 additional points to ASEAN without any restriction as to frequency or aircraft and without being subject to any commercial agreement.⁵ The entitlements and offers vary across BASA partners. On one hand, seats and frequency of air linkages with the Malaysia, Singapore and Thailand sectors are over-utilised, the same with CLMV, on the other, are largely underutilised.

Table 20: Bilateral Air Services Agreement between India and ASEAN*

	Foreign Entitlements (Number of seats offered per week to major metro cities in India⁵)	Indian Entitlements (Number of seats offered per week to respective capital cities in ASEAN countries)	India's offer to ASEAN countries (Unlimited seats offered to 18 additional cities)
Brunei	11200	11200	Yes
Cambodia	11200	11200	Yes
Indonesia	11200	11200	Yes
Malaysia	20670	20670	Yes
Myanmar	11200	11200	Yes
Philippines	11200	11200	Yes
Singapore	29700	29700	Yes
Thailand	23609	23609	Yes
Vietnam	11200	11200	Yes
Lao PDR	Bilateral Air Service Agreement has been signed on July 2015 onwards		

Notes: *Details are given in Appendix 3; \$ - Delhi, Mumbai, Kolkata, Chennai, Bengaluru and Hyderabad.

Source: AIC based on the discussions with DGCA and selected airlines operators.

5.13 Based on BASA, Table 21 presents city pair-wise air service between ASEAN and India. Map 1 illustrates all the current air links between India and Southeast and East Asian cities, both direct and indirect links. It is evident that countries like Thailand, Malaysia and Singapore have regular direct air services from their capital cities to Indian major cities and some of Tier I airports. However, only Gaya qualifies from Tier II cities as an international destination from ASEAN. Barring Gaya, none of the Tier II cities are connected with Southeast and East Asian countries by air.

Trends in Passenger Flow between ASEAN and India

5.14 Table 22 shows the country-wise international passengers carried by all airlines between ASEAN and India. Out of 10 ASEAN countries, as on September 2015, only five ASEAN countries such as Malaysia, Myanmar, Singapore, Thailand and Vietnam have direct flights with India. For the

remaining five ASEAN countries (Cambodia, Lao PDR, Indonesia, the Philippines and Brunei), there is no direct flight with India, but have inter-connection from other airports. For the year 2005-06, the number of passengers to and from India and Malaysia, Singapore and Thailand was in the range of 0.77 million to 1.75 million, whereas, the passengers to and from India and Indonesia and Myanmar were in the range of 17,000 to 22,000 only. However, the difference in the number of Indian passengers travelling to ASEAN countries has been higher than the number of passengers of ASEAN countries travelling to India. Similarly, for the year 2013-14, there was almost 50 per cent increase in the passenger flow between ASEAN and India, compared to 2005-06, travelled mostly from Singapore, Malaysia and Thailand.

Table 21: ASEAN-India BASA: City Pair-wise Air Links, 2014*

Metro Airports	ASEAN Cities					
	Bandarseri Brunei#	Bangkok Thailand	Jakarta Indonesia#	Kuala Lumpur Malaysia	Yangon Myanmar	Singapore
Delhi		√	√	√	√	√
Mumbai		√	√	√		√
Bengaluru		√		√		√
Chennai		√	√	√		√
Kolkata	√	√		√	√	√
Hyderabad		√		√		√
Tier I						
Ahmedabad				√		√
Amritsar						√
Kochi	√			√		√
Coimbatore						√
Guwahati		√				
Jaipur		√				√
Lucknow		√		√		√
Nagpur	√	√				
Pune						√
Tiruchirappalli				√		√
Thiruvananthapuram				√		√
Varanasi		√				
Tier II						
Gaya		√			√	

Notes: *Drawn based on existing BASA but not all are operational. #To be operational.

Source: Calculated based on DGCA.

Map 1: Air Links between India and Southeast and East Asian Countries



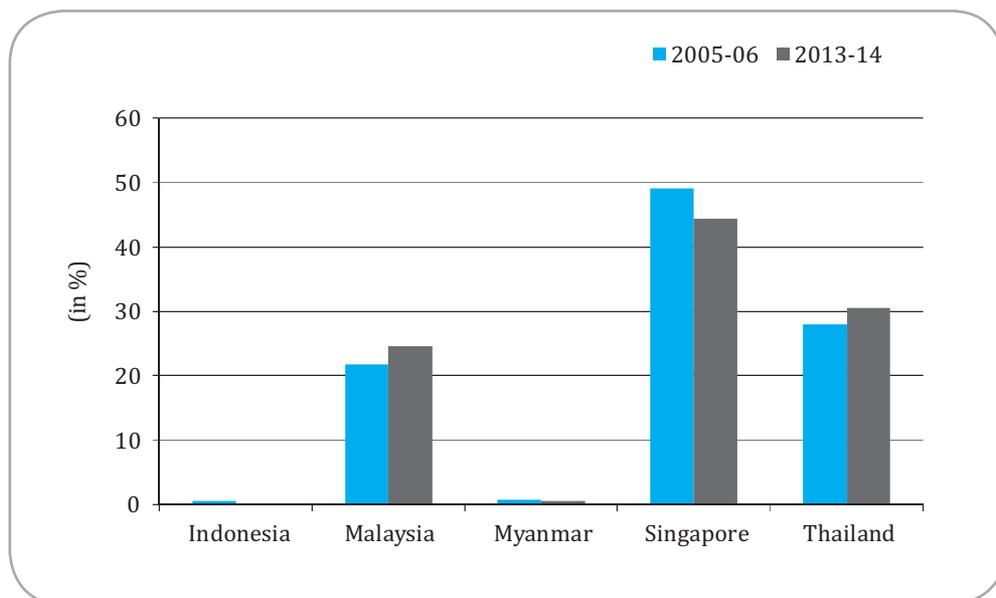
Note: Drawn based on data provided by various airlines as on January 2016. This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes.
Source: AIC at RIS.

Table 22: Country-wise Scheduled International Passengers Carried from India

(Numbers in '000)

Country	2005-06			2013-14		
	Passengers Travel		Difference	Passengers Travel		Difference
	to India	from India		to India	from India	
	(1)	(2)	(1) - (2)	(3)	(4)	(3) - (4)
Indonesia	11.71	6.73	4.98	-	-	-
Malaysia	359.37	419.07	-59.71	873.74	902.53	-28.78
Myanmar	12.19	12.48	-0.29	17.93	17.91	26.00
Singapore	853.31	909.11	-55.81	1581.87	1629.46	-47.58
Thailand	495.43	510.68	-15.26	1084.06	1121.81	-37.74
ASEAN	1,732.00	1,858.09	-126.09	3557.61	3671.69	-114.08
World	9,736.53	10,428.71	-692.18	21170.37	21914.41	-744.04
Share of ASEAN in World (%)	17.78	17.81		16.80	16.75	

Source: Air Transport Statistics, DCGA, New Delhi.

Figure 19: Share of Total Passengers Travelled between ASEAN and India

Source: Air Transport Statistics, DGCA, New Delhi.

- 5.16 Figure 19 shows the share of total passengers who travelled between ASEAN and India for the years 2005-06 and 2013-14, respectively. It clearly depicts that the share of passenger travelled from respective countries (particularly, Singapore, Malaysia and Thailand) to total ASEAN countries was almost same between 2005-06 and 2013-14. Singapore (49 per cent) and Thailand (28 per cent) together contributed to 77 per cent of the passengers flow, followed by Malaysia (23 per cent) in 2005-06. In 2013-14, Singapore (48 per cent) and Thailand (30 per cent) together contributed to 78 per cent of the passengers flow, followed by Malaysia (24 per cent).
- 5.17 ASEAN countries such as Singapore, Thailand and Malaysia presently cover about 12 cities in India from their capital cities. In terms of city-wise passengers flow between India and ASEAN countries, the air services are available mostly for metro cities like Chennai, Delhi, Mumbai, Kolkata, Bengaluru and Hyderabad and Tier 1 cities like Guwahati, Gaya, Jaipur, Lucknow, Varanasi, Thiruvananthapuram, Cochin, Ahmedabad and Tiruchirappalli (Tables 23a to 23f).

Table 23(a): City-wise Air Passengers Flow between India and Thailand

(Numbers in '000)

City-wise Pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Bangkok-Bengaluru	2005	51.88	52.22	0.34	104.10	7.40
	2013	94.23	89.99	-4.24	184.22	
Bangkok-Bombay	2005	138.33	132.55	-5.78	270.89	6.70
	2013	227.70	227.26	-0.44	454.96	
Bangkok-Kolkata	2005	86.99	88.28	1.29	175.27	11.36
	2013	208.65	205.93	-2.73	414.58	
Bangkok-Delhi	2005	173.89	161.86	-12.03	335.75	11.99
	2013	418.17	412.48	-5.69	830.65	
Bangkok-Guwahati	2004	0.16	0.14	-0.018	0.30	14.47
	2008	0.29	0.22	-0.076	0.52	
Bangkok-Gaya	2005	5.35	5.22	-0.13	10.56	2.96
	2013	7.52	11.29	3.77	18.80	
Bangkok-Hyderabad	2004	3.18	2.45	-0.74	5.63	27.58
	2013	39.23	34.91	-4.32	74.14	
Bangkok-Jaipur	2004	4.40	4.15	-0.26	8.55	-46.43
	2006	1.20	1.25	0.051	2.45	
Bangkok-Lucknow	2006	0.00	0.21	0.21	0.21	-19.80
	2008	0.00	0.14	0.14	0.14	
Bangkok-Chennai	2005	42.70	39.64	-3.05	82.34	7.06
	2013	73.87	68.18	-5.69	142.05	
Bangkok-Nagpur	2006	2.32	2.25	-0.07	4.57	-48.01
	2010	0.21	0.12	-0.09	0.33	
Bangkok-Varanasi	2006	2.67	0.28	-2.38	2.96	21.82
	2010	5.13	1.38	-3.75	6.51	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 23(b): City-wise Air Passengers Flow between India and Indonesia

(Numbers in '000)

City-wise pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Jakarta-Bombay	2004	3429	7457	4028	10886	-62.20
	2011	6	6	0	12	
Jakarta-Chennai	2004	925	990	65	1915	-96.77
	2006	0		0	2	
Jakarta-Delhi	2004	850	1935	1085	2785	-85.78
	2007	8	0	-8	8	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 23(c): City-wise Air Passengers Flow between India and Malaysia

(Numbers in '000)

City-wise Pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Kuala Lumpur-Ahmedabad	2004	4.65	3.97	-0.67	8.62	275.16
	2005	16.35	16.01	-0.34	32.35	
Kuala Lumpur-Bengaluru	2005	30.39	33.56	3.17	63.96	14.90
	2013	94.95	99.31	4.36	194.26	
Kuala Lumpur-Bombay	2005	62.90	57.45	-5.46	120.35	8.40
	2013	114.69	114.79	0.09	229.48	
Kuala Lumpur-Kolkata	2005	18.00	16.94	-1.06	34.94	10.61
	2013	36.88	41.43	4.55	78.30	
Kuala Lumpur-Cochin	2009	16.13	16.09	-0.03	32.22	24.66
	2011	23.88	26.18	2.29	50.07	
Kuala Lumpur-Delhi	2005	74.40	66.77	-7.64	141.17	8.38
	2013	133.59	135.16	1.57	268.74	
Kuala Lumpur-Hyderabad	2005	21.71	21.99	0.28	43.71	8.92
	2013	43.30	43.31	0.01	86.60	
Kuala Lumpur-Jaipur	2005	0.02	0.04	0.18	0.05	-100.00
	2007	0.00	0.00	0.00	0.00	
Kuala Lumpur-Chennai	2005	195.30	146.62	-48.68	341.92	2.81
	2013	221.97	204.88	-17.09	426.84	
Kuala Lumpur-Trivandrum	2009	0.18	0.04	-0.14	0.22	19124.09
	2010	21.77	20.52	-1.23	42.29	
Kuala Lumpur-Tiruchirappalli	2007	0.57	1.72	1.14	2.29	161.92
	2011	47.34	60.53	13.18	107.86	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 23(d): City-wise Air Passenger Flow between India and Myanmar

(Numbers in '000)

City-wise Pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Yangon-Kolkata	2005	3.36	3.38	0.03	6.74	10.27
	2013	8.43	6.31	-2.13	14.74	
Yangon-Delhi	2003	0.50	0.39	-0.11	0.89	3755.82
	2004	18.14	16.33	-1.80	34.47	
Yangon-Gaya	2005	2.30	2.32	0.02	4.62	19.91
	2013	8.77	10.96	2.18	19.73	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 23(e): City-wise Air Passengers Flow between India and Singapore

(Numbers in '000)

City-wise Pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Singapore-Ahmedabad	2005	19.10	15.32	-3.78	34.41	8.88
	2013	34.79	33.19	-1.60	67.98	
Singapore-Amritsar	2004	17507	19.66	2.15	37.16	11.61
	2008	33.01	24.65	-8.36	57.66	
Singapore-Bengaluru	2005	87.13	86.90	-0.23	174.02	6.20
	2013	139.87	141.79	1.92	281.67	
Singapore-Bombay	2005	197.97	188.61	-9.36	386.57	5.97
	2013	312.13	302.39	-9.74	614.52	
Singapore-Kolkata	2005	50.60	46.42	-4.17	97.02	1.38
	2013	55.12	53.18	-1.95	108.30	
Singapore-Coimbatore	2007	5.33	5.35	0.03	10.68	31.79
	2011	16.32	15.90	-0.41	32.22	
Singapore-Cochin	2005	26.76	25.20	-1.56	51.96	13.50
	2013	72.67	70.37	-2.30	143.04	
Singapore-Delhi	2005	175.36	166.96	-8.40	342.32	7.79
	2013	316.54	307.43	-9.11	623.97	
Singapore-Hyderabad	2005	40.79	38.68	-2.11	79.48	9.35
	2013	81.41	81.01	-0.41	162.42	
Singapore-Jaipur	2004	0.45	0.47	0.02	0.93	-47.74
	2005	0.23	0.26	0.03	0.48	
Singapore-Chennai	2005	260.85	239.20	-21.65	500.04	6.14
	2013	416.31	389.41	-26.90	805.72	
Singapore-Pune	2006	3.37	3.33	-0.04	6.71	-44.20
	2007	1.62	2.13	0.51	3.74	
Singapore-Tiruchirapalli	2006	0.00	0.36	0.36	0.36	234.80
	2011	69.21	83.48	14.28	152.69	
Singapore-Trivandrum	2005	14.52	13.69	-0.83	28.21	12.85
	2013	37.27	36.94	-0.33	74.21	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 23(f): City-wise Air Passenger Flow between India and Brunei

(Numbers in '000)

City-wise Pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Bandar Seri-Cochin	2006	19.19	16.61	-2.58	35.81	-56.96
	2007	6.79	8.62	1.82	15.41	
Bandar Seri-New Delhi	2006	3.84	3.17	-0.67	7.02	-48.09
	2008	1.17	0.71	-0.46	1.89	
Bandar Seri-Kolkata	2003	2.48	1.48	-1.00	3.97	-38.40
	2004	1.59	0.89	-0.73	2446	

Source: Air Transport Statistics, DGCA, New Delhi.

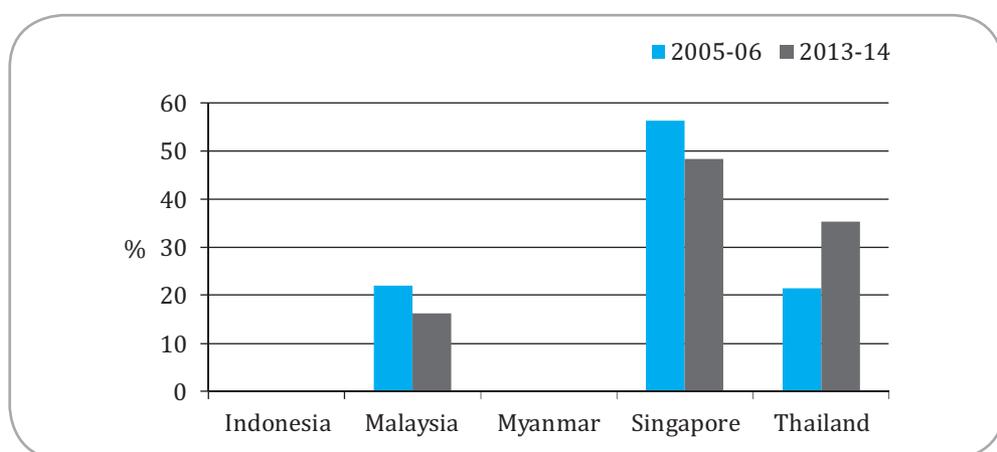
Table 24: Country-wise Scheduled International Freight Carried by all Airlines

(Numbers in '000 tonnes)

Country	2005-06			2013-14		
	Freight Carried			Freight Carried		
	to India	from India	Difference	to India	from India	Difference
	(1)	(2)	(1) - (2)	(3)	(4)	(3) - (4)
Indonesia	0.05	0.12	-0.073	-	-	-
Malaysia	19.36	14.53	4.83	12.8	18.14	-5.28
Myanmar	0.006	0.09	-0.09	0.0006	0.03	-0.03
Singapore	46.22	40.56	5.66	42.81	48.94	-6.14
Thailand	18.05	15.12	2.93	39.07	27.69	11.37
ASEAN	83.68	70.43	13.25	94.74	94.81	-0.07
World	328.74	486.14	-157.39	491.05	770.49	-279.45
Share of ASEAN in World (%)	25.45	14.49	-	19.29	12.31	-

Source: Air Transport Statistics, DGCA, New Delhi.

Figure 20: Share of Total Freight Carried between ASEAN and India



Source: Air Transport Statistics, DGCA, New Delhi.

Trends in Air Cargo Carried between ASEAN and India

5.18 In Table 24, we compare air cargo flow between India and ASEAN for the years 2005-06 and 2013-14. In 2005-06, except Indonesia and Myanmar, all ASEAN countries recorded freight surplus with India, whereas, in 2013-14, except Thailand, all ASEAN countries recorded freight deficit with India.

5.19 In Figure 20, we compare the share of individual ASEAN countries in total cargo carried to ASEAN during 2005-06 and 2013-14. Singapore (46 per cent) and Thailand (22 per cent) together contributed 68 per cent of the freight flow, followed by Malaysia (22 per cent) in 2005-06. In 2013-14, Singapore (48 per cent) and Thailand (35 per cent) together contributed 82 per cent of the freight flow, followed by Malaysia (16 per cent). City-wise trend in air cargo carried between India and ASEAN countries are presented in Tables 25a to 25f.

Table 25(a): City-wise Air Cargo Carried between India and Thailand

(Numbers in tonnes)

City-wise Pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Bangkok-Bengaluru	2005	2542.00	1585.00	957.00	4127.00	10.11
	2013	4222.50	4699.20	-476.70	8921.61	
Bangkok-Mumbai	2004	4059.00	2943.00	-1116.00	7002.00	9.10
	2013	9700.10	5642.80	4057.30	15342.93	
Bangkok-Kolkata	2004	1894.00	1808.00	-86.00	3702.00	5.22
	2013	2446.70	3408.20	-961.50	5854.89	
Bangkok-Delhi	2004	4547.00	3989.00	-558.00	8537.00	12.26
	2013	16540.80	7639.70	8901.10	24180.54	
Bangkok-Guwahati	2004	0.00	3.00	3.00	3.00	-
	2008	0.00	3.00	3.00	3.00	
Bangkok-Gaya	2004	0.00	0.00	0.00	0.00	-
	2013	0.30	0.00	0.30	0.29	
Bangkok-Hyderabad	2004	0.00	13.00	13.00	13.00	87.55
	2013	1739.60	1994.10	-254.50	3733.70	
Bangkok-Jaipur	2004	22.00	45.00	23.00	67.00	-46.74
	2006	10.00	9.00	-1.00	19.00	
Bangkok-Lucknow	2006	0.00	0.00	0.00	0.00	-
	2008	0.00	0.00	0.00	0.00	
Bangkok-Chennai	2004	3705.00	2945.00	-760.00	6650.00	4.13
	2013	4410.60	5158.40	-747.80	9569.03	
Bangkok-Nagpur	2006	0.00	1.00	1.00	1.00	-
	2010	0.00	0.00	0.00	0.00	
Bangkok-Varanasi	2006	0.00	0.00	0.00	0.00	-
	2010	0.00	0.00	0.00	0.00	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 25(b): City-wise Air Cargo Carried between India and Indonesia

(Numbers in tonnes)

City-wise pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Jakarta-Bombay	2004	124.00	16.00	-108.00	140.00	-
	2011	0.00	0.00	0.00	0.00	
Jakarta-Chennai	2004	31.00	3.00	-28.00	34.00	-
	2006	0.00	2.00	2.00	0.00	
Jakarta-Delhi	2004	14.00	2.00	-12.00	17.00	-
	2007	0.00	0.00	0.00	0.00	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 25(c): City-wise Air Cargo Carried between India and Malaysia

(Numbers in tonnes)

City-wise pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Kuala Lumpur-Ahmedabad	2004	303.00	6.00	-297.00	309.00	141.10
	2005	524.00	222.00	-302.00	745.00	
Kuala Lumpur-Bengaluru	2004	2218.00	3047.00	829.00	5265.00	-12.77
	2013	757.90	782.10	-24.20	1540.04	
Kuala Lumpur-Mumbai	2004	4894.00	4753.00	-141.00	9647.00	-3.79
	2013	4118.00	2692.00	1426.00	6810.00	
Kuala Lumpur-Kolkata	2004	226.00	161.00	-65.00	388.00	-1.49
	2013	124.90	214.00	-89.10	338.86	
Kuala Lumpur-Cochin	2009	20.00	21.00	1.00	41.00	125.39
	2011	130.89	77.41	-53.47	208.30	
Kuala Lumpur-Delhi	2004	3841.00	3546.00	-295.00	7387.00	1.39
	2013	4619.90	3750.40	869.50	8370.31	
Kuala Lumpur-Hyderabad	2004	1000.00	1332.00	332.00	2332.00	-8.97
	2013	338.00	662.10	-324.10	1000.10	
Kuala Lumpur-Jaipur	2005	0.00	0.00	0.00	0.00	-
	2007	0.00	0.00	0.00	0.00	
Kuala Lumpur-Lucknow	2006	0.00	0.00	0.00	0.00	-
	2007	0.00	0.00	0.00	0.00	
Kuala Lumpur-Chennai	2004	5784.00	8213.00	2429.00	13997.0	-9.78
	2013	3401.60	2141.20	1260.40	5542.74	
Kuala Lumpur-Trivandrum	2009	0.00	0.00	0.00	0.00	-
	2010	0.00	46.00	46.00	46.00	
Kuala Lumpur-Tiruchirappalli	2007	0.00	0.00	0.00	0.00	-
	2011	419.99	0.00	-419.99	419.99	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 25(d): City-wise Air Cargo Carried between India and Myanmar

(Numbers in tonnes)

City pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Yangon-Kolkata	2005	61.00	-	-61.00	62.00	-8.19
	2013	31.30	-	-31.30	31.29	
Yangon-Delhi	2003	-	-	-	-	
	2007	12.00	2.00	-10.00	14.00	
Yangon - Gaya	2005	-	-	-	-	
	2013	0.40	-	0.40	0.40	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 25(e): City-wise Air Cargo Carried between India and Singapore

(Numbers in tonnes)

City-wise pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Singapore-Ahmedabad	2005	1064.0	763.0	-301.0	1827.0	7.69
	2013	2120.8	1182.9	-937.9	3303.7	
Singapore-Amritsar	2004	152.0	15.0	-137.0	167.0	28.55
	2008	414.0	42.0	-372.0	456.0	
Singapore-Bengaluru	2005	5171.0	6919.0	1748.0	12090.0	-2.74
	2013	4666.5	5010.1	343.6	9676.5	
Singapore-Bombay	2005	10122.0	11070.0	948.0	21192.0	6.42
	2013	17969.2	16900.8	-1068.4	34869.9	
Singapore-Kolkata	2005	4399.0	2050.0	-2349.0	6449.0	-0.98
	2013	3848.1	2113.6	-1734.5	5961.6	
Singapore-Coimbatore	2007	2.0	2.0	0.0	4.0	137.06
	2011	116.7	9.6	-107.0	126.3	
Singapore-Cochin	2005	446.0	260.0	-186.0	706.0	0.07
	2013	576.1	133.6	-442.5	709.7	
Singapore-Delhi	2005	7034.0	11937.0	4903.0	18972.0	-1.03
	2013	6914.0	10551.0	3637.0	17464.9	
Singapore-Hyderabad	2005	710.0	731.0	21.0	1442.0	-3.29
	2013	667.8	435.7	-232.1	1103.5	
Singapore-Jaipur	2004	1.0	0.0	-1.0	1.0	0.00
	2005	1.0	1.0	0.0	1.0	
Singapore-Chennai	2005	10589.0	12424.0	1835.0	23013.0	-4.03
	2013	10188.6	6367.8	-3820.8	16556.4	
Singapore-Pune	2006	7.0	1.0	-6.0	7.0	-42.86
	2007	4.0	0.0	-4.0	4.0	
Singapore-Trivandrum	2005	403.0	35.0	-368.0	438.0	-2.94
	2013	302.2	42.9	-259.3	345.1	

Source: Air Transport Statistics, DGCA, New Delhi.

Table 25(f): City-wise Air Cargo Carried between India and Brunei

(Numbers in tonnes)

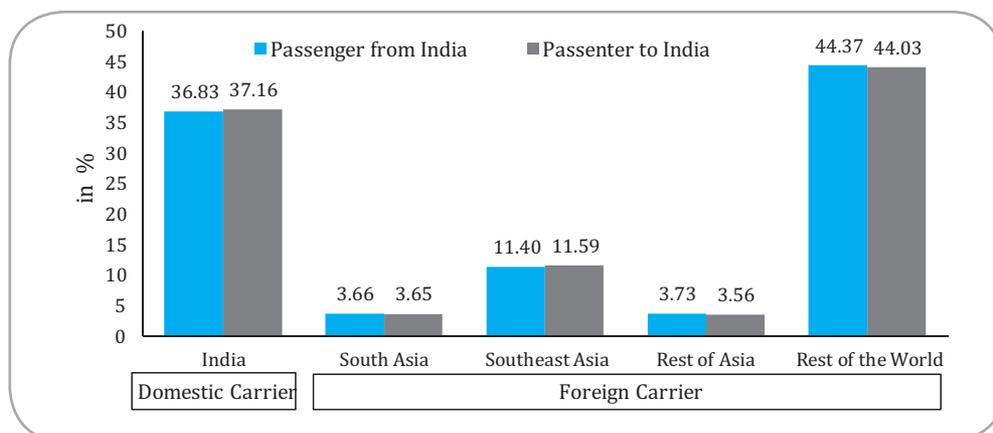
City-wise pair	Year	From India	To India	Deficit/ Surplus	Total	CAGR (%)
Bandar Seri-Cochin	2006	241.00	1.00	-240.00	242.00	-37.19
	2007	152.00	0.00	-152.00	152.00	
Bandar Seri-New Delhi	2006	82.00	0.00	-82.00	82.00	-3.66
	2008	76.00	0.00	-76.00	76.00	
Bandar Seri-Kolkata	2003	-	-	-	-	
	2004	65.00	51.00	-14.00	116.00	

Source: Air Transport Statistics, DGCA, New Delhi.

Trends in Domestic and Foreign Airline-wise International Passenger Flow

5.20 Table 26 presents the domestic and foreign airline-wise international passenger flow from and to India. Among five Indian airlines, Air India and its subsidiary – Air India Express and domestic private carriers like Jet Airways, IndiGo and Spicejet carry almost equal passenger flow from and to India. India’s all airlines taken together carried 9.15 million international passengers from India and 8.83 million passengers to India, making a surplus of 0.30 million passengers. Indian airlines carried an average 37 per cent of the total passenger flow from and to India (see Figure 21). Airlines from South Asia has carried only about 3.6 per cent of the total passenger, and mostly by Sri Lankan Airways, which has contributed 72.33 per cent of total South Asian airlines passengers (excluding Indian airlines), whereas airlines from Southeast Asia has carried about 11.5 per cent of international passenger flow from and to India (Figure 21). In the Southeast Asia, airlines are mostly from Singapore (Singapore Airlines, Silk Air and Tiger Airways), Malaysia (Air Asia, Malaysia Airlines, Malindo Airways) and Thailand (Thai Airways, Bangkok Airways) and one airline from Myanmar. The total international passenger flow carried by Southeast Asian airlines has been about 3.49 million from India and 3.39 million to India. Airlines from the other Asian countries such as China, Japan and Korea shared about 3.7 per cent of International passenger from and to India (see Figure 21). Table 26 also shows that more than 50 per cent of the international passenger flow has been carried by Asian airlines including India.

Figure 21: Market Share of International Passenger Flow of Domestic and Foreign Carrier in 2015



Source: DGCA, MoCA.

Table 26: Domestic and Foreign Airline-wise International Passenger Flow in 2015

(Numbers in '000)

Domestic / Foreign Airlines	Passenger from India	Passenger to India	Surplus/ Deficit
Air India	2846.77	2804.99	41.78
Air India Express	1364.58	1210.49	154.09
IndiGo	834.49	780.25	54.24
Jet Airways	3546.71	3521.00	25.71
Spicejet	563.25	521.66	41.59
Indian Airlines	9155.80	8838.39	317.41
Ariana Afghan	20.32	18.60	1.72
Druk Air	35.18	38.67	-3.49
Bhutan Airlines	17.65	18.37	-0.72
Biman Bangladesh	53.28	45.37	7.91
Budhha Air	0.77	0.70	0.07
Nepal Airlines Corporation	31.32	32.12	-0.79
Pak International	25.51	13.14	12.37
Mihin Lanka	67.75	66.23	1.52
Srilankan Airways	658.41	635.97	22.44
Airlines from South Asia	919.19	869.16	50.03
Air Asia Berhad	267.03	271.54	-4.50
Bangkok Airways	45.00	44.21	0.80
Malaysia Airlines	456.16	443.06	13.10
Malindo Airways	224.49	244.22	-19.72

Table 26 continued...

Table 26 continued...

Myanmar Airlines	7.35	7.58	-0.23
Silk Air	224.90	207.33	17.57
Singapore Airlines	606.43	581.33	25.10
Thai Airways	690.97	636.88	54.09
Tiger Airways	312.35	320.55	-8.20
Airlines from Southeast Asia	3493.10	3392.66	100.44
Air China	41.28	37.99	3.29
Cathay Pacific	408.23	392.10	16.13
China Airlines Ltd	53.53	14.93	38.61
China Eastern Airlines	88.93	88.69	0.24
China Southern	77.06	73.62	3.44
Dragon Air	87.60	89.83	-2.22
Japan Airlines	50.52	47.21	3.31
All Nippon Airways	58.24	45.38	12.86
Korean Air	27.76	24.77	2.99
Asiana Airlines	34.53	32.90	1.63
Airlines from Rest of Asia	927.67	847.39	80.28
Airlines from Rest of World	11030.61	10470.01	560.60
Total - Airlines	24858.96	23781.64	1077.32

Source: DGCA, MoCA.

Table 27: Domestic and Foreign Airline-wise International Freight Flow in 2015

(Numbers in tonnes)

Domestic / Foreign Carrier	Freight from India	Freight to India	Surplus/Deficit
Air India	57666.36	43479.42	14186.94
Air India Express	2419.31	108.17	2311.14
IndiGo	12512.71	1747.40	10765.31
Jet Airways	68512.50	47419.80	21092.70
Spicejet	2893.43	414.38	2479.05
Indian Carrier	144004.31	93169.17	50835.14
Ariana Afghan	409.67	158.46	251.20
Druk Air	54.31	3.81	50.49
Bhutan Airlines	0.00	0.00	0.00
Biman Bangladesh	150.22	11.17	139.04
Budhha Air	0.00	0.00	0.00
Nepal Airlines	101.62	0.71	100.91
Pak International	379.88	86.57	293.31

Table 27 Continued...

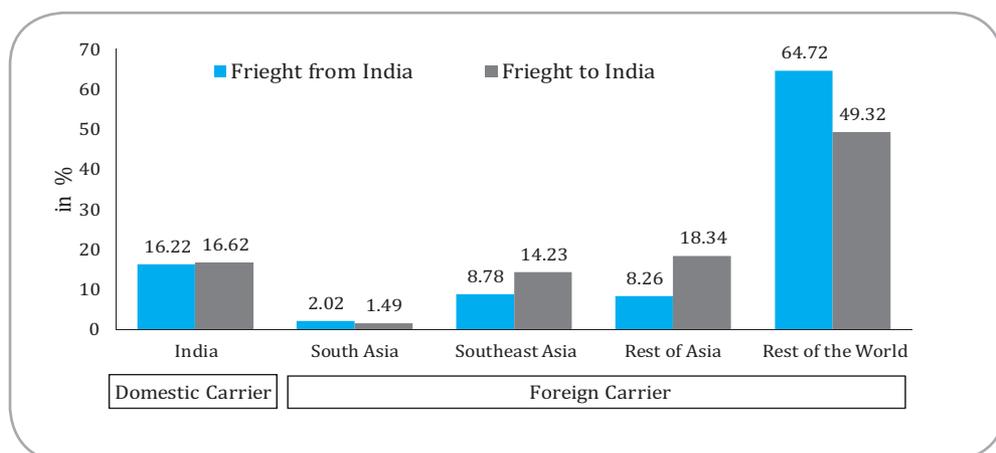
Table 27 Continued...

Mihin Lanka	3.89	5.18	-1.29
Sri Lankan Airways	16854.93	8090.16	8764.77
South Asian Carrier	17954.51	8356.07	9598.44
Air Asia Berhad	3669.50	411.18	3258.32
Bangkok Airways	572.97	168.56	404.41
Malaysia Airlines	14324.98	13847.35	477.64
Malindo Airways	459.07	34.24	424.83
Myanmar Airlines	0.00	0.00	0.00
Silk Air	2508.12	852.81	1655.31
Singapore Airlines	34129.83	36682.28	-2552.45
Thai Airways	19057.11	26713.99	-7656.88
Tiger Airways	3202.25	1102.07	2100.18
Southeast Asian Carrier	77923.85	79812.48	-1888.64
Air China	1727.90	1626.74	101.16
Cathay Pacific	56005.05	84519.73	-28514.68
China Airlines	1039.97	884.37	155.60
China Eastern Airlines	2307.44	2624.21	-316.77
China Southern	605.15	1204.99	-599.83
Dragon Air	2602.30	2419.11	183.20
Japan Airlines	2480.37	4671.81	-2191.43
All Nippon Airways	3905.74	2704.65	1201.09
Korean Air	1099.23	1708.14	-608.91
Asiana Airlines	1534.60	490.50	1044.11
Rest of Asia - Carrier	73307.77	102854.24	-29546.48
Rest of the World - Carrier	574584.99	276545.31	298039.68
Total - Carrier	887775.42	560737.27	327038.14

Source: DGCA, MoCA.

5.21 Table 27 shows domestic and foreign airline-wise international freight flow from and to India. Indian carriers carry on an average about 16 per cent of freight flow from and to India (Figure 22). Private carriers like Jet Airways carry substantial freight, compare to Air India and its subsidiary – Air India Express, followed by IndiGo and Spicejet. Indian airlines international freight flow from India is about 0.14 million tonnes and 0.09 million tonnes of freight to India. In the case of foreign carriers, across Southeast Asia and other Asian countries, the share of freight carries to India is relatively higher than freight carried from India, whereas, foreign carriers from rest of the world has carried 65 per cent of freight from India and 50 per cent of freight carried to India in 2015.

Figure 22: Market Share of International Freight Flow of Domestic and Foreign Carrier from (2015)



Source: DGCA, MoCA

Trends in Airline-wise Passenger Flow between India and ASEAN

5.22 Table 28 presents the frequency of Air India flights between Indian cities and cities of major Asia-Pacific countries (see Map 2). It clearly shows that the frequency of Air India flights is mostly connecting Delhi to all cities of Asia-Pacific countries, except Dhaka, Kuala Lumpur and Male. Air India flights from Mumbai connect seven cities of the Asia-Pacific countries, namely, Bangkok, Hong Kong, Osaka, Seoul, Shanghai, Tokyo and Singapore. Air India has 5 to 7 flights per week between major India cities and cities of Asia-Pacific countries. Among the Indian cities, more passengers' flights are between Indian metro cities like Mumbai and Bangkok (7 flights per week), Delhi and Bangkok (7 flights per week); and Ahmedabad and Bangkok (7 flights per week). In the case between Colombo and Indian cities, the frequency of flights between Colombo and Delhi, and Colombo and Chennai are 7 flights per week in each sector. There are 7 flights from Dhaka to Kolkata, apart from which no other Indian metro cities have flights to Dhaka. Kuala Lumpur has only 4 flights flying per week from Chennai. Singapore has the maximum number of flights from Chennai, Delhi and Mumbai of 7 – 14 flights per week.

5.23 Table 29 shows the seating capacity (per week) of Air India flights between India and Asia-Pacific region. A flight between India and Singapore has the highest seating capacity with more than 100,000 seats per week making 70 flights per week. Next to it is the flight between India and Bangkok, India and Male, India and Seoul, India and Kathmandu, each having seat capacity in the range of about 33,000 to 43,000 per week. Air India has flights between India and Yangon, India and Hong Kong, India and Shanghai, and India and Colombo, each having seating capacity of about 15,000 to 25,000 per week. Air India flights constitute less than 13,000 seats per week to the cities like Osaka, Sydney, Melbourne, Kabul, Kuala Lumpur, and Dhaka, respectively.

Table 28: Frequency of Air India and Air India Express Flights between India and Asia-Pacific Countries

(Number of Flights per week as on 24 October 2015)

	Bangkok		Colombo		Dhaka		Hong Kong		Kabul		Kathmandu		Kuala Lumpur		Male		Melbourne		
	From	To	From	To	From	To	From	To	From	To	From	To	From	To	From	To	From	To	
Ahmedabad	To	7 ^a																	
	From																		
Bengaluru	To														7				
	From																		
Chennai	To		7													7			
	From			7									4		4				
Delhi	To	7	7																
	From			6				7	4	4	14	14					3		3
Gaya	To																		
	From																		
Kolkata	To					7													
	From												4						
Mumbai	To	7					7 ^b												
	From		7					7 ^b											
Trichirappalli	To																		
	From																		
Trivandrum	To																		
	From														7				7
Total		21	14	14	13	7	7	14	14	4	4	18	4	4	21	4	21	3	3

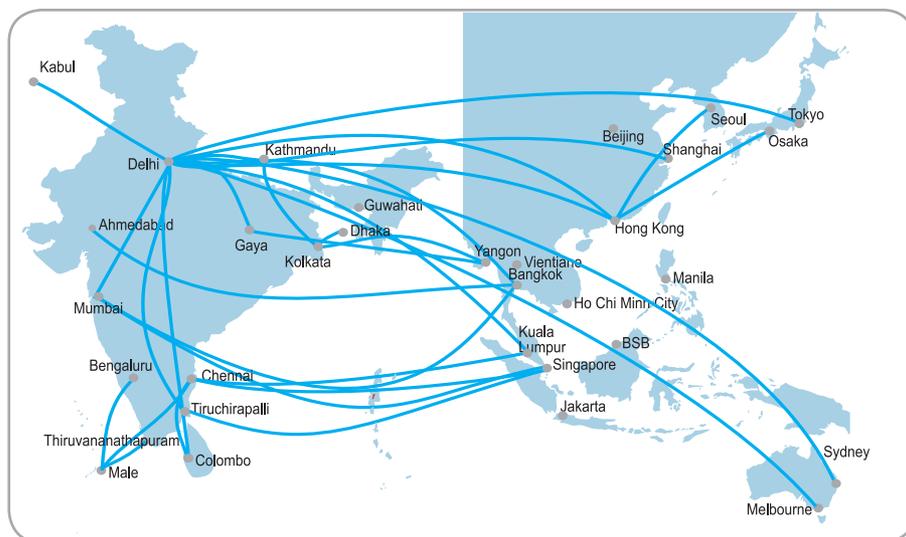
Table 28 Continued...

Table 28 Continued...

	Osaka		Seoul		Shanghai		Singapore		Sydney		Tokyo		Yangon		
	From	To	From	To	From	To	From	To	From	To	From	To	From	To	
Ahmedabad	To														
	From														
Bengaluru	To														
	From														
Chennai	To						14 ^e								
	From							14 ^e							
Delhi	To	3 ^c	4 ^c	4 ^c	5	5	7	7	4	4	4	4	1 ^f	1 ^f	
	From	3 ^c													
Gaya	To												3		
	From													2	
Kolkata	To												3		
	From													3 ^f	
Mumbai	To	3 ^d	4 ^d	4 ^d	5 ^b	5 ^b	7	7							
	From	3 ^d													
Trichirappalli	To						7	7							
	From														
Trivandrum	To														
	From														
Total		6	6	8	8	10	10	35	35	4	4	4	4	7	6

Note: a. Via Mumbai b. Via Delhi c. Via Hong Kong d. Via Delhi - Hong Kong e. Via Tiruchirappalli f. Via Gaya
 Source: Calculated based on www.dgca.nic.in

Map 2: Airlinks of Air India and Air India Express Flights between India and Asia-Pacific Countries



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes.

Source: AIC at RIS.

Table 29: Total Seat Capacity of Air India Flights between India and Asia-Pacific Countries (as on 24 October 2015)

(Number)

Sl. No.	Air India Flights between India and Asia-Pacific countries	Flights Frequency per week	Average Seat per Fleet	Total Seats per week
1	Singapore	70	230	128660
2	Bangkok	35	249	43505
3	Male	42	155	39060
4	Kathmandu	36	233	33480
5	Hong Kong	28	225	25228
6	Shanghai	20	256	20480
7	Colombo	27	182	19656
8	Yangon	13	199	15548
9	Seoul	16	225	14416
10	Osaka	12	225	10812
11	Sydney	8	256	4096
12	Tokyo	8	256	4096
13	Dhaka	14	133	3724
14	Melbourne	6	256	3072
15	Kuala Lumpur	8	186	2976
16	Kabul	8	182	2912

Source: Calculated based on www.dgca.nic.in

Table 30: Air India-Code Share Partners

(Number)

Sl. No.	Airline	Origin	Destination	Flight Frequency per week	Seat/Fleet	Total Seat per week
1	Singapore Airlines	Bangkok	Singapore	7	318	2226
2	Singapore Airlines	Kolkata	Singapore	4	292	1168
3	Singapore Airlines	Kuala Lumpur	Singapore	5	292	1460
4	Singapore Airlines	Los Angeles	Singapore	7	853	5971
5	Singapore Airlines	San Francisco	Singapore	14	303	4242
6	Singapore Airlines	Singapore	Bangkok	7	292	2044
7	Singapore Airlines	Singapore	Kolkata	4	292	1168
8	Singapore Airlines	Singapore	Kuala Lumpur	5	292	1460
9	Singapore Airlines	Singapore	Los Angeles	7	853	5971
10	Singapore Airlines	Singapore	San Francisco	14	425	5950
11	Air Canada	Calgary	Tokyo	2	261	522
12	Air Canada	Halifax	London	4	261	1044
13	Air Canada	Hong Kong	Vancouver	7	425	2975
14	Air Canada	London	Calgary	6	256	1536
15	Air Canada	London	Halifax	4	261	1044
16	Air Canada	London	St. Johns	3	156	468
17	Air Canada	London	Toronto	14	275	3850
18	Air Canada	London	Vancouver	7	303	2121
19	Air Canada	Paris	Toronto	7	256	1792
20	Air Canada	St. Johns	London	3	156	468
21	Air Canada	Tokyo	Calgary	2	261	522
22	Air Canada	Tokyo	Vancouver	4	256	1024
23	Air Canada	Toronto	London	14	275	3850
24	Air Canada	Toronto	Paris	7	256	1792
25	Air Canada	Vancouver	Hong Kong	7	425	2975
26	Air Canada	Vancouver	London	7	303	2121
27	Air Canada	Vancouver	Tokyo	4	256	1024
28	Asiana Air	Delhi	Seoul	3	292	876
29	Asiana Air	Seoul	Delhi	3	292	876

Source: Calculated based on Air India (2015).

5.24 Table 30 presents the list of routes for which Air India has code share partners⁶ along with the frequency of flights per week and total seating capacity per week. It shows that Air India has code share with Singapore Airlines to cover the two-way routes, especially between Singapore and various destinations such as Bangkok, Kuala Lumpur, Kolkata, San Francisco and Los Angeles, respectively. Most of the destinations have 7

flights per week, except the route between Singapore and San Francisco, which is having 14 flights per week. Next to it is Air India, which has code share arrangement with Air Canada to cover the two-way routes in various destinations of the Asia-Pacific countries such as Tokyo, Singapore and Kuala Lumpur and two of European cities such as London and Paris, and various destinations in Canada such as Vancouver, Toronto, St. Johns, Halifax and Calgary. Between London and Toronto, it has 14 flights per week, whereas rest of the routes has mostly 7 flights per week. Air India has code share arrangement with Asiana Air, which connects Seoul and Delhi with 3 flights per week.

- 5.25 Table 31 presents airlines having direct flight between ASEAN and Indian cities. Among 10 ASEAN countries, the direct flight services are available from Singapore, Bangkok, Kuala Lumpur and Malaysia to all the metro cities in India and some Tier I and Tier II cities in India and vice versa. In the case of flights between Thailand and Indian cities, more passengers flights are between Bangkok and Indian metro cities such as Mumbai and Bangkok (35 flights per week), Delhi and Bangkok (31 flights per week), Kolkata and Bangkok (28 flights per week). Between Bangkok and other Indian metro cities like Chennai, Bengaluru and Hyderabad, each route has less than 15 flights per week. With respect to Tier I and Tier II cities, there is a direct flight between Bangkok and Gaya and Ahmedabad, 7 flights per week from Ahmedabad and 5 from Gaya.
- 5.26 In the case of flights between Malaysia and Indian cities, more flights are between Kuala Lumpur and metro cities of India, except Kolkata. Tier I and Tier II cities are relatively well connected with Kuala Lumpur. The frequency of flights between Kuala Lumpur and Indian metro cities like Delhi, Mumbai and Chennai are in the range of 16 to 32 flights per week, followed by 14-16 flights per week between Kuala Lumpur and Bengaluru and Kuala Lumpur and Hyderabad, respectively. In case of Tier I cities, 37 flights per week connect Trichirappalli and Kuala Lumpur, followed by 21 flights per week between Kochi and Kuala Lumpur, 6 flights per week between Vishakhapatnam and Kuala Lumpur and 4 flights per week between Thiruvananthapuram and Kuala Lumpur.
- 5.27 Flights between Singapore and Indian metro cities and Tier I cities have higher frequencies, compared to the flights between other ASEAN cities like Bangkok and Kuala Lumpur and Indian cities like Delhi. For instance, the highest frequency of flights is between Singapore and Chennai (49 flights per week; followed by Mumbai – 38 flights per week, Delhi – 28 flights per week and Bengaluru – 18 flights per week. Kolkata has 11 flights per week with Singapore and Hyderabad has 15 flights per week. In case of Tier I cities, flights between Singapore and Tier I cities in India mostly

cover southern part of India, especially, Kochi – 13 flights; Coimbatore – 4 flights; Tiruchirappalli – 20 flights; Thiruvananthapuram – 4 flights; Amritsar – 3 flights; Jaipur – 3 flights; and Vishakhapatnam – 3 flights per week, respectively.

Table 31: Indian and ASEAN Airlines Offering Direct Flights between ASEAN and Indian Cities#

(Flights per week)

	Flights from ASEAN Cities			
	Bangkok, Thailand	Kuala Lumpur, Malaysia	Singapore	Yangon, Myanmar
Metro Airports				
Delhi	31	21	28	1
Mumbai	35	21	38	
Bengaluru	12	16	18	
Chennai	12	32	49 ^s	
Kolkata	28	7	11	5
Hyderabad	5	14	15	
Tier I/Tier II				
Ahmedabad	7		4	
Kochi		21	13	
Coimbatore			4	
Trichirappalli		37	20	
Thiruvananthapuram		4	4	
Varanasi	4			
Vishakhapatnam		6	3	
Gaya	5			7
Amritsar		3	3 ^s	
Lucknow			3	
Goa		3		
Jaipur			3 ^s	
Flights to ASEAN Cities				
Metro Airports				
Delhi	31	21	28	1
Mumbai	35	21	38	
Bengaluru	12	16	18	
Chennai	12	32	49 ^s	
Kolkata	28	7	11	5
Hyderabad	5	14	15	

Table 31 continued...

Table 31 continued...

Tier I/Tier II				
Ahmedabad	7		4	
Kochi		21	13	
Coimbatore			4	
Trichirappalli		37	20	
Thiruvananthapuram		4	4	
Varanasi	4			
Vishakhapatnam		6	3	
Gaya	5			7
Amritsar		3	3 ^s	
Lucknow			3	
Goa		3		
Jaipur			3 ^s	

Notes: # As on January 2016; Indian airlines include Air India, Jet Airways, Spice Jet, and IndiGo and ASEAN airlines include Singapore Airline, Malaysian Airlines, Thai Airways, Myanmar Airways International, Bangkok Airlines, Silk Air, Tiger, Air Asia Berhad, Thai Air Asia and Milando Airways. \$ – flight includes Scoot, a Subsidiary of Singapore Airlines that would operate from 24 May 2016 onwards.

Source: Calculated based on www.dgca.nic.in

5.28 Flights between Myanmar and India cover Kolkata (5 flights per week), and Gaya (7 flights per week), respectively. Finally, flights between Bangkok, Kuala Lumpur and Singapore and Indian metro cities have reasonably higher frequencies, compared to Tier I cities.

5.29 Tier I cities in southern India are relatively better connected with Singapore and Kuala Lumpur.

5.30 Table 32 presents that Indian airlines-wise flights between ASEAN and Indian cities [see Map 3(a) to 3(e)]. Air India has flights between most of the metro cities in India and ASEAN cities like Singapore, Malaysia, Kuala Lumpur and Yangon. Air India has 7 flights per week each between Delhi, Mumbai, Chennai, Trichirappalli and ASEAN cities like Singapore and Bangkok. In the case of Jet Airways, it has 14 flights per week between Mumbai and Singapore, and Bangkok, followed by 7 flights per week between Indian metro cities like Delhi, Mumbai and Chennai and ASEAN cities Singapore, Bangkok and Kuala Lumpur. Spice Jet covers a single route between Kolkata and Bangkok with 7 flights per week. In case of IndiGo Airlines, it has 14 flights per week between Kolkata and Bangkok; and 7 flights per week between Chennai and Singapore. However, Jet Airways, Spice Jet and IndiGo have no direct flight between Tier I/ II and ASEAN cities.

Table 32: Indian Airlines-wise Flights between ASEAN and India#

(Flights per week)

Metro Cities	Air India	Jet Airways	Spice Jet	IndiGo	Total
Delhi → Singapore	7	7			14
Singapore → Delhi	7	7			14
Delhi → Bangkok	7	7			14
Bangkok → Delhi	7	7			14
Delhi → Ho Chi Minh		7			7
Ho Chi Minh → Delhi		7			7
Mumbai → Singapore	7	14			21
Singapore → Mumbai	7	14			21
Mumbai → Bangkok	7	14			21
Bangkok → Mumbai	7	14			21
Kolkata → Singapore	4				4
Singapore → Kolkata	4				4
Kolkata → Bangkok			7	14	21
Bangkok → Kolkata			7	14	21
Kolkata → Yangon	5				5
Yangon → Kolkata	5				5
Delhi → Yangon	1				1
Yangon → Delhi	1				1
Chennai → Singapore	7	7		7	21
Singapore → Chennai	7	7		7	21
Chennai → Kuala Lumpur	4				4
Kuala Lumpur → Chennai	4				4
Tier I/Tier II Cities					
Trichirappalli → Singapore	7				7
Singapore → Trichirappalli	7				7
Gaya → Yangon	3				3
Yangon → Gaya	3				3
Bangkok → Ahmedabad	7				7
Ahmedabad → Bangkok	7				7

Note: # As on January 2016.**Source:** Calculated based on DGCA.

Map 3(a): Air Links of All Indian Airlines Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 3(b): Air Links of Air India Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 3(c): Air Links of Jet Airways Direct Flights between India and Asia Pacific Countries



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 3(d): Air Links of Spice Jet Direct Flights between India and Asia Pacific Countries



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 3(e): Air Links of IndiGo Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

5.31 Table 33(a) and Table 33(b) show that from the ASEAN countries, 8 airlines are having direct flight to Indian cities (see Maps 4(a) to 4(k)). Singapore Airlines covers 5 Indian metro cities like Delhi, Mumbai, Kolkata, Chennai and Bengaluru in the range of 3 to 17 flights per week of round trip to Singapore. In case of Tier I/II cities, it covers only one city – Hyderabad (4 flights per week). Myanmar Airways International has one direct flight between Gaya and Yangon (4 flights per week). Similarly, Bangkok Airways has one direct flight between Mumbai and Bangkok with frequency of 7 flights per week. Malaysia Airlines covers all metro cities in India except Kolkata in the range of 7 to 14 flights per week of round trip to Kuala Lumpur. It has no direct flights with Tier I and Tier II cities. Thai Airways has direct flights between all metro cities in India and Bangkok, and is having highest frequency of flight between Delhi and Bangkok (17 flights per week); and the rest of metro cities are in the range of 5 to 12 flights per week. With respect to Tier I/II cities, Thai Airways has one direct flight between Gaya and Bangkok with frequency of 5 flights per week. Malindo Airways of Malaysia has seven direct flights in India including metro cities like Delhi and Mumbai and Tier I/II cities like Kochi, Tiruchirappalli, Visakapatnam, Trivandrum and Amritsar in the range of 3 to 16 flights per week of round trip to Kuala Lumpur. Air Asia has direct flights to 4 metro cities, namely, Kolkata, Chennai, Bengaluru and Hyderabad, and flight frequency ranges

from 4 to 14 in these cities. Kochi and Kuala Lumpur show very high frequency of flights among the Tier I/II cities, with a frequency from 14 to 21 flights. Two more Tier I/II cities are having Air Asia flight, namely, Goa and Vishakapatnam with frequency of 3 flights per week. Tiger Airways has six direct flights including two Tier I/II cities between Singapore and cities like Chennai, Bengaluru, Hyderabad, Kochi, Trichirappalli and Lucknow in the range of 3 to 13 flights per week. Silk Air has four direct flights between Singapore and Indian metro cities like Kolkata, Chennai, Bengaluru and Hyderabad in the range of 3 to 9 flights per week. It also has direct flights to almost 4 Tier I/II cities in India with Singapore and Kuala Lumpur in the range of 3 to 9 flights per week. Besides, Singapore-based carrier Scoot, the long-haul, low-cost, wholly-owned subsidiary of Singapore Airlines, would operate 7 flights per week between Chennai and Singapore and three flights per week between Amritsar and Singapore and between Jaipur and Singapore from May 2016 onwards. Therefore, the airlines from Singapore are the largest foreign airline in India, including Singapore Airlines, Tigerair, Silk Air and Scoot, which covers almost 15 cities in India. This is next to Air India in terms of offering direct international flights out of Indian cities (see Table 28). What emerges is that compared to Indian airlines serving ASEAN, ASEAN airlines are having more direct flights in both metro and Tier I/II cities of India.

- 5.32 Table 34 shows the seat capacity utilisation ratio for Indian and ASEAN airlines. Column (1) depicts the total seats offered based on Bilateral Air Services Agreement (BASA) between India and ASEAN metro cities. Column (2) presents total airlines seat capacity per week, which is calculated based on type of aircraft flying to the respective destinations multiply by frequency of flight per week. For calculating seat capacity, we have selected the flights which have direct flight between ASEAN and major metro destinations. ASEAN cities include Singapore, Bangkok, and Kuala Lumpur and Indian metro cities include Delhi, Mumbai, Chennai, Kolkata, Bengaluru, Hyderabad and Cochin.
- 5.33 In case of utilisation rate of Indian airlines, there is only 3.8 per cent seat capacity utilisation between India and Kuala Lumpur, thus showing a poor utilisation compared to foreign airlines (89 percent) on the same route. However, 47 per cent utilisation rate between India and Bangkok and 43.5 per cent between India and Singapore are decent. On the other, in case of utilisation rate of ASEAN airlines, the seat capacity between India and Singapore has been highly utilised at 90 per cent level. The utilisation rate of seat capacity between India and Kuala Lumpur has been about 89 per cent, followed by India and Bangkok of 80 per cent. Table 34 clearly shows that the seat capacity utilisation is strongly in favour of ASEAN airlines in the range of 80 to 90 per cent.

Table 33(a): ASEAN Airlines-wise Flights between ASEAN and India: Metro Cities#

(Flights per week)

Metro Cities	Singapore Airlines	Bangkok Airways	Malaysia Airlines	Thai Airways	Malindo Air	Tigerair	Silk Air	Scoot\$	Air Asia	Total
Delhi → Singapore	14									14
Singapore → Delhi	14									14
Delhi → Bangkok				17						17
Bangkok → Delhi				17						17
Delhi → Kuala Lumpur			7		14					21
Kuala Lumpur → Delhi			7		14					21
Mumbai → Singapore	17									17
Singapore → Mumbai	17									17
Mumbai → Bangkok		7		7						14
Bangkok → Mumbai		7		7						14
Mumbai → Kuala Lumpur			14		7					21
Kuala Lumpur → Mumbai			14		7					21
Kolkata → Singapore	3						4			7
Singapore → Kolkata	3						4			7
Kolkata → Bangkok				7						7
Bangkok → Kolkata				7						7
Kolkata → Kuala Lumpur									7	7
Kuala Lumpur → Kolkata									7	7
Chennai → Singapore	7					11	3	7		28
Singapore → Chennai	7					11	3	7		28
Chennai → Bangkok				12						12
Bangkok → Chennai				12						12
Chennai → Kuala Lumpur			14						14	28
Kuala Lumpur → Chennai			14						14	28
Bengaluru → Singapore	7					7	4			18
Singapore → Bengaluru	7					7	4			18
Bengaluru → Bangkok				12						12
Bangkok → Bengaluru				12						12
Bengaluru → Kuala Lumpur			12						4	16
Kuala Lumpur → Bengaluru			12						4	16
Hyderabad → Singapore						6	9			15
Singapore → Hyderabad						6	9			15
Hyderabad → Bangkok				5						5
Bangkok → Hyderabad				5						5
Hyderabad → Kuala Lumpur			7						7	14
Kuala Lumpur → Hyderabad			7						7	14

Note: # As on January 2016 except Scoot, a subsidiary of Singapore Airlines. \$ - Air routes for Scoot would operate from May 2016 onwards.

Source: Calculated based on DGCA.

Table 33(b): ASEAN Airlines-wise Flights between ASEAN and India: Tier I/II Cities#

(Flights per week)

Tier I/Tier II Cities	Singapore Airlines	Myanmar Airways International	Bangkok Airways	Malaysia Airlines	Thai Airways	Malindo Air	Tigerair	Silk Air	Air Asia	Scot [§]	Total
Kochi → Kuala Lumpur						7			14		21
Kuala Lumpur → Kochi						7			14		21
Kochi → Singapore							4	9			13
Singapore → Kochi							4	9			13
Coimbatore → Singapore								4			4
Singapore → Coimbatore								4			4
Ahmedabad → Singapore	4										4
Singapore → Ahmedabad	4										4
Trichirappalli → Kuala Lumpur						16			21		37
Kuala Lumpur → Trichirappalli						16			21		37
Trichirappalli → Singapore							13				13
Singapore → Trichirappalli							13				13
Vishakhapatnam → Kuala Lumpur						3			3		6
Kuala Lumpur → Vishakhapatnam						3			3		6
Vishakhapatnam → Singapore								3			3
Singapore → Vishakhapatnam								3			3
Thiruvananthapuram → Kuala Lumpur						4					4
Kuala Lumpur → Thiruvananthapuram						4					4
Thiruvananthapuram → Singapore								4			4
Singapore → Thiruvananthapuram								4			4
Gaya → Yangon		4									4
Yangon → Gaya		4									4
Gaya → Bangkok					5						5
Bangkok → Gaya					5						5
Amritsar → Kuala Lumpur						3					3
Kuala Lumpur → Amritsar						3					3
Amritsar → Singapore											
Singapore → Amritsar											
Jaipur → Singapore											
Singapore → Jaipur											
Lucknow → Singapore							3				3
Singapore → Lucknow							3				3
Goa → Kuala Lumpur									3		3
Kuala Lumpur → Goa									3		3
Varanasi → Bangkok					4						4
Bangkok → Varanasi					4						4

Note: # As on January 2016 except Scoot, a subsidiary of Singapore Airlines. § – Air routes for Scoot would operate from May 2016 onwards.

Source: Calculated based on DGCA.

Map 4(a): Direct Airlines Routes between ASEAN and Indian Cities: ASEAN Airlines



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 4(b): Air Links of Singapore Airlines Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

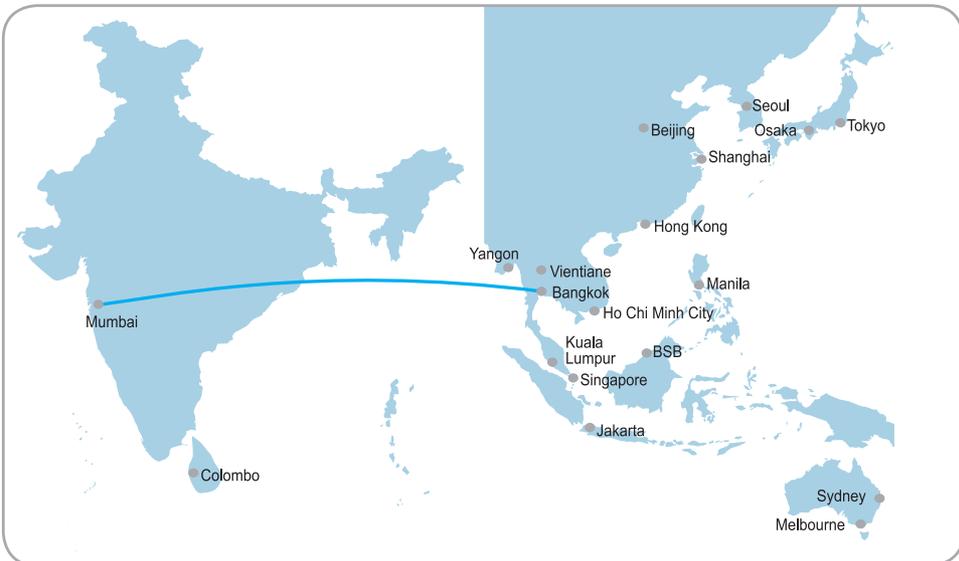
Map 4(c): Air Links of Myanmar Airways International Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 4(d): Air Links of Bangkok Airways Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 4(e): Air Links of Malaysia Airlines Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 4(f): Air Links of Thai Airways Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 4(g): Air Links of Malindo Air Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

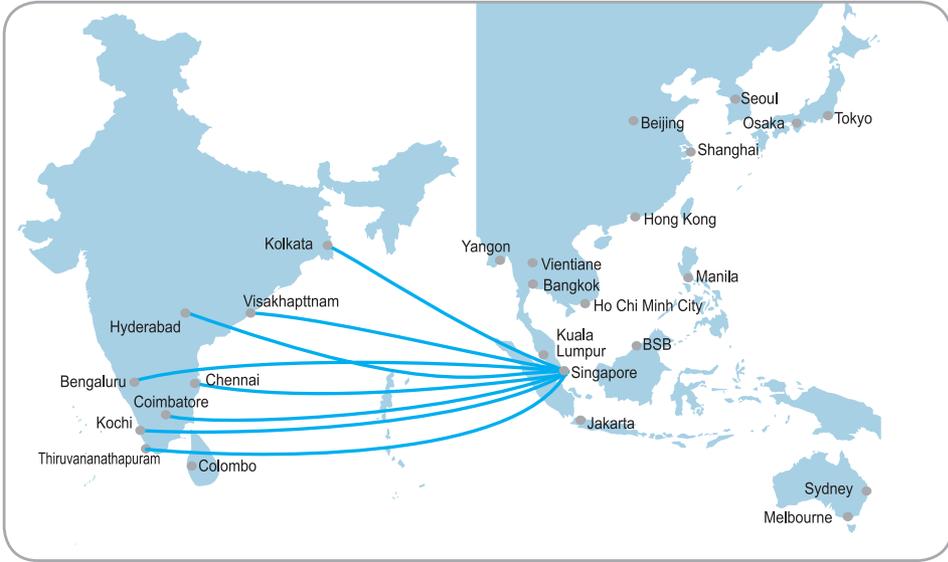
Map 4(h): Air Links of Tiger Air Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 4(i): Air Links of Silk Air Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Map 4(j): Air Links of Air Asia Direct Flights between ASEAN and Indian Cities



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: AIC at RIS.

Table 34: Seat Capacity Utilisation Rate for Indian and ASEAN Airlines[#]

Flight between Indian Cities and ASEAN Cities	Total Seats Offered based on BASA to Metro Airports (per week)	Total Airlines Seat Capacity (per week)	Utilisation Rate (%)
	(1)	(2)	(3) =(2)/(1)*100
Indian Airlines^s			
India & Singapore	59400	25834	43.49
India & Bangkok	47218	22232	47.08
India & Kuala Lumpur	41340	1440	3.48
ASEAN Airlines^{ss}			
India & Singapore	59400	53294	89.72
India & Bangkok	47218	37722	79.89
India & Kuala Lumpur	41340	36726	88.84

Note: # As on January 2016; \$ Indian Airlines include Air India, Jet Airways, Spice Jet, IndiGo and Air Asia; \$\$ ASEAN Airlines include Singapore Airline, Malaysian Airlines, Thai Airways, Myanmar Airways International, Bangkok Airlines, Silk Air, Tiger and Milando Airways.

Source: Calculated based on DGCA.

Table 35: Selected Types of Air Services Agreements

Type	Freedoms	Designation	Withholding/ownership	Tariffs	Capacity
B	3rd and 4th	Multi-designation	Substantive ownership and effective control	Double approval	Pre-determination
E	3rd,4th,5th	Multi-designation	Substantive ownership and effective control	Double approval	Pre-determination
I Incomplete ICAO coding	<i>If either:</i>		"n/a"	"n/a"	"other"

Note: The detailed table is given in Appendix 4.

Table 36: Air Liberalisation Indices of ASEAN and India BASAs

Number	Signatory 1	Signatory 2	Type	ALI Standard	ALI 5+	ALI O+	ALI D+
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	India	Singapore	E	13	18	11	15.5
2	India	Thailand	I	16	20.5	13.5	18
3	India	Malaysia	E	10	15.5	8.5	13
4	India	Philippines	E	13	18	11	15.5
5	India	Myanmar	E	10	15.5	8.5	13
6	Cambodia	India	B	4	3.5	3.5	7.5
7	Brunei Darussalam	India	E	10	15.5	8.5	13

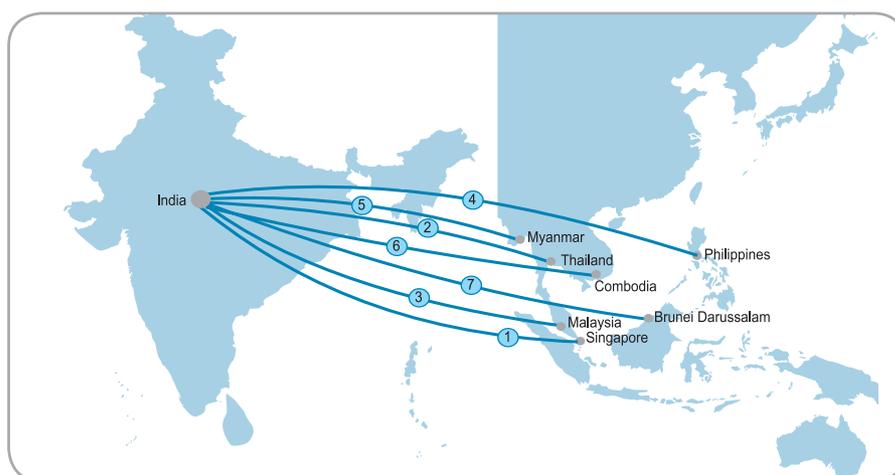
Note: ALI ranges from 0 to 50 with higher value implying more liberalised ASA between the two countries.

Source: <http://www.wto.org/asap/index.html>

GATS and Air Liberalisation between ASEAN and India: An Evaluation

5.34 To understand the air liberalisation performance, we refer the WTO's Air Liberalisation Index (ALI), which is a synthetic measure of the openness of a given ASA. It was devised by the WTO Secretariat in consultation with a panel of professionals, academics and air transport negotiators. It has been constructed by attributing weights to the different variants of the key market access features of Air Services Agreements, e.g. freedoms of the air, capacity, etc. (see Table 35 and Appendix 4 for detailed table). Table 36 presents the air liberalisation indices for ASEAN and India Bilateral Air Service Agreements, which is also illustrated in Map 5. Column (4) of the Table 36 shows the type of Bilateral ASA between ASEAN and India. All ASEAN countries except Cambodia, Lao PDR and Thailand have first to fifth freedom granted to India on a reciprocal basis, whereas Cambodia provides first to fourth freedom, while negotiations are still ongoing with Thailand and Lao PDR. Columns (5) to (8) show the different measures of Air Liberalisation Index between ASEAN and India. The value of the ALI ranges between zero, for very restrictive ASAs, and 50, for very open ones. Four weighting systems have been devised to accommodate different geographical and economic situations. In addition to the "standard" system, the other three variants each give comparably more weight to one market access feature, namely fifth freedom traffic rights (5th+), liberal withholding/ownership provisions (OWN+), multiple designation (DES+).⁷ It is evident that ASEAN-India Bilateral ASAs are restrictive for all the ASEAN countries. For instance, Thailand holds the highest value of 16 out of 50 for ALI standard, which is even not close to very open ones (i.e., 50). One reason of limited air connectivity between India-ASEAN can be attributed to this restrictiveness of Bilateral ASAs.

Map 5: ASA between ASEAN and India and Degree of Air Service Liberalisation



Note: This is not correct political map of any country or a region. Maps have been drawn for pictorial illustration of air routes. The line connecting dots are routes of direct flights.

Source: Drawn based on <http://www.wto.org/asap/index.html>

Endnotes

- ¹ Refer, for example, Directorate of Industrial Policy and Promotion (DIPP, 2015).
- ² DGCA carries forecasting of air traffic for the following reasons: (i) airlines have to plan their commercial strategies, suppliers of hardware, such as airframe, (ii) aero engine manufacturers need to plan investment and production schedules, (iii) those responsible for stationary hardware such as airports and air traffic control need to develop their capacity, (iv) surface land-use/transport planners need to construct roads and railroads to service airports, and (v) development of human resources by establishing education and training activities to cater to the needs of the industry. Government policymakers need forecasts to allow for the development of overall institutional and regulatory structures. Besides, air traffic forecast is required to undertake crucial decisions like up-gradation of the existing terminals, building of new terminals, development of green field airports, installation/replacement of terminal and CNS/ATS equipment, fleet expansion and man power planning, etc.
- ³ DGCA has used log-linear regression model to forecast passenger growth, cargo traffic and aircraft movements for both domestic and international traffic for the period 2011-12 to 2031-32. It has considered domestic GDP as the explanatory variable for forecasting domestic passenger growth and world GDP has the explanatory variable for forecasting international passenger traffic to and from India. Similar is the case of forecasting domestic and international freight traffic. For the purpose of forecast, DGCA has assumed the Indian GDP growth rate to range from 8.5 per cent in the near term to 6 per cent in the long term on an average as the expected scenario in the period 2011-12 to 2031-32. Similarly, DGCA has assumed the international GDP growth rate in the range from 3.25 per cent in the near term and 3 per cent in the long term as the likely scenario keeping in line with the IMF expected GDP growth rates.
- ⁴ A bilateral air service agreement is concluded between two contracting countries and liberalises commercial civil aviation services between those countries. The bilateral air services agreements allow the designated airlines of those countries to operate commercial flight that covers the transport of passengers and cargoes between that two countries. Also they normally regulate frequency and capacity of air services between countries, pricing and other commercial aspects. The Chicago Convention determined that no scheduled international air service may be operated over or into the territory of a contracting state without their permission. Over the following years, ICAO developed a series of traffic rights, known as Freedoms of the Air. These freedoms continue to form the basis of rights exchanged in air services negotiations today (Refer, for example, Department of Infrastructure and Transport, Australian Government, 2009).
- ⁵ These 18 points are Patna, Lucknow, Guwahati, Gaya, Varanasi, Bhubaneswar, Khajuraho, Aurangabad, Goa, Jaipur, Port Blair, Cochin, Thiruvananthapuram, Calicut, Amritsar, Visakhapatnam, Ahmedabad, Tiruchirapalli.
- ⁶ A code share flight is a flight that is marketed by one carrier and operated by another. Code share flights come about as a result of agreements between airlines to sell seats on each others' flights in order to provide passengers with a wider choice of destinations. The ticket would be booked on the flight number of the airline that you have booked your travel, however it may be operated by another carrier (Air India Website).
- ⁷ Refer Appendix 4 for details of the weights attributed to each ALI variant.

6

Airport Infrastructure, Performances and Challenges

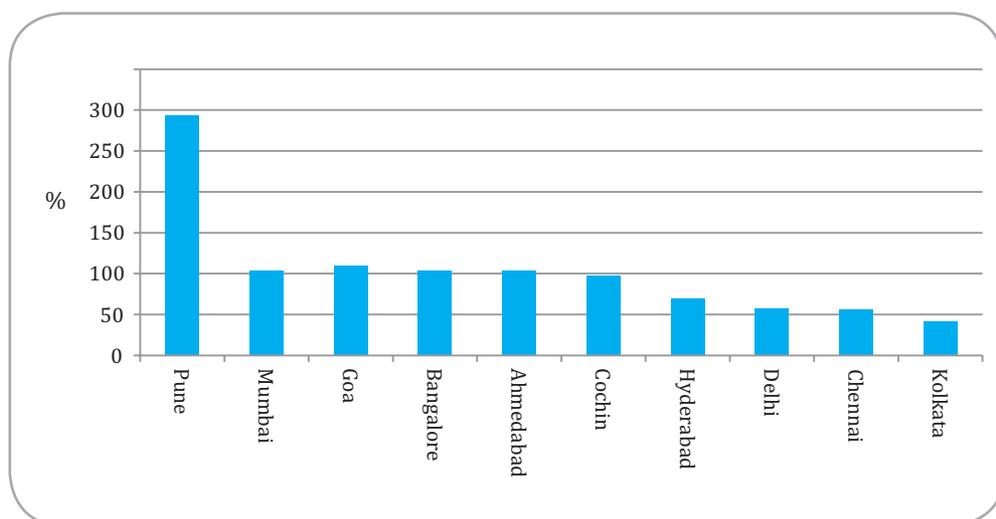
6.1 Airport is the gateway of a country or a region. The quality of airport infrastructure is an important component of the overall transportation network and contributes directly to a country's international competitiveness. Almost 35 per cent of the total value of exports is carried as air cargo, which weights less than one per cent of the total cargo exported.¹ Better cargo handling facilities promote trade, especially capital goods and high-value items. Besides, almost 92 per cent of the country's foreign tourists arrive by air and tourism significantly contributes to foreign exchange reserve.² Modern airports are symbol of economic progress. Realising its importance in the development and growth, the Government of India has allocated a total amount of US\$ 14 billion for airport development for the 12th Five Year Plan (2012-17). The Airport Authority of India (AAI) has set a target of developing 250 operational metro airports by 2020, where US\$ 81 billion has been allocated for upgrading non-metro airports. For encouraging greenfield airport development, 100 per cent FDI has been allowed. Besides, to facilitate air linkages, the Government of India has been continuously extending 'E-Visa' to overcome the infrastructure and security hurdles (see Appendix 5).

Capacity at Indian Airports

6.2 There are 15 major airports in India, namely, Delhi, Mumbai, Chennai, Bengaluru, Kolkata, Hyderabad, Cochin, Ahmedabad, Goa, Trivandrum, Guwahati, Jaipur, Calicut, Lucknow and Pune. Major airports are those airports which have or are designed to have annual passenger throughput in excess of one and a half million or any other airport as the Central Government notified as such. Some of them located in metropolitan cities

are referred to as metro airports, namely, Delhi, Mumbai, Hyderabad, Bengaluru, Chennai and Kolkata. These six airports have the capacity to handle 78.6 per cent of the total passenger traffic handling capacity created in the country. Out of these, Delhi, Mumbai, Hyderabad and Bengaluru are Joint Ventures (JV) airports, whereas Chennai and Kolkata are AAI airports (Figure 23). The total capacity of all these six metro airports was about 160 million passengers in 2012-13. Delhi has the highest capacity to handle passengers amounting to about 60 million passengers per annum, followed by Mumbai, Kolkata, Chennai, Hyderabad and Bengaluru in that order. The passenger handling capacity at all the 15 major airports taken together was about 200 million passengers in 2012-13, which was approximately 90 per cent of the total capacity to handle passengers at all Indian airports. Total capacity to handle passengers at all Indian airports stood at 233 million passengers in 2012-13 (Table 37). In the year 2014-15, India civil aviation sector has achieved remarkable milestones and received several awards from leading global agencies for the best performance (see Box 4). Indian airlines are raising capacity massively to capture market share. For instance, IndiGo has placed firm order for 250 Airbus A320 neo plans, and it has also purchased rights for 100 more airplanes. Low-fare airline GoAir has ordered 72 A320 neo planes. New airlines such as Vistara and Air Asia India are also adding more fleet to boost capacity, while other airlines such as Air India, Spice Jet Airways are expanding at a moderate pace.³

Figure 23: Metro Airport Capacity in Terms of Passenger Throughput, 2012-13



Source: Air Traffic Statistics for 2012-13, Airports Authority of India.

Box 4: Achievements of Indian Civil Aviation in 2014-15

Restoration of Category 1 status in Aviation safety by Federal Aviation Authority (FAA)

Awarded by Global Agency, Airports Council International (ACI)

- Delhi – Best Airport in the world in 25-40 million category
- Mumbai – 5th Best Airport in the world 25-40 million category
- Hyderabad – 3rd best in the world in 5 – 15 million category.

Air Navigation Service (ANS) of AAI – Golden Peacock Award for best Airspace Service

Two new Airlines started operations during June – December 2014: Air Asia; Air Vistara

Passenger Movement – Increased from 169 million in 2013-14 to 188.67 million in 2014-15 a growth of 11.8 per cent, highest since 2009. (Average annual growth during 2009-14 was 7 per cent).

Cargo Movement – risen from 2.28 million tonnes in 2013-14 to 2.54 million tonnes a growth of 11.6 per cent, highest since 2009. (Average annual growth during 2009-14 was 3 per cent).

Source: NITI Ayog, Government of India.

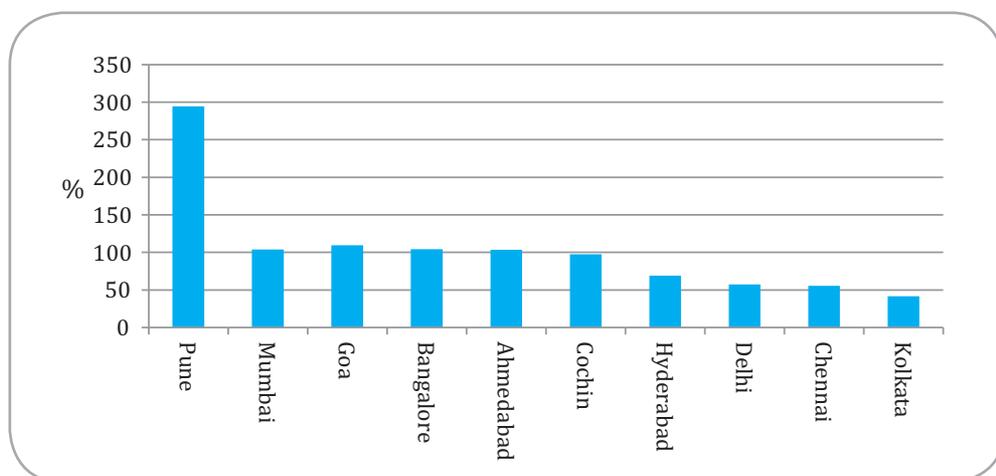
Terminal Capacity Utilisation at Metro Airports

6.3 Figure 24 shows the terminal capacity utilisation.⁴ Delhi airport capacity utilisation has been approximately 50 per cent, indicating that the additional capacity at Terminal 3, whose operations commenced in 2010-11, is yet to be fully utilised. The capacity utilisation at Chennai and Hyderabad airports is above 50 per cent as the passenger traffic is high and additional capacity for handling passengers is at various stages of deployment or planning. However, capacity utilisation at Mumbai and Bengaluru airports are 100 per cent and 101 per cent, respectively, indicating the existing capacity is under tremendous stress and the passenger traffic to be handled is much beyond their capacity. In order to address the difficulties that passenger face at the airports, Airports Authority of India (AAI) has been making efforts to improve the operational efficiency and customer service at 10 major airports. The identified airports are Chennai, Kolkata, Goa, Pune, Trivandrum, Calicut, Lucknow, Guwahati, Srinagar and Bhubaneswar. Together these airports handled 48 million passengers in 2015, with Chennai and Kolkata airports accounting for half of total traffic. Some of the key issues that will be addressed include queuing time at check-in points, baggage transfer time, easy access to passengers through navigation and signboards, availability of cheap parking space and adequate seating area at the airports, smooth movement of arriving, departing and transit passengers by making necessary changes including providing additional infrastructure facilities.⁵

6.4 Also, the terminal capacity utilisation for all metro airports stood at 62.5 per cent in 2012-13 and for all Indian airports at 70.4 per cent, reflecting

that there is still potential for passenger traffic growth at the non-metro airports for effective capacity utilisation. Table 37 presents a list of all major airport terminal capacity, passenger traffic handled and capacity utilisation for the year 2012-13.

Figure 24: Terminal Capacity Utilisation of Major Airports in India, 2012-13



Source: Air Traffic Statistics for 2012-13, Airports Authority of India..

Table 37: Annual Terminal Capacity and Passenger Throughput at Major Airports, 2012-13

Sl. No.	Major Airports	Capacity (million)	Passenger Traffic handled (million)	Capacity Utilisation (%)
1	Mumbai	29.07	30.21	103.91
2	Delhi	60.00	34.37	57.28
3	Chennai	23.00	12.78	55.55
4	Bengaluru	11.50	11.99	104.29
5	Kolkata	24.10	10.07	41.78
6	Hyderabad	12.00	8.30	69.17
7	Cochin	5.00	4.88	97.62
8	Ahmedabad	4.02	4.16	103.55
9	Goa	3.23	3.54	109.68
10	Pune	1.12	3.29	294.19

Source: Calculated based on Airports Authority of India (Air Traffic Statistics for 2012-13, available at http://www.aai.aero/traffic_news/traffic_news_2013.jsp).

Table 38: Tier-wise List of Indian Airports

Sl. No.	Metro Airports	Tier I	Tier II	Tier III
1	Delhi	Ahmedabad	Agartala	Agatti
2	Mumbai	Amritsar	Agra	Aizawl
3	Bengaluru	Aurangabad	Allahabad	Belgaum
4	Chennai	Bhopal	Bagdogra	Cooch Behar
5	Kolkata	Bhubaneswar	Bhavnagar	Dehradun
6	Hyderabad	Calicut	Bhuj	Dibrugarh
7		Chandigarh	Gaya	Dimapur
8		Coimbatore	Gorakhpur	Gaggal
9		Goa	Gwalior	Hubli
10		Guwahati	Imphal	Jabalpur
11		Indore	Jammu	Jaisalmer
12		Jaipur	Jamnagar	Jamshedpur
13		Kochi	Jodhpur	Jorhat
14		Lucknow	Kanpur	Kandla
15		Madurai	Nanded	Khajuraho
16		Mangalore	Port Blair	Kullu
17		Nagpur	Raipur	Leh
18		Patna	Rajkot	Lilabari
19		Pune	Ranchi	Ludhiana
20		Srinagar	Shillong	Mysore
21		Thiruvananthapuram	Surat	Nasik
22		Tiruchirappalli	Udaipur	Pantnagar
23		Vadodara	Vijayawada	Pathankot
24		Varanasi	Visakhapatnam	Pondicherry
25				Porbandar
26				Rajahmundry
27				Salem
28				Shimla
29				Silchar
30				Tezpur
31				Tirupati
32				Tuticorin
33				Vijaynagar

Source: Author's compilation based on Airports Authority of India, New Delhi.

Non-Metro Airports

6.5 AAI used to own the responsibility of development, maintenance and ownership of airport facilities in the country for several years. With the opening up of the aviation sector for private participation, five airports are managed through PPP mode: Hyderabad, Bengaluru, Delhi, Mumbai, and Cochin. Currently, 60 per cent of air traffic is handled by airports under

PPP mode and the rest by AAI. Both AAI and JV airports play a vital role in the development of airport infrastructure. In terms of non-metro airports, AAI is in the process of upgradation and modernisation of 35 non-metro airports including Agra, Ahmedabad, Amritsar, Bhopal, Jaipur, Pune and Goa; of which, 28 airports have already been developed, while rest are likely to be completed soon. Non-metro airports are important from the point of enhancing regional connectivity and development of regional hubs. Some of the non-metro airports are major tourist destinations and business hubs as well. AAI has continued its unparalleled role in creating air connectivity across the nation, incurred an expenditure of around Rs.125 billion in the 11th Five Year Plan period. The list of Indian airports according to city tiers is given in Table 38 and also illustrated in Maps 6 to 9, respectively.

Map 6: Metro Airports of India



Note: This pictorial representation does not purport to be the political map of India.

Source: AIC at RIS.

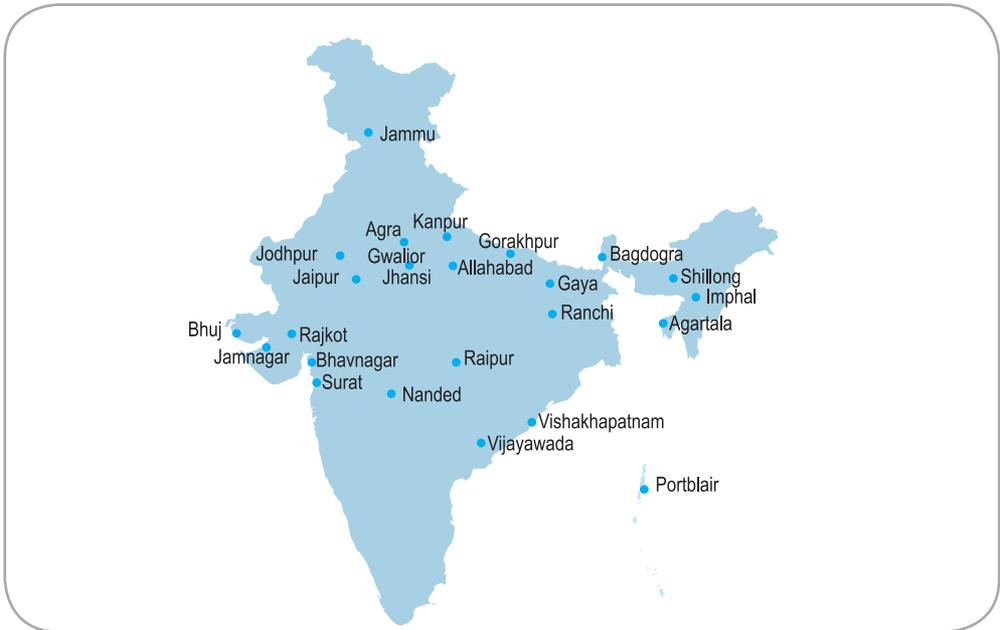
Map 7: Tier I Airports of India



Note: This pictorial representation does not purport to be the political map of India.

Source: AIC at RIS.

Map 8: Tier II Airports of India



Note: This pictorial representation does not purport to be the political map of India.

Source: AIC at RIS.

Map 9: Tier III Airports of India



Note: This pictorial representation does not purport to be the political map of India.

Source: AIC at RIS.

Greenfield Airports

6.6 The Government of India has granted in-principle approval for 15 greenfield airports, which are at various stages of development, while several others are under due consideration (Table 39). These airports are expected to improve connectivity with under-served and un-served parts of India. In order to enhance regional air connectivity in the Northeast India, AAI has almost completed the construction of a greenfield airport at Pakyong (Sikkim) at an estimated cost of Rs. 3.09 billion, while two other airports, namely, Cheithu (Nagaland) and Itanagar (Arunachal Pradesh) are under construction. The Government of India has granted site clearance for the construction of a large greenfield airport at Bhogapuram near Visakhapatnam, which would be showcased as the “Gateway to Southeast Asia”. Besides, the Government of India has given clearance to three other airports, of which two are at Kurnool and Nellore in Andhra Pradesh. The Civil Aviation Ministry has also given clearance for construction of another greenfield airport for international airport at Dholera in Gujarat, which is expected to reduce air traffic load at the existing Ahmedabad airport.⁶ The greenfield airports are mostly being set up through PPP route, wherein a Joint Venture is established between private promoters and state government promoted company or state government or AAI.

Table 39: State-wise List of Approved Greenfield Airports

Sl. No.	State	Airport
1.	Andhra Pradesh	Bhogapuram at Visakhapatnam, Kurnool, Nellore
2.	Maharashtra	Navi Mumbai Sindhudurg Shirdi
3.	Uttar Pradesh	Kushinagar
4.	Kerala	Kannur
5.	Karnataka	Bijapur Simoga Hassan Gulbarga
6.	West Bengal	Durgapur Aerotropolis
7.	Goa	Mopa
8.	Madhya Pradesh	Dabra
9.	Rajasthan	Paladi Ram Singhpur, Saras
10.	Puducherry	Karaikal
11.	Punjab	Ludhiana Aerotropolis

Source: Report of Working Group on Civil Aviation Sector, Ministry of Civil Aviation, Government of India, June 2012.

Cargo Handling

6.7 Given the importance of global and regional value chains, countries across the world are showing high importance to the demand for air cargo services. Faster movement of raw materials, components, parts and spares help firms in maintaining lower inventories and enhancing production efficacy. Besides, growth of passenger fleets provides ample belly space for cargo movement both in the domestic and international segment. Therefore, addressing the lacunae in the air cargo segment would enable us to facilitate production fragmentation and trade integration. The entry of leading private air cargo companies has brought in a wave of increasing automation, mechanisation and process improvement initiatives at major air cargo terminals in the country. Such investments in air cargo handling at key airports such as Delhi, Mumbai, Bengaluru, Hyderabad, etc., are expected to yield higher air cargo throughput and improved service levels. The current share of air cargo compared to other modes of cargo transportation is fairly low in India. The potential for air cargo growth in India can be gauged from the fact that some of the global airports such as Hong Kong, Dubai and Incheon (Seoul) handle more cargo volume than all Indian airports put together.

Table 40: Transshipment Volumes at Global Airports in 2012

Airport	Cargo Handled (mmtpa)	Transshipment Cargo (mmtpa)
Hong Kong	4.06	1.5
Incheon	2.45	1.2
Singapore	1.89	0.8
India	2.19	-

Note: mmtpa – Million Metric Tonne Per Annum.

Source: AAI, Airport Council International Database, KPMG Analysis.

- 6.8 Another important issue in Indian airports is the negligence of transshipment. There is no dedicated transshipment infrastructure at Indian airports like Hong Kong, Incheon, Singapore, etc. While Hong Kong, Incheon and Singapore handle one third of total cargo as transshipment, India, on the other, is yet to handle transshipment cargo (Table 40). Conservative estimates by KPMG indicate that the Indian subcontinent alone can offer transshipment opportunity of 80,000-100,000 MT per annum.⁷
- 6.9 Reduction in dwell time and faster clearance of cargo are extremely critical for India. For large Indian airports, cargo dwell time takes from 2 to 5 days as compared to an average of 4 to 12 hours at leading global airports (see Table 41). The present operating parameters (daily throughput, dwell times) at most air cargo terminals of the country are far from international best practices.

Table 41: Global Benchmarks of Dwell Time vis-à-vis Indian Airports, 2012

Airport	Dwell Time-Exports (Hours)	Dwell Time-Imports (Hours)
Sharjah	4	4 to 8
Singapore	6	3 to 6
Frankfurt	6	NA
Incheon	2 to 3	2 to 7.5
Dubai	2 to 3	2 to 6
Hong Kong	3 to 6	4 to 8
Delhi	36	119
Mumbai	48	96
Chennai	48	72
Hyderabad	12	36
Kolkata	48	72
Bengaluru	36	48

Note: Includes 72 hours free period both on Exports and Imports.

Source: Airport websites, industry research, Table extracted from Air Cargo Logistics in India Working Group Report, Ministry of Civil Aviation (May 2012).

Table 42: Operating Hours of Cargo Terminals at International Airports

Airport	Cargo Handled (mmtpa)	Operating Hours
Delhi	0.60	1 shift
Mumbai	0.67	1 shift
Hong Kong	4.6	24X7
Dubai	3.0	24X7
Incheon	2.7	24X7
Shanghai Pudong	2.6	24X7
CDG, Paris	2.0	2 Shifts
Changi, Singapore	1.7	24X7
Schiphol, Amsterdam	1.6	2 Shifts
Suvarnabhumi, Bangkok	1.3	24X7

Source: Websites of Airports, AAI, KPMG analysis.

6.10 Limited working hours of concerned agencies at the cargo terminals is one of the key reasons for the delay in international cargo clearance. In many countries, cargo clearances follow 24x7 operation (see Table 42). India needs to adopt similar procedure to handle cargo movement to various destinations covering different time zones. Given the lengthy documentation and procedures of the Indian customs and other regulatory agencies, cargo operations should begin with at least two shifts of work at the air cargo complexes/express terminals of all international airports to ease congestion and to reduce delays in clearance. This would require close and regular interaction between the Ministry of Civil Aviation (MoCA), Central Board of Customs and Excise (CBEC) and the industry.

Investment Challenges and PPP Mode of Airport Development

6.11 Rapid growth in the air traffic since 2004 exerted pressure on the capacity at major airports in the country leading to congestion, delay and poor customer experience. Available airport infrastructure was grossly inadequate particularly in metro and major cities to cater to the upsurge in aircraft movement and passenger traffic. To meet the growing demand for airport services, both passenger handling and cargo carried, and provide world class infrastructure, a significant and continuous investment is required to be made in the civil aviation sector. Table 43 shows the progress of investment at different levels of infrastructure in airport sector. For instance, AAI has achieved 96 per cent of the proposed investment of Rs. 9.34 billion in 2014-15 and planned to invest Rs. 6.80 billion in 2015-16. Investment in airport sector is achieved more than targeted amount of Rs. 16.73 billion and raised the investment target to Rs. 19.30 billion for the year 2015-16. Similarly, the Government of India has chosen to develop

airports in 50 Tier II and Tier III cities and award OMD under public private partnership (PPP). Table 44 shows the priority projects that are targeted for the year 2015-16 for the completion of construction of new airport terminals, setting up world class maintenance and repair and overhaul (MRO) and proposed new airports at Tier II cities over Rs.1 billion.

Table 43: Airports: Progress of Parameters

(Rupees in Billion)

Sl. No.	Parameters	2014-15		Growth in 2014-15 over 2013-14	2015-16	
		Target	Achievement		Target	Achievements (April to June, 2015)
1	Investment by AAI	9.34	8.98 (96%)	(+) 58 %	6.80	1.02 (1.40 upto July 2015)
2	Total Investment in Airport Sector	16.39	16.73 (100%)	(-) 43 %	19.30	5.04 (6.04 upto July 2015)
3	Development of Airports in 50 Tier II and III Cities	Commencement of work in 5 cities	World commenced in Hubli, Belgaum, Kishanganrh, Tejpur, Jharsuguda	-	More airports to be chosen for 2015-16	
4	Award of OMD under PPP	4 Airport (Ahmedabad, Jaipur, Kolkata and Chennai)	RFQ issued but award progress not completed	-	To complete award in 4 Airports	AAI will study various models and issue RFP within 2015-16.

Source: NITI Ayog, Government of India.

6.12 Airport infrastructure is a capital intensive investment with significant risk attached to it. Therefore, private investment has been encouraged under the airport infrastructure policy. Various financial models were adopted for development of airport infrastructure including PPP and FDI routes. To bridge the gap between capacity available and demand, the Ministry of Civil Aviation's airport infrastructure policy recognises the need for private sector participation, operation and management of airports through induction of private capital and management skills. Unlike most of the airports, there is a revenue sharing model with which the Indian airports

under PPP model operate. PPP model involves significant flow of private loans from banks and financial institutions with promoters' equity. Brown-field airports like Delhi and Mumbai under the PPP model have a revenue sharing agreement with AAI, wherein 46 per cent and 38.7 per cent of their revenues respectively are shared. In mature markets, non-aeronautical revenue constitutes larger portion of the total revenue for the airport operators unlike the situation in India. For instance, Table 45 shows the on-going airports development project under PPP model. Total investment made by private airport operators in the last few years was to the tune of Rs. 300 billion, spread across greenfield development of Hyderabad and Bengaluru international airports and modernisation of Delhi and Mumbai international airports. A major achievement during the 11th Five Year Plan was the commissioning of Terminal 3 (T3) and associated infrastructure at the Delhi international airport in a record period of 37 months. In 2014, T3 had an annual throughput capacity of 34 million passengers.

Table 44: Priority: Tracking Critical Projects

Sl.No	Parameter	Targets for 2015-16
1	Completion of Construction of new airport terminals by AAI	Chandigarh with an investment of Rs. 5.00 billion – target date 31.5.2015 Khajuraho with an investment of Rs. 0.75 billion – target date 31.5.2015 Tirupati with an investment of Rs 1.74 billion – target date 31.7.2015 Vadodara with an investment of Rs. 1.16 billion – target date 31.12.2015
2	Airports in JVE Sector/JV	Durgapur International Airport, West Bengal – 31.05.2015 (Investment Rs. 10.00 Billion)
3	Setting up world class Maintenance Repair & Overhaul (MRO)	Air India and M/s Boeing at Nagpur – 30.07.2015 – (Investment Rs.64.20 billion)
4	New Projects over Rs. 1.00 billion by AAI (Tier II Cities)	Port Blair – New Integrated Terminal Building with an investment of Rs. 3.75 billion – target date 30.9.2018 Jharsugudha – airport development with an investment of Rs. 2.00 billion – target date 30.09.2018 Calicut – New arrival hall and strengthening of runway-with an investment of Rs. 1.55 billion – target date 31.12.2017 Vijaywada-Construction of terminal building – with an investment of Rs.1.05 billion – target date 31.12.2016.

Source: NITI Aayog, Government of India.

Table 45: Upcoming Airports in Private / State Sector

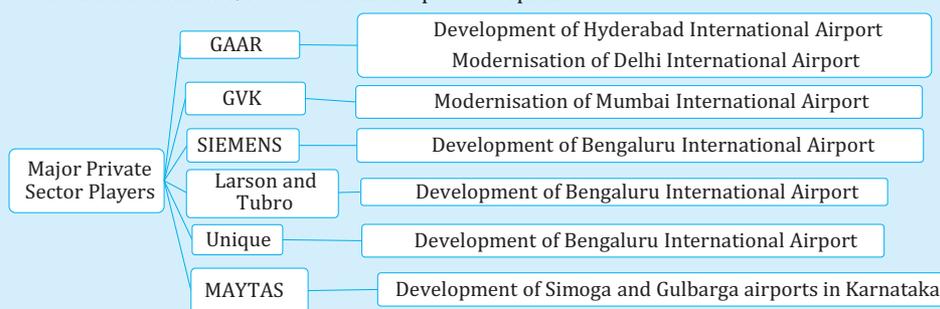
Sl. No.	Airport/Location and State	Investment (Rs. billion)	Likely date of completion
1	Shirdi, Maharashtra	3.50	31.06.2016
2	Sindhudurg Airport, Maharashtra	4.50	31.07.2017
3	Kannur International Airport, Kerala	18.92	31.08.2017
4	Navi Mumbai International Airport – Maharashtra	155.75	30.06.2019
5	Mopa Airport, Goa	30.00	31.12.2019

Source: NITI Aayog, Government of India.

6.13 The PPP model has also provided impetus to the need for overall improvement in the delivery mechanism of AAI in a competitive scenario from private operators (Box 5). The entry of leading private air cargo companies has brought in a wave of increasing automation, mechanisation and process improvement initiatives at major air cargo terminals in the country. Such investments in air cargo handling at key airports such as Delhi, Mumbai, Bengaluru, Hyderabad, etc., are expected to yield higher air cargo throughput and improved service levels.

Box 5: Public Private Partnership in Indian Airports

- AAI dominates, but private sector participation is rising
- Until recently, AAI was the only major player involved in developing and upgrading airports in India
- Post liberalisation, private sector participation in the sector has been increasing
- Private sector investment is expected to increase to US\$ 9.2 billion during the Twelfth Five Year Plan from US\$ 5.5 billion in the previous plan



Source: www.ibef.org

6.14 The infrastructure facilities provided in ASEAN cities like Singapore, Kuala Lumpur and Bangkok are performing better than major Indian airports (Table 46). In Indian case, compared to other metro airport,

the infrastructure facilities provided in Delhi and Mumbai are almost comparable to Jakarta and Bangkok.

Key Challenges Facing Indian Aviation Cargo Shipment

6.15 Some major infrastructural bottlenecks faced in the Indian aviation sector are cumbersome regulatory procedures, lack of skilled labour and slow rate of technology adaptation in supply chain management. Airports in India were primarily developed for passenger transportation, thus infrastructure for cargo shipment is grossly inadequate. Unlike passenger terminal, cargo storage space needs specialised infrastructure for perishable and non-perishable commodities. It also needs backend support like loading zone, road connectivity, storage handling capacity and warehousing facilities. Development of any modern warehousing facilities for handling air cargo is contingent due to the following factors:⁸

- Nature of cargo operations, e.g. mail;
- Nature of cargo mix (bulk or small);
- Adopting technology to reduce manual dependency for cargo handling;
- Gross cargo volume and peak time cargo volume;
- Simplification of Customs procedure; and
- Cargo storage period.

Inadequate Cargo Handling Infrastructure at Gateway Airports

6.16 Major gaps in air cargo infrastructure at gateway airports include small cargo loading zone, old equipment and lack of specialised warehouse to handle and store hazardous and specialised cargo. Table 47 compares India's position in air cargo handling with global best practices.

Procedural Hurdles in Regulatory System

6.17 Simple, transparent and swift regulatory procedure is crucial for air cargo movement. Key regulatory agencies shall coordinate to minimise time and hassle in air cargo handling. This includes Customs Administration, Airport Authorities, Bureau of Civil Aviation Security, and Office of the Drug Controller, Public Health Office Plant Quarantine Directorate, Carriers, Express Airline companies, Terminal operators, Freight forwarders and Custom House Agents. Being part of cargo supply chain, operations should cooperate with regulatory agencies to reduce dwell time, congestion and improve efficiency.

Table 46: Comparison of Infrastructure Facilities between ASEAN and India

	Units	India					ASEAN			
		Kolkata	Bangaluru	Hyderabad	Delhi	Mumbai	Singapore	Jakarta	Bangkok	Hanoi
Area	1000 acres	1.57	4	5.49	5.22	1.55	3.2	4.45	8	2.01
Runways	Numbers	2	1	2	3	2	3	2	2	2
Terminals	Numbers	1	1	1	2	2	3	3	1	2
Passengers Handling Capacity	Numbers in Million	20	20	15	46	40	66	38	45	19
Passengers Traffic	Numbers in Million	10	12.7	8.36	35.88	32	53.7	59.7	51.4	12.9
Check-in Counters	Numbers	128	86	130	240	188	-	180	460	77
Aerobridges	Numbers	18	15	18	78	52	156	-	72	8
Baggage belts	Numbers	10	13	4	18	10	-	30	22	6
Car Parking Space	Numbers	1250	2000	1800	6300	5000	-	4800	6000	-

Source: Various Airport websites.

Table 47: Comparison of Air Cargo Infrastructure Operations in India and Global Practices

Global Best Practices	Cargo Operations in India
Segregated facilities for different types of cargo	Most terminals do not offer separate facilities, except cold rooms
Dedicated and specialised perishable handling facilities that cater to end-to-end supply chain needs	Inadequate investments in cold chain infrastructure (temp-controlled warehouses, trucks) to handle agricultural, pharmaceutical and other perishable commodities
Proper waiting area for trucks	Agents use the cargo terminal landside as a truck parking / holding area, leading to congestion
Agent warehouses, office spaces and other processing facilities close to cargo terminal	Agent warehouse are often located within the city
Promotes transshipment handling/hub operations	Cargo terminal operators need to have separate license handling area for transshipment handling
Dedicated facilities for Air Express Operations with air side and city side access, multiple freighter parking bays	No fixed model and dependent on decision of individual airport operators. Very few dedicated freighter parking bays.

Source: Air Cargo Logistics in India, Ministry of Civil Aviation (May 2012).

Procedural Hurdles in Operation of Air Freight Station (AFS)

6.18 Amendments have to be carried out in the application software of Customs to capture the transactions covered in transshipment for AFS. Suitable instructions are required for giving clearance to consignments pertaining to AFS. Off-site Freight Station is a creation under the Customs Act for augmenting Off-port facilities for processing cargo meant for international trade. For effective implementation, there should be enabling provision guidelines either time bound or tonnage based that could mandate for moving cargo from the Airport to AFS. For example, Chennai airport allows the terminal operator to move cargo to an AFS of their choice if dwell time of 72 hours is exceeded.

Requirement of 100 per cent Export Shipment Examination Leads to Delay

6.19 Export shipments cannot be moved till all shipments marked for examination are scrutinised. Customs system should be able to identify export package meant for examination through scanner so that they can directly be moved to the warehouse. This facilitates the custodian and trade members to decongest the warehouse. It is possible to make modification in the system software to establish a link with custodians to convey the

packages to eliminate human intervention and facilitate cargo movement to warehouse.

Duplication of Documentation

6.20 Generation of export promotion copies is a time consuming exercise. These documents should be replaced with electronic mode. Customs should make digital signature mandatory to transact business with Customs. Once this is established, print copies of documents like Bills of Entry, Shipping Bills, EP copies can be eliminated, saving time for customs and trade transaction.

Cumbersome Trade Procedures

6.21 We have to simplify Customs procedures and documentations through full adoption of Electronic Data Interchange (EDI). Wherever data is transmitted electronically, hard copy requirement should be waived off by customs. Physical copies should be only required when electronic processing is not possible or missing. This will help in reducing the dwell time of import/export cargo heavily. Customs should go for full EDI adoption for import/export registration, clearance, drawback and e-payment of duty, thereby making it a paperless transaction process. Certain functionalities to be achieved fully through EDI are as follows:

- Dispensing manual printing of customs Shipping Bills and Bills of Entry to expedite processing time at examination points
- Convey export order/out of charge real time from customs to expedite deliveries
- Accept electronic confirmation of AWB and RMS goods released without delay
- Put provision for regularisation of short/excess/over-carried cargo as part of normal EDI amendment message without human intervention
- Customs may consider to waive off submission of manual documents if trade partners are submitting data electronically to avoid duplication of work and unnecessary paper work. Submission of delivery order by airlines, sub-delivery order by consol agents, Customs out of Charge copies, manifest, consol manifest may also be dispensed with.

Complicated Supply Chain

6.22 We have to ensure smooth inter-linkage of all the agencies in the supply chain with EDI. For effective implementation, it is necessary to mandate

EDI standards, standardised processes, digital signatures and inter-linking of regulatory agencies and adoption of multi-model EDI processes by everyone. Currently, testing agencies are not well connected with customs digitally and all certifications are manual. Precious time is lost as documents physically travel from different locations to customs. To achieve greater mobility in the circular flow of information between airports, airlines, operators and other stakeholders in the supply chain, there should be inter-linkages and circular flow with airlines, airport operations, air freight stations, customs, banks and other allied agencies. The industry should focus on improving information flow between different parties in the logistics chain through electronic messaging and other EDI protocols. System link should be effectively established with custodians to eliminate human intervention and facilitate custodian to plan rest of the cargo to warehouse.

Transshipment a Cumbersome Process

6.23 Customs facilitation procedures for cargo transshipment need clarity and simplification. Customs procedures for cargo transshipments and procedures differ greatly at various airports. There is an urgent need for standardisation of policy and procedures for gateway operations. As more and more Indian carriers fly out to international destinations, transshipment segment has significant market potential. Transshipment from one gateway airport to another gateway airport via an intervening gateway airport, where a simple transshipment load is done, should be permitted. At present, customs formations in different airports take different views on this issue. Currently, bank guarantee is needed separately for export and import transshipment. The criteria should be based on waiver for airlines who are operating for over five years on a scheduled basis with a clean track record of no default on payments to customs.

Multiple Handling of the Packages by Various Agencies Working at the Airport

6.24 There is multiple handling of cargo by various agencies at the airport (outsourced loaders, ground handler, customs, custodian, and screening team) during clearance. Thus, bottlenecks are created at different stages of cargo clearance due to procedural issues. The flow of service needs to be well defined in order to have seamless cargo movement.

Restricted Working Hours Lead to Delay in Cargo Clearance

6.25 Limited working hours of concerned agencies at the cargo terminals is one of the key reasons for the delay in international cargo clearance. In

many countries, cargo clearance on 24X7 basis is followed. India needs to adopt similar procedure to handle cargo movement to various destinations covering different time zones.

- 6.26 Given the extensive documentation and procedures of the Indian customs and other regulatory agencies, the fast pace of growth of the economy and trade, all cross-border regulatory agencies and other stakeholders in cargo operations should begin with at least two shifts of work at the air cargo complexes/express terminals of all international airports to ease congestion and to reduce delays in clearance.

Incomplete Automation/IT Adoption

- 6.27 Airlines and freight forwarders adopt technologies to provide better information, management, coordination and package tracking across the world. Automation and mechanisation are not widely used in the Indian airports. Technology like Warehouse Management System (WMS), Radio Frequency Identification Devices (RFID), Automatic Storage and Retrieval Systems (ASRS) should be used to facilitate quicker and more efficient operations for decongesting airports. Besides, a significant amount of congestion, damage and pilferage are caused by the current practice of cargo being brought to terminal in loose units (cartons, etc.), which is then unitised into pallets or containers before being loaded onto aircrafts. This problem can be alleviated by setting up AFS in the hinterland. Customs check, X-ray screening, palletisation, etc., can take place at the AFS and airport terminals would only act as a 'processing gateway' between airlines and cargo carriers. Box 6 illustrates the Air Freight Terminal Automation System at Changi Airport, Singapore.

Box 6: Air Freight Terminal Automation – SATS Freight Terminals, Changi Airport, Singapore

Automated Material Handling Systems:

- 3690 ULD storage positions
- 15 elevating transfer vehicles
- 12 transfer vehicles
- 63 workstations
- 4 bridge vehicles
- 13 bypass vehicles
- 9 stacker machines
- Real Time tracking of cargo bins within warehouse is facilitated through 1600 units of RFIDs.

Source: AI-SATS submission to WG.

Table 48: Comparison of Air Cargo Automation in India with Global Best Practices

Global Benchmarks and Best Practices	Cargo Operations in India
Warehouse Management System (WMS) is must at most terminals	Only some of the new terminal operators have WMS facility in place
Efficient utilisation of terminal space through multi-level storage	Only ETV Systems installed and that too at a few terminals
Increase in productivity, through unmanned vehicle and better accuracy in handling	Labour intensive operations at most of the complexes
Only physical loading outsourced	Most aspects of Cargo operations outsourced to 3rd parties
Use of RFID to track cargo shipments	Nothing significant in India
Use of handheld devices to facilitate real time updates	Only few cargo terminal operators are using handheld devices
Use of web/IT applications to improve customer service, e.g. collection time for cargo	Agents /forwarders need to physically wait at the cargo terminals for their shipments to be cleared.

Source: AI-SATS submission to WG.

Underdeveloped Warehouse Management System (WMS)

6.28 Table 48 shows the technology and automation gaps at air cargo complexes in India against global best practices. Warehouse Management System (WMS) is vital for efficient cargo operations. The primary purpose of a WMS is to control the movement and storage of materials within a warehouse. WMS aims to control the movement and storage of materials within a warehouse and process the associated transactions, including shipping, receiving, put away and picking. Radio Frequency Identification Tags are extremely useful for the real-time tracking of cargo bins within the warehouse. In addition to scanning, the industry should focus on improving information flow between different parties in the logistics chain through electronic messaging and other EDI protocols.

Endnotes

- ¹ Refer, MOCA (2012).
- ² Refer, Indian Tourism Statistics (2011).
- ³ Refer, "What Aviation will look like in 2016," *The Mint*, 4 January 2016.
- ⁴ Terminal capacity utilisation is calculated by dividing the passengers handled in a year by the capacity of the respective airport.
- ⁵ Refer, "Boarding a flight to become easier next year," *The Hindu*, 26 December 2015.
- ⁶ Refer, "Nod to Andhra airport site," *Asian Age*, 28 December 2015.
- ⁷ Refer, MoCA (2012).
- ⁸ Refer, for example, MoCA (2012).



7

Air Transport Agreement between India and ASEAN

International air services between countries operate under the terms of a bilateral air services agreement (BASA) negotiated between two countries. BASAs are generally of treaty status and are enforceable in international law. They were formulated in 1944 at the International Civil Aviation Conference (ICAC) held in Chicago, also known as '*Chicago Convention*'. The Chicago Convention stipulated that two nations seeking to be linked by commercial air services would negotiate the terms through concluding a bilateral air service agreement also known as a "bilateral" or ASA. This would specify the conditions under which the proposed services would operate in terms of the privileges granted by either signatory country to the airline or airlines of the other country. The conditions that would be covered under ASAs are as follows:

Traffic Rights: It is known as '*Freedoms of the Air*'. The 'Freedoms of the Air' are international commercial aviation agreements (traffic rights) that grant a country's airline(s) the privilege to enter and land in another country's airspace. There are generally considered to be nine freedoms of the air. Most nations of the world exchange first and second freedoms through the international Air Service Transit Agreements. The other freedoms are usually established between countries in bilateral or multilateral agreements. The nine freedoms of the air are given in Table 49.

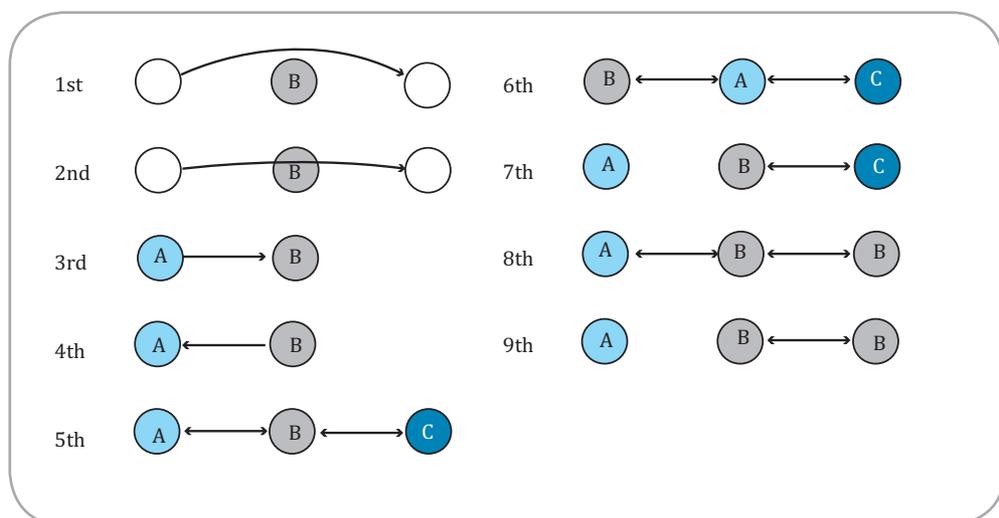
Authorised Points: The allowable route that could be operated. For instance, Figure 25 illustrates different air freedom rights under Air Service Agreements.

Table 49: Air Freedom Rights

Freedom	Description
First	The right to fly over a foreign country without landing.
Second	The right to refuel or carry out maintenance in a foreign country without embarking or disembarking passengers or cargo.
Third	The right to fly from one's own country to another.
Fourth	The right to fly from another country to one's own.
Fifth	The right to fly between two foreign countries on a flight originating or ending in one's own country.
Sixth	The right to fly from a foreign country to another while stopping in one's own country for non-technical reasons.
Seventh	The right to fly between two foreign countries while not offering flights to one's own country.
Eighth	The right to fly inside a foreign country, continuing to one's own country.
Ninth	The right to fly inside a foreign country without continuing to one's own country.

Source: International Civil Aviation Organisation (ICAO).

Figure 25: Air Freedom Rights



Note: Blue circles indicate the operating airline's domestic market and dark blue or grey circles indicate foreign markets.

Source: Drawn based on Manual on Regulations of International Air Transport, International Civil Aviation Organisation (ICAO), 2004.

- **Capacity:** The number of flights or seats that could be operated between the two countries.
- **Tariff:** The method of setting fares on the route. The agreement would specify the conditions necessary for a fare proposed by the airline of one country to become operative.

- **Designation, Ownership and Control:** The number of airlines the bilateral partners can nominate to operate services and the ownership criteria airlines must meet to be designated under the bilateral agreement (e.g., the airlines designated by Country A must be majorly owned by residents of Country A).

Other clauses related to operative agreements (e.g., code-sharing) and various “doing business” issues such as repatriation of currencies, the ability to select handling agents at foreign airports and the use of computer reservations systems.

Air Freedom Rights under ASA

7.2 ASA specifies which airlines could operate between the two countries; the routes carriers could operate (e.g., which airports they could fly to); whether carriers could offer beyond services (fifth freedom rights); limits on the frequency and capacity (seats) that the carriers could operate, and often placed controls over airline pricing. As a result, the development of international air service has been as much a function of government policy as it has been a function of commercial considerations. In addition to the bilateral ASAs, most countries have also placed foreign ownership and control restrictions on the airlines. In part, this was to ensure that the airline complied with the national ownership requirements in the ASA. In order for an airline to be designated by a country in the ASA, majority has to be owned and controlled by citizens of that country. However, these ownership restrictions were also justified for various strategic, safety and defence reasons. For example, governments wanted the ability to control the airlines in times of national emergency. Typically, the ownership restrictions specify the maximum percentage of airline shares (stocks) that can be owned by foreign nationals.

ASEAN Single Aviation Market

7.3 The imperatives for enhancing air connectivity in ASEAN are manifold. ASEAN needs to collectively respond to the opportunities offered by its geographical and comparative advantages and to the competitive challenges brought about by global trade and investment environment. ASEAN is located at the heart of an economically vibrant and growing region bounded by India in the west; China, Japan, and the Republic of Korea in the northeast; and Australia and New Zealand in the south. ASEAN Single Aviation Market (ASAM) is the region’s major aviation policy geared towards the development of a unified and single aviation market in Southeast Asia. The aviation policy was proposed by the ASEAN Air Transport Working Group, supported by the ASEAN Senior Transport Officials Meeting, and endorsed by ASEAN Transport Ministers. The ASAM is expected to fully

liberalise air travel between member states in the ASEAN region, allowing ASEAN countries and airlines operating in the region to directly benefit from the growth in air travel around the world, and also freeing up tourism, trade, investment, and service flows between member states. Although the ASEAN Open Skies policy in part came into effect on 1 January 2015, it is yet to be fully operational. Greater connectivity between aviation markets arising from ASAM should encourage higher traffic growth and service quality, while lowering airfares. The most important aspect of liberalising aviation markets is the guarantee of third, fourth, fifth, and seventh freedoms of the air.

- 7.4 ASAM is supposed to integrate production networks and enhance regional trade by allowing airlines from ASEAN member states to fly freely throughout the region. It involves liberalisation of air services under a single and unified air transport market. Airline industry analysts are largely positive on the new policy as it will lead to growth and will open up the market to more competition. Greater connectivity between aviation markets arising from ASAM should encourage higher traffic growth and service quality, while lowering airfares. It will certainly boost tourism that relies entirely on convenient and affordable airline services to survive. Overland tourism is in its infancy and often considerably more risky than flying. Unlike European single aviation market, where air transport integration measures have automatic force of law, ASEAN's market access liberalisation is pursued through agreements that the member states must voluntarily accept.
- 7.5 The ten member states of the ASEAN earlier identified a 2015 deadline to establish ASAM for the liberalisation of air transport services in the region. Also referred to as the "ASEAN Open Skies" policy, the aim was to have the ASAM in place by 2015. An "open skies" proposal for the region has been discussed since the 1990s.¹ The proposal was subsequently included as an area of cooperation in the so-called "Plan of Action for Transport and Communications (1994-1996)". At that time, a Framework Agreement on Services (FAS) was adopted to liberalise trade in services beyond the commitments undertaken in the World Trade Organisation's General Agreement on Trade in Services (GATS). Subsequently, the discussions took place in the larger context of greater economic integration across all sectors through the harmonisation of trade and investment policies.
- 7.6 In November 2004, building upon earlier discussions, the 10th Air Traffic Management (ATM) in Phnom Penh, Cambodia, adopted an Action Plan for ASEAN Air Transport Integration and Liberalisation 2005-2015 (ASEAN, 2004). This plan established certain strategic actions to further liberalise

air services and to promote an enabling environment for a single and unified air transport market in the region. This Action Plan, together with an accompanying document known as the Roadmap for Integration of Air Travel Sector (RIATS), had laid down the target year of 2015 for achieving an effective “open skies” regime for the region.

Roadmap for Integration of Air Travel Sector

7.7 The Roadmap for Integration of Air Travel Sector (RIATS) provides concrete actions to achieve greater air transport liberalisation in ASEAN through a staged and progressive implementation. The agreements formed under RIATS are intended to provide:

- a. Full liberalisation of intra-ASEAN air cargo services;
- b. Full liberalisation of schedule passenger services with no limitations on third, fourth, or fifth freedom traffic rights:²
 - Within sub-region such as IMT-GT, IMS-GT, BIMP-EAGA and GMS;
 - Between sub-regions such as IMT-GT, BIMP-EAGA and GMS; and
 - Between ASEAN capitals.

Broadly, the ASEAN ‘Open Skies Agreement’ is ultimately intended to create an aviation environment wherein there are no limitations on capacity, frequency or aircraft type and services between member states. In practice, ‘Open Skies’ within the ASEAN region is not one agreement but three separate agreements:

- (i) Multilateral Agreement on Air Services (MAAS)
- (ii) Multilateral Agreement on the Full Liberalisation of Air Freight Services (MAFLAFS); and
- (iii) Multilateral Agreement for the Full Liberalisation of Passenger Air Services (MAFLPAS).

MAAS contains two relevant protocols that free up third/fourth and fifth freedom access, respectively, among the ASEAN capital cities. MAFLPAS follows up on MAAS by abolishing third/fourth and fifth freedom restrictions among all other ASEAN cities. The achievement of ASEAN’s ambitions is contingent upon the timely and complete ratification of all three agreements by member states.

Limitations of ASAM³

7.8 ASAM is an ambitious project. Once implemented, flow of airlines will grow along with passengers and cargoes. However, it has several limitations, some of which are discussed here.

- ASAM is relatively much less ambitious; only third, fourth and fifth freedom relaxations among member states are contemplated. Seventh freedom access is not included. Neither is the sensitive right of cabotage which allows a foreign airline to connect two domestic points in a country.
- It also does not address airline ownership. There is no provision for regional ownership, or common majority shares in airlines held by a single ASEAN-based investor. Common ownership of airlines across borders would be a major problem for ASEAN aviation as it is currently dominated by government-owned airlines.
- The ASAM agreements have the acceptance of all the ASEAN countries, except for Indonesia and the Philippines. Both countries are reluctant to accept them, and have indicated that their capitals, Jakarta and Manila, remain excluded from the agreement. Indonesia claims that unlimited third, fourth freedom access into its cities, including Jakarta, translates into unlimited sixth freedom opportunities for Singapore, Malaysia and Thai carriers (including aggressive low-cost airlines such as Air Asia, Tiger and Jetstar). To protect themselves from such competition, Indonesian carriers appeared to be against the Agreement. With Indonesia alone accounting for almost half of the entire ASEAN population, its decision to stay out hampers the single market project significantly. Intra-ASEAN liberalisation is, therefore, yet to be completed.
- In sum, if the relatively modest third/fourth freedom relaxations do not even enjoy full acceptance from member states, prospects of single aviation market are bleaker still for any future relaxation to seventh freedom and cabotage restrictions.

ASEAN-India Aviation Cooperation Framework

7.9 The 14th ASEAN Transport Ministers' meeting held in Manila on 2008 proposed 'Open Skies' Agreement and India's keen interests to join the ASEAN member states is establishing a larger aviation market. They looked forward to the implementation of ASEAN's own liberalisation of their air services within the ASEAN region. ASEAN member states and India had agreed to pursue cooperation in the following fields:

(i) Open Skies Agreement

ASEAN and India agree to work towards concluding an agreement based on the 'Open Skies' principles, covering both air freight and passenger services. Air Transport Agreement between the Governments of the ASEAN and India (ASEAN-India Air Transport Agreement (AIATA)) was convened during the 19th ASEAN Air Transport Working Group Meeting in 2009. In line with the ASEAN multilateral air services agreements, the AIATA

includes the following elements:

- Multiple airline designation
- Open route schedule
- Full exercise of third, fourth and fifth freedom traffic rights
- Any frequencies, capacities and aircraft types
- Change of gauge and
- Inter-modal transport arrangement

(ii) Cooperation in Other Aviation Fields

Airline Cooperation

The Parties shall promote, among others, the followings:

- Cooperative arrangements between or among airlines, including the utilisation of resources and business management, and
- Airline cooperation in the form of interlining, block-space, code-sharing among ASEAN and Indian airlines.

Airports and Air Navigation

- ASEAN and India will exchange information and best practices on planning, construction, and management of civil airports; and management of air navigation services.

Aviation Safety

- The Parties shall exchange information on air safety (major aircraft incidents and accidents) and provide mutual assistance in the use of air safety investigation facilities and equipment, with a view to sharing information on flight safety and expertise on accident investigation.

Aviation Security

- The Parties shall act in conformity with the aviation security provisions established by the International Civil Aviation Organisation and designated as Annexes to the Chicago Convention, exchange information and best practices on aviation security.

Human Resources Development

- The Parties shall cooperate in holding workshops or seminars on subjects of common interest in the air transport sector. Subjects may cover, but shall not be limited to, personnel training on planning, construction, and management of civil airports; safety management for air service; aircraft maintenance, repairing and overhaul; air traffic control; airworthiness; special techniques on incident and accident

investigation; certification of aircraft operation; apron movement control, fire fighting and aviation security; and training in the licensing and certification for pilots, and training in international civil aviation laws.

Information Exchange

- The Parties shall cooperate in the exchange of information on air transport infrastructure and industry developments to facilitate ASEAN-India Air Transport Services. The information may cover laws and regulations, policies and standards in the field of civil aviation, including but not limited to, construction, management and operation of civil airports; safety management systems of airport and aircraft operators, and notification and investigation of aircraft accidents and incidents.

(iii) Working Mechanism

- The ASEAN Air Transport Working Group (ATWG) shall be the negotiating platform with representatives from India on the ASEAN-India Aviation Cooperation Framework. The ASEAN ATWG and India shall focus on the finalisation of the ASEAN-India Air Services Arrangement as priority.

(iv) Air Transport Agreement on ASEAN-India Protocols

Following protocols are proposed in the AIATA:

a) Protocol 1 (Unlimited Third and Fourth Freedom Traffic Rights between any Points in Contracting parties)

The Protocol 1 proposes unlimited 3rd and 4th freedom traffic rights. It means the designated airline(s) of each ASEAN member state shall be allowed to operate scheduled air passenger and/or cargo services from any point in its territory with an international airport to any point in the territory of India with an international airport and vice versa with full third and fourth freedom traffic rights. At the same time, the designated airline(s) of India shall be allowed to operate scheduled air passenger and/or cargo services from any point in its territory with an international airport to any point in the territory of an ASEAN member state with an international airport and vice versa with full third (3rd) and fourth (4th) freedom traffic rights. It also proposes that there shall be no limitation on capacity, frequency and aircraft type with regard to air passenger and cargo services operated under this Protocol as provided in Article 1 of this Protocol.

b) Protocol 2 (Unlimited Intermediate and Beyond Fifth Freedom Traffic Rights between any points in Contracting Parties and any Specified Points in Non-Contracting Parties)

It talks about unlimited intermediate and beyond 5th freedom traffic rights between any points in contracting parties (ASEAN and India) and any specified points in non-contracting parties (e.g. United States). This Protocol proposes that the designated airline(s) of each ASEAN member state shall be allowed to operate scheduled air passenger and/or cargo services from any point(s) in its territory with international airport(s) to any point(s) in the territory of India with international airport(s) and vice versa: (i) via any intermediate point(s) with international airport(s) [in 2/3 specified regions]; and/or (ii) beyond India to any beyond point(s) with international airport(s) [in 2/3 specified regions] with full third, fourth and fifth freedom rights. On India, the Protocol proposes that the designated airlines of India shall be allowed to operate scheduled air passenger and/or cargo services from any point(s) in its territory with international airport(s) to any point(s) in the territory of an ASEAN member state with an international airport(s) and vice versa: (i) via any intermediate point(s) in the territory of an ASEAN member state with international airport(s); and/or (ii) beyond to any beyond point(s) in the territory of an ASEAN member state with international airport(s), with full third, fourth and fifth freedom rights. It also proposes that there shall be no limitation on capacity, frequency and aircraft type with regard to air passenger and cargo services operated under this Protocol.

c) Protocol 3 (Unlimited Intermediate and Beyond Fifth Freedom Traffic to any Points)

The Protocol 3 proposes the term “fifth (5th) freedom traffic rights” means intermediate and beyond fifth freedom traffic rights from ASEAN or India to any non-Contracting Parties. It proposes that the designated airline(s) of each ASEAN member state shall be allowed to operate scheduled air passenger and/or cargo services from any point in its territory with an international airport to any intermediate and beyond points with full third, fourth and fifth freedom traffic rights. On India, it proposes that the designated airline(s) of India shall be allowed to operate scheduled air passenger and/or cargo services from any point in its territory with an international airport to any intermediate and beyond points with full third, fourth and fifth freedom traffic rights. This Protocol suggests that there shall be no limitation on capacity, frequency and aircraft type with regard to air passenger and cargo services operated under this Protocol.

AIATA: Implications

7.10 AIATA aims to establish integrated, efficient and competitive international air transportation between ASEAN and India to enhance trade, the welfare of consumers, and economic growth.

- i) The purposed agreement has several implications, some of which are discussed below. The current version of AIATA offers many benefits in terms of expanding markets, but it also has several clauses which are not 'optimally' favourable to India. Given the asymmetry Indian airlines have with major airlines of ASEAN in terms of fleet size, networks and technical and financial resources, India's airlines would not be able to compete with ASEAN's airlines until there is adequate support and equal operating practices such as joint venture and/or code-sharing, sharing of each other's resources, etc. Moreover, it would be a great difficulty for Indian carriers to build their presence in new destinations in ASEAN, whereas major ASEAN carriers may outpace Indian carriers in serving destinations in India and bringing passengers to their respective hubs in ASEAN for transporting them worldwide. However, the 5th freedom traffic rights may be offered on reciprocal basis to each other in designated routes in gradual manner with sufficient safeguards. India is very generous to offer unlimited access to 18 cities to ASEAN countries. Till date, ASEAN response is very limited. India has unilateral Open Sky policy on cargo transformation. Therefore, we may not need any separate Open Sky Agreement with ASEAN on cargo operation. However, we may wait till ASEAN becomes a single market in aviation before we may offer a comprehensive open sky.
- ii) With respect to major cities, 3rd and 4th freedom have been offered based on code/seat sharing basis between India and ASEAN member states through bilateral ASA on mutual interest. A single market in ASEAN may negate the current advantages. Therefore, it would be ideally good to allow more Indian carriers to serve the unutilised routes between ASEAN and India, and also between East Asia and India.
- iii) We have to build infrastructure facilities adequately in Indian airports before any further liberalisation is carried out aiming ASEAN and beyond. Initially, we may extend the support through technical cooperation and aviation cooperation.
- iv) While bilateral air traffic rights on international routes between India and other countries were decided on the basis of reciprocity, at present, the actual utilisation of available rights on international sectors was

highly imbalanced. The utilisation by foreign airlines was around 65 per cent, that of our airlines was only around 30 per cent. As a result, foreign airlines derived disproportionate economic advantage out of the traffic right. Further, out of 100 countries with which India had bilateral ASAs, airlines of 51 countries have been operating to India, while Indian carriers are operating to only 25 countries.

- v) While Indian entitlements had remained grossly underutilised, there was a problem of inadequate capacity on most international routes from India, with passengers finding it difficult to obtain seats. We may provide further attention to such requirement. The ministries of External Affairs, Tourism and Commerce, as well as Trade, Industry and Tourism bodies had been reiterating the need to liberalise international air services so that seats were available to/from India all through the year.⁴

The Draft of National Civil Aviation Policy 2015

7.11 The draft National Civil Aviation Policy (NCAP) proposes to rationalise jet fuel cost, strengthen regional connectivity, promote air cargo, liberalise ground handling services, maintenance, repair and operations (MRO) through fiscal and regulatory concessions and frame separate regulations for promoting helicopter operations. The draft NCAP aims to make Indian skies more vibrant and encourage maximum number of people to fly within domestic and abroad and to promote employment generation in India. Some of its silent features are as follows.

- i) **Regional Connectivity Scheme (RCS):** The proposed NCAP has regional connectivity scheme to connect tier II and tier III airports. To promote regional connectivity scheme, the Government of India would provide viability gap funding (VGF) to airlines flying to underserved and unserved destinations to keep airfare low on regional routes. The VGF would be indexed to aviation turbine fuel (ATF) prices and to inflation. The Government of India would provide 80 per cent of the resource to bridge losses incurred by airlines by flying to these routes, whereas the remaining amount will be covered by respective states. The Government of India would levy a charge of 2 per cent on all domestic and international flights tickets sold within the country from the metro air ports to subsidise air travel on regional routes, through which the Government of India would generate around Rs. 15 billion per annum for the proposed RCS. The estimated revenue would be utilised to provide VGF to airlines for capping fares at about Rs. 2,500 per flying hour between non-metro destination.

- ii) The government has been trying to provide affordable air travel options to the growing middle-class consumer by keeping minimum airfare. There are still several regions in India like parts of Rajasthan, North East India, Madhya Pradesh which have limited or no options to travel by rail. In such areas, the RCS would provide affordable and time-effective air travel options to the masses.⁵ The RCS is expected to boost domestic air traffic from 70 million in 2015 to 300 million by 2022 and further raise to 500 million in 2027.⁶ India has 476 airports, of which only 75 have regular flights. About 30 airports with the AAI receive no schedule flights that are ready to be put to use under the RCS.
- iii) **Bilateral ASA:** In the proposed draft policy, the government plans to liberalise the regime of bilateral rights leading to greater ease of doing business and wider choice to passengers. The government proposed to enter into open sky agreement in two stages. In the first stage, India could follow an Open Sky policy with SAARC countries and the countries are at least 5,000 km away from New Delhi, which would be implemented from April 2016 onwards. In the second stage, with effect from April 2020, the government would enter into an Open Sky agreement on a reciprocal basis for the major international airports within 5000 km from New Delhi. Besides, increase in FDI in airlines from 49 per cent to above 50 per cent will be examined if the government decides to go in for open skies for countries lying within 5,000 km radius.
- iv) **Ground Handling:** According to new draft of NCAP, the government has proposed to allow 100 per cent FDI in general aviation and ground handling agencies (GHAs) to ensure fair competition. There will be no upper limit on the number of GHAs at an airport. Besides, the draft policy allows domestic airlines and charter operators to carry out self-handling themselves or through their own subsidiaries or to outsource the same to other airlines or to a GHA. It is expected that airliners will ultimately offer relatively low competitive air fares as volume of passengers go up⁷. Ultimately, this will benefit the customers.
- v) **Maintenance, Repair and Overhaul (MRO):** According to the proposed NCAP, MRO business in India is around Rs. 50 billion, of which 90 per cent of them are spent in foreign countries like Sri Lanka, Singapore, Malaysia and UAE. Therefore, in order to make India has a hub for MRO in Asia, the new draft of NCAP has proposed to abolish service tax on MRO (maintenance, repair, overhaul) services provided in India and to increase in tax-free period for storage of spares imported by MROs. The policy aims to attract foreign airlines to get their aircrafts serviced and repaired in India.

- vi) **FDI in Aviation Industry:** In the draft NCAP, the government has proposed to ease the FDI norms in certain segments in the civil aviation sector. The government has raised investment limits to 100 per cent from 74 per cent in the Non-Scheduled Air Transport Service, Ground Handling Services and also 49 per cent of FDI for regional air transport services in order to push regional connectivity plan. According to Dubey (2016), FDI limit in airlines should be raised to 100 per cent, like in far more risky sectors such as energy and telecommunications. Other sectors within aviation – airports, cargo, MRO, general aviation, etc – allow 74 per cent or 100 per cent FDI.⁸
- vii) **Code Share Agreements:** In the NCAP, the government has liberalised the mode of code share agreements to facilitate seamless connectivity for passenger. Particularly, Indian carriers can have code share agreements with foreign carriers for any destination within India on a reciprocal basis, and international code-share between India and foreign carriers would be liberalised subject to air service agreement between India and relevant country.
- viii) **Aviation Education and Skill Building:** In terms of developing the human resource skills for aviation sector, the government would bring several courses under the National Aviation University (NAU). The Ministry of Civil Aviation (MoCA) would provide support to the Aerospace and Aviation Sector Skill Council (AASSC) for imparting skills and encourage private sector in funding aviation institutions, industrial training and R&D projects.
- ix) **Air Cargo:** The Government of India is keen to promote the air cargo given the importance of 'Make in India' initiatives, growing e-Commerce segments and promoting exports. The government has agreed to constitute the Air Cargo Logistics Promotion Board (ACLPB) to promote growth in air cargo and address the factors affecting cost and time. For instance, the NCAP has proposed an action plan to reduce the dwell time of air cargo from 'aircraft to truck' to below 24 hours by December 2016 and further reduction of 6 hours by 31 December 2017 and would also develop Service Delivery Modules for all elements of the air cargo value chain. The government would streamline and simplify customs procedures and has proposed to bring paper-less air cargo by April 2017. The government has also proposed to bring all government authorities under one roof for a smooth custom clearance, promoting global good practice, providing incentives for skill development of people employed in the air cargo value chain. The MoCA would encourage development of air cargo village near airports to improve the operational efficiency.

Endnotes

- ¹ Refer, Findlay and Forsyth (1992).
- ² ASEAN member states are categorised as follows: IMT-GT is Indonesia, Malaysia and Thailand Growth Triangle; IMS-GT is Indonesia, Malaysia and Singapore Growth Triangle; BIMP-EAGA is Brunei Darussalam-Indonesia-Malaysia-the Philippines-East ASEAN Growth Area; GMS is Greater Mekong Sub-region, comprising Cambodia, China (specifically Yunnan Province and Guangxi Zuang Autonomous Region), Lao PDR, Myanmar, Thailand, and Vietnam.
- ³ Drawn upon ASEAN Secretariat (2011), Tan (2013), a.o
- ⁴ Refer, for example, Comptroller and Auditor General of India (CAG) (2011).
- ⁵ Refer, "Small town connect: Fares may hit air pocket", *The New Indian Express*, 4 November 2015.
- ⁶ *ibid.*
- ⁷ Refer, "Draft Civil Aviation Policy to Hit Ground Handling Agencies", *The New Indian Express*, 26 November 2015.
- ⁸ Refer, for example Dubey (2016).

8

Summary and Recommendations

- 8.1 Connectivity is the main thrust of the Act East Policy (AEP). Air connectivity is the key to sourcing intermediate goods and services in Just-in-Time, which feed into India's industries and transporting finished goods to their ultimate destinations. It is an important mode of transportation for carrying passengers, high-value fragile goods and perishable commodities from one place to another in a limited time. India's rising trade with Southeast and East Asia calls for stronger air connectivity. This Study shows that there is a need for greater liberalisation of air connectivity between ASEAN and India, especially in air cargo that would help to unlock the trade potential of the region by removing constraints and bottlenecks to growth. Given the importance of global value chains, minimising the time and transportation cost is essential for the sustenance and smooth functioning of stronger production network, that would, however, enhance the trade flow between ASEAN and India and beyond. Air connectivity is, therefore, an important component of India's connectivity agenda with Southeast and East Asia.
- 8.2 With signing of the India-ASEAN Free Trade Agreement in Services and Investments, ASEAN and India would likely to benefit from an extended market, where the air connectivity will play a pivotal role not only in expanding trade and investments between them but also in strengthening services trade in which India has comparative advantages. The negotiations for the Regional Comprehensive Economic Partnership (RCEP) are under way, and to effectively implement it, connectivity in all forms is essential,

in which air connectivity would bring much value addition in terms of building supply chain in high technology products. More airlines in air cargo service would boost trade between ASEAN and India and vice versa. Stronger air connectivity with Southeast and East Asia would also provide great fillip to our Make-in-India and Skill India initiatives.

- 8.3 ASEAN constitutes about 16 per cent of international passenger flow from and to India in 2015. While there is almost 50 per cent increase in the passenger flow between ASEAN and India in 2013-14, compared to 2005-06, the distribution of passengers is skewed. Flow of ASEAN passengers coming to India has been much lower than the Indian passengers going to ASEAN or transit through ASEAN. Hubs like Bangkok, Singapore and Kuala Lumpur equipped with bigger and performing airlines continue to attract passenger and air cargoes from India. Today, out of 10 ASEAN countries, only five ASEAN countries like Malaysia, Myanmar, Singapore, Vietnam and Thailand have direct flights with India and vice versa. For the rest five ASEAN countries (Cambodia, Indonesia, Lao PDR, the Philippines, Brunei), there is no direct flight but have inter-connection from other airports, of which Indonesia and the Philippines are two prominent ASEAN countries with which India has substantial business and tourism interests, but are yet to have direct air connection.
- 8.4 All goods are not transported by air. Goods that are high in value and low in volumes are most likely to be transported by air. Besides, goods that are time sensitive with higher opportunity cost of time in transport, intermediate products and final retail products are normally transported through air transport. ASEAN constitutes about 18 per cent of international freight flow from India and about 11 per cent international freight flow to India. Except Thailand, all ASEAN countries recorded freight deficit with India in 2015, suggesting that India exports more 'weights' than what it imports from ASEAN, and naturally is paying more towards freight. This Study also shows that China and Vietnam have high growth and high volume trade by air, and ASEAN countries like Singapore, Malaysia, Thailand, the Philippines; ASEAN+ countries except New Zealand; and South Asian countries like Sri Lanka, Nepal and Bangladesh have high volume but low growth in parts and components trade. Therefore, in order to facilitate the regional and global value chains, it is recommended to strengthen air services with these countries on priority basis.
- 8.5 Indian airlines such as Air India, Air India Express, Jet Airways, IndiGo and Spice Jet carry on average 37 per cent of the total international passenger flows from and to India, out of which, about 5.5 per cent of passengers

are carried between India and ASEAN countries. Airlines from ASEAN countries carry twice the size of international passengers from and to India compare to Indian airlines of about 11.5 per cent. In ASEAN countries, airlines are mostly from Singapore (Singapore Airlines, Silk Air and Tiger Airways), Malaysia (Air Asia, Malaysia Airlines, Malindo Airways) and Thailand (Thai Airways, Bangkok Airways). Airlines having direct flights between Bangkok, Kuala Lumpur and Singapore and Indian metro cities have reasonably higher frequencies, compare to Tier I cities. However, Tier I cities in southern part of India are relatively better connected with Singapore and Kuala Lumpur, mostly by ASEAN airlines. Therefore, seat capacity utilisation is strongly in favour of ASEAN airlines of about 80-90 per cent, whereas, Indian airlines utilisation rate is about 43-45 per cent each between India and Singapore and India and Bangkok. Poor utilisation rate of about 3.48 per cent seat capacity has been witnessed between India and Kuala Lumpur.

- 8.6 It is in our interest to ensure that air connectivity between ASEAN and India keep up with soaring traveller demand. With more flights to more destinations, business people will travel more, and so will tourists. As passenger traffic goes up, business will increase and investments will follow in that cyclical order. Our airlines will, therefore, have to be ready to serve the rising demand of air services between India and ASEAN.
- 8.7 The air traffic, both passenger and cargo, between ASEAN and India are governed by respective bilateral air services agreement (BASA) signed between India and partner countries over time. Till December 2015, India has signed BASA with all the ASEAN countries with latest being with Lao PDR. Airlines of ASEAN countries, mainly Thailand, Singapore and Malaysia, have been flying to major Indian cities like Mumbai, Chennai, Kolkata, Delhi, Hyderabad and Bengaluru. India has offered 18 additional points to ASEAN without any restriction as to frequency or aircraft and without being subject to any commercial agreement. The entitlements and offers vary across BASA partners. ASEAN countries like Singapore, Thailand and Malaysia fly to 12 cities in India from their capital cities. On one hand, seats and frequency of air linkages with the Malaysia, Singapore and Thailand are overutilised, the same with CLMV, on the other, is largely underutilised. Therefore, we are yet to witness ASEAN airlines to fly to India's Tier II and III cities. Indian airlines also do not connect them either. This imbalance needs to be corrected through greater collaboration not only at the government level but also through private sector collaboration.

Recommendations

1. **More Cargo Airlines in Indian Sky and Vice Versa:** Given the importance of global and regional value chains, there is a growing demand for on-time air cargo services. The entry of leading private air cargo companies has brought in a wave of increasing automation, mechanisation and process improvement initiatives at major air cargo terminals in India. Such investments in air cargo handling at key airports such as Delhi, Mumbai, Bengaluru, Hyderabad, etc., are expected to yield higher air cargo throughput and improved service levels. The current share of air cargo compared to other modes of cargo transportation is fairly low in India. The potential for air cargo growth in India can be gauged from the fact that some of the global airports such as Hong Kong, Dubai and Incheon handle more cargo volume than all Indian airports put together. We may attract cargo airlines from Southeast and East Asia to boost the trade between India and Southeast and East Asia and rest of the world.

2. **Promote Air Services to Tier II and Tier III Cities between ASEAN and India:** Air services could facilitate larger numbers of tourists between India and ASEAN countries. This is very important at a time when India has offered e-Visa to most of the ASEAN countries. On Buddhist circuit, there is considerable interest from the ASEAN countries to visit Northeast and other parts of India. To promote tourism particularly in Tier II or Tier III cities, we shall facilitate operation of more flights. Given the BASAs we have and in view of proposed 5th freedom rights of traffic, new air services may be explored on the following routes: (i) Guwahati → Dhaka → Yangon → Guwahati; (ii) Guwahati → Imphal → Mandalay → Guwahati; (iii) Guwahati → Bangkok → Guwahati; (iv) Imphal → Dhaka → Bangkok → Imphal; (v) Agartala → Bangkok → Agartala; (vi) Bagdogra → Dhaka → Bagdogra; (vii) Bagdogra → Bangkok → Bagdogra; (viii) Kolkata → Yangon → Bangkok → Kolkata; (ix) Kolkata → Port Blair → Phuket → Port Blair → Kolkata; (x) Vizag → Kuala Lumpur → Vizag; (xi) Kolkata → Port Blair → Bangkok → Port Blair → Kolkata; and (xii) Gaya → Yangon → Gaya. Appendix 6 illustrates these routes. The aforesaid routes may be negotiated with ASEAN under the BASA or through the proposed ASEAN-India Air Transport Agreement.

3. **More Indian Airlines in Southeast and East Asian Sky:** We may allow more Indian airlines to serve between Southeast and East Asia and India. In the Draft of NCAP (2015), MoCA has proposed to replace 5/20 rule¹ by allowing Indian airlines to have 20 aircrafts requirement and deploying a minimum of 20 per cent domestic capacity.² If approved, the proposed policy would allow new Indian carriers to operate internationally, which in turn would boost air connectivity with ASEAN and beyond.

4. **ASEAN Single Aviation Market Must:** Although the ASEAN Open Skies Policy in part came into effect on 1 January 2015, it is yet to be fully operational. The ASEAN Single Aviation Market (ASAM) will lead to growth and development as it opens up the market to more competition. Greater connectivity between aviation markets arising from ASAM should encourage higher traffic growth and service quality, while lowering air fares. The most important aspect of liberalising aviation markets is the guarantee of third, fourth, fifth, and seventh freedoms of the air. Opening of ASAM would be advantageous to Indian carriers to fly to Southeast Asia on a larger scale.
5. **Completion of ASEAN-India Air Transport Agreement:** The ASEAN-India Air Transport Agreement would increase air travel seating capacity on flights and liberalise air cargo services between the two sides provided we remove the bottlenecks to trade and air transportation. At the same time, India has Open Sky Policy in air cargo for a long time. We want ASEAN carriers to serve Tier II and Tier III cities. We expect that ASEAN should allow Indian carriers with fifth freedom to connect important destinations. While a comprehensive air transport agreement is needed to expand tourism and trade between ASEAN and India, this would only make sense when ASEAN becomes a single aviation market and we introduce a competition policy. In addition to air service liberalisation, we should also aim to improve aviation safety, aviation security, air traffic management, civil aviation technology, and air transport regulatory frameworks. However, to develop a strong aviation industry, India needs to stabilise pricing and capacity. While passenger growth is itself a positive sign, airlines require to undertake capital restructuring to reduce interest costs and net losses, if they want to be in service for long-run.
6. **Greater Cooperation in Aviation Technology and Logistics:** India and ASEAN shall have more cooperation for building new airports, aviation technology, safety and security, warehouse management, sharing of cargo resources and logistics know how. This is an area where both will have 'win-win' opportunities. There are plenty good lessons that the Singapore Airport offers to India. At the same time, India may extend cutting edge technology like GPS Aided Government Navigation (GAGAN) to ASEAN. GAGAN is a satellite based navigation system to provide accurate navigation services over the Bay of Bengal, Southeast Asia, Indian Ocean, Middle East, and African regions (see Appendix 7 for further details). More cooperation between cargo and airlines industry associations between ASEAN and India will strengthen the institutional links. Indian airlines association or air cargo associations may consider signing cooperation agreements with their counterparts in ASEAN countries.

7. **Promote Make in India Initiative by Strengthening Air Cargo Industry:** Need to strengthen infrastructure facilities and offer investment opportunities in logistics sector, particularly in air cargo industry, to tap the potential of e-commerce and 'Make in India' initiative. Some of the ASEAN countries which are world class logistics service providers such as Singapore can be tapped for air cargo services as well as technology. As market expands, joint venture prospect in logistics, retailing and electronic transactions between India and ASEAN also grows high. India-ASEAN services trade agreement may play a facilitating role in air cargo and logistics services between ASEAN and India.
8. **Developing Value Chains and New Airlinks:** India is playing a proactive role in economic integration with CLMV region in terms of trade in goods and services as well as in exploring investment opportunities. To catalyse investments from the Indian private sector in this region, a Project Development Company (PDC) as a Special Purpose Vehicle (SPV) would be set up with US\$ 100 million capital to start with to support regional value chains (RVC) between India and CLMV. Therefore, there is a need to strengthen India's air links with CLMV countries. Currently, India has air connectivity with Yangon in Myanmar and Ho Chi Minh City in Vietnam. But, as on date, there is no direct airlinks between India and Cambodia; and India and Lao PDR. Therefore, better airlinks should be developed between India and CLMV.
9. **Develop Aviation Education:** An ASEAN-India School of Aviation in India or anywhere in ASEAN would be an excellent project to start with. Besides, institutional level exchange programme to share the knowledge and technical skills would strengthen the technical cooperation between ASEAN and India in the aviation sector.
10. **Trade Facilitation Agreement and Air Connectivity:** There is a need to improve air cargo logistic sector to reduce transportation costs and improve air connectivity between ASEAN and India. India and most of the ASEAN and East Asian countries are members of the WTO Trade Facilitation Agreement (TFA), and have either ratified the Agreement or in the process of ratification. The WTO TFA is a legally binding agreement that expects better connectivity and faster and efficient logistics services. Therefore, by facilitating air linkages between ASEAN, East Asia and India, we may not only comply with the TFA obligations but also successfully connect Asia that all nations can live with.

Endnotes

- ¹ In October 2004, the Union Cabinet stipulated that for Indian carriers to fly abroad, they required to have a fleet of 20 aircrafts and operational experience of five years to start international operations. In the Draft of NCAP (2015), MoCA has invited the stakeholders for possible policy options to relax rule 5/20.
- ² Refer, for example, "Government drops plan to bid out unused air traffic rights." *The Indian Express*, 18 April 2016.

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Appendix 1

List of Items Selected for Computing Air Shipping Ratio

Sl. No.	Product Code	Product Description
1	301	Live fish.
2	303	Fish, frozen, excluding fish fillet
3	304	Fish fillets and other fish meat (w
4	305	Fish, dried, salted or in brine; sm
5	306	Crustaceans, whether in shell or no
6	307	Molluscs, whether in shell or not,
7	308	Aquatic invertebrates other than cr
8	401	Milk and cream, not concentrated no
9	402	Milk and cream, concentrated or con
10	405	Butter and other fats and oils deri
11	406	Cheese and curd.
12	408	Birds' eggs, not in shell, and egg
13	409	Natural honey.
14	410	Edible products of animal origin, n
15	603	Cut flowers and flower buds of a ki
16	604	Foliage, branches and other parts o
17	703	Onions, shallots, garlic, leeks and
18	704	Cabbages, cauliflowers, kohlrabi, k
19	705	Lettuce (<i>Lactuca sativa</i>) and chicor
20	706	Carrots, turnips, salad beetroot, s
21	708	Leguminous vegetables, shelled or u
22	709	Other vegetables, fresh or chilled.
23	710	Vegetables (uncooked or cooked by s
24	711	Vegetables provisionally preserved
25	712	Dried vegetables, whole, cut, slice
26	713	Dried leguminous vegetables, shelle
27	714	Manioc, arrowroot, salep, Jerusalem
28	802	Other nuts, fresh or dried, whether
29	803	Bananas, including plantains, fresh
30	804	Dates, figs, pineapples, avocados,
31	805	Citrus fruit, fresh or dried.
32	806	Grapes, fresh or dried.

Continued...

Continued...

33	808	Apples, pears and quinces, fresh.
34	809	Apricots, cherries, peaches (includ
35	810	Other fruit, fresh.
36	811	Fruit and nuts, uncooked or cooked
37	812	Fruit and nuts, provisionally prese
38	813	Fruit, dried, other than that of he
39	814	Peel of citrus fruit or melons (inc
40	910	Ginger, saffron, turmeric (curcuma)
41	1003	Barley.
42	1004	Oats.
43	2002	Tomatoes prepared or preserved othe
44	2003	Mushrooms and truffles, prepared or
45	2004	Other vegetables prepared or preser
46	2005	Other vegetables prepared or preser
47	2006	Vegetables, fruit, nuts, fruit-peel
48	2007	Jams, fruit jellies, marmalades, fr
49	2008	Fruit, nuts and other edible parts
50	2009	Fruit juices (including grape must)
51	2101	Extracts, essences and concentrates
52	2102	Yeasts (active or inactive); other
53	2103	Sauces and preparations therefor; m
54	2104	Soups and broths and preparations t
55	2105	Ice cream and other edible ice, whe
56	2106	Food preparations not elsewhere spe
57	2201	Waters, including natural or artifi
58	2202	Waters, including mineral waters an
59	2203	Beer made from malt.
60	2204	Wine of fresh grapes, including for
61	2206	Other fermented beverages (for exam
62	2207	Undenatured ethyl alcohol of an alc
63	2208	Undenatured ethyl alcohol of an alc
64	2209	Vinegar and substitutes for vinegar
65	2401	Unmanufactured tobacco; tobacco ref
66	2402	Cigars, cheroots, cigarillos and ci
67	2403	Other manufactured tobacco and manu

Continued...

Appendix

Continued...

68	7101	Pearls, natural or cultured, whethe
69	7102	Diamonds, whether or not worked, bu
70	7103	Precious stones (other than diamond
71	7104	Synthetic or reconstructed precious
72	7105	Dust and powder of natural or synth
73	7106	Silver (including silver plated wit
74	7107	Base metals clad with silver, not f
75	7110	Platinum, unwrought or in semi-manu
76	7112	Waste and scrap of precious metal o
77	7113	Articles of jewellery and parts the
78	7114	Articles of goldsmiths' or silversm
79	7115	Other articles of precious metal or
80	7116	Articles of natural or cultured pea
81	7117	Imitation jewellery.
82	7118	Coin.
83	9001	Optical fibres and optical fibre bu
84	9002	Lenses, prisms, mirrors and other o
85	9003	Frames and mountings for spectacles
86	9004	Spectacles, goggles and the like, c
87	9005	Binoculars, monoculars, other optic
88	9006	Photographic (other than cinematogr
89	9007	Cinematographic cameras and project
90	9008	Image projectors, other than cinema
91	9010	Apparatus and equipment for photogr
92	9011	Compound optical microscopes, inclu
93	9012	Microscopes other than optical micr
94	9013	Liquid crystal devices not constitu
95	9014	Direction finding compasses; other
96	9015	Surveying (including photogrammetri
97	9016	Balances of a sensitivity of 5 cg o
98	9017	Drawing, marking-out or mathematica
99	9018	Instruments and appliances used in
100	9019	Mechano-therapy appliances; massage
101	9020	Other breathing appliances and gas
102	9021	Orthopaedic appliances, including c

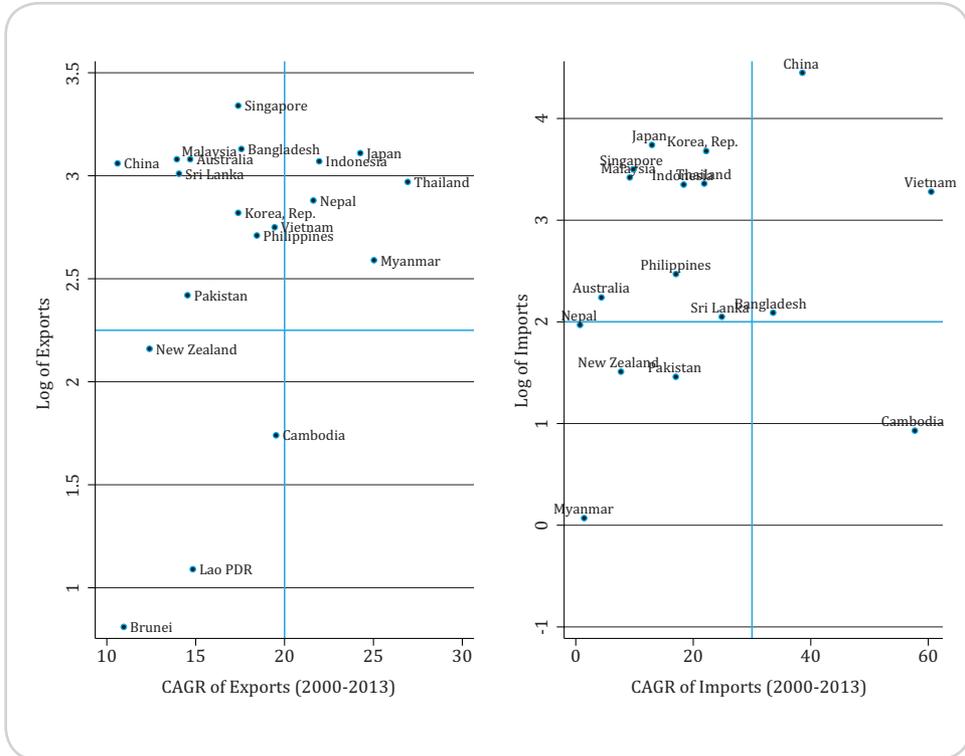
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103	9022	Apparatus based on the use of X-ray
104	9023	Instruments, apparatus and models,
105	9024	Machines and appliances for testing
106	9025	Hydrometers and similar floating in
107	9026	Instruments and apparatus for measu
108	9027	Instruments and apparatus for physi
109	9028	Gas, liquid or electricity supply o
110	9029	Revolution counters, production cou
111	9030	Oscilloscopes, spectrum analysers a
112	9031	Measuring or checking instruments,
113	9032	Automatic regulating or controlling
114	9033	Parts and accessories (not specifie
115	9101	Wrist-watches, pocket-watches and o
116	9102	Wrist-watches, pocket-watches and o
117	9103	Clocks with watch movements, exclud
118	9104	Instrument panel clocks and clocks
119	9105	Other clocks.
120	9106	Time of day recording apparatus and
121	9107	Time switches with clock or watch m
122	9108	Watch movements, complete and assem
123	9109	Clock movements, complete and assem
124	9110	Complete watch or clock movements,
125	9111	Watch cases and parts thereof.
126	9112	Clock cases and cases of a similar
127	9113	Watch straps, watch bands and watch
128	9114	Other clock or watch parts.
129	9701	Paintings, drawings and pastels, ex
130	9702	Original engravings, prints and lit
131	9703	Original sculptures and statuary, i
132	9704	Postage or revenue stamps, stamp-po
133	9705	Collections and collectors' pieces
134	9706	Antiques of an age exceeding one hu

Appendix 2

Figure 14a: Scatter Plot of Log of Exports and Imports of Selected BEC Items in 2013 and CAGR of Exports and Imports of Selected BEC Items between 2000 and 2013



Appendix 3

Table 18: Bilateral Air Service Agreement between India and ASEAN / ASEAN+5 Countries

Countries	Foreign Entitlements		Indian Entitlements		ASEAN Offer	
	No of Frequency	Equivalent Seats	No of Frequency	Equivalent Seats	7 weekly service to Mumbai, Calcutta, Delhi and Chennai	18 Additional cities [#]
ASEAN						
Brunei	2	450	2	450	yes	yes
Cambodia	-	-	-	-	yes	yes
Indonesia		1000		1000	yes	yes
Malaysia	Chennai - 7	2800	Indian Entitlements at MH levels less 1500 seats		yes	yes
	Mumbai - 6	1800				
	Bengaluru - 2	600				
	Delhi - 1	300				
	Hyderabad - 2	600				
	Calicut - 3	900				
Myanmar		750		750	yes	yes
Philippines	Limited to 7 flights per week with any aircraft type not exceeding the capacity of a B747 aircraft.					
Singapore	Route to Mumbai, Chennai, Kolkata, Delhi, Kochi, Hyderabad, Bengaluru	32.75 Units + 1650 weekly seats + 5 weekly services		32.75 Units + 1650 weekly seats + 5 weekly services	yes	yes
Thailand		9895		9895	yes	yes

Continued...

Appendix

Continued...

Vietnam	-	-	-	-	yes	yes
Lao PDR	-	-	-	-		
ASEAN+						
Australia	to and from Major Cities: Chennai, Mumbai, Kolkata, Bengaluru and Hyderabad	6500	to and from Sydney, Melbourne, Brisbane, Perth	6500		
China	42	16800	42	16800		
New Zealand	2	600	2	600		
Japan	14 units	2800	14 units	2800		
South Korea	7	5600	7	2200		

Notes: #18 additional points in India without any restriction as to frequency or aircraft and without being subject to any commercial agreement. These 18 points are Patna, Lucknow, Guwahati, Gaya, Varanasi, Bhubaneswar, Khajuraho, Aurangabad, Goa, Jaipur, Port Blair, Cochin, Thiruvananthapuram, Calicut, Amritsar, Visakhapatnam, Ahmedabad, Tiruchirapalli.

Source: Calculated based on DGCA, http://www.dgca.nic.in/bilateral/bilateral_idx.htm

Appendix 4

Air Services Agreements Projector (ASAP) by WTO provides an estimate of the 'openness' of the bilateral ASAs through computing Air Liberalisation Index (ALI). It was devised by the WTO Secretariat in consultation with a panel of professionals, academics and air transport negotiators.

The degree of liberalisation of the ASAs incorporate many features covering a wide range of topics such as aviation security, incident investigation, immigration, control of travel documents and many others. In a recent study, the WTO Secretariat (WTO, 2006) has identified seven features of ASAs as relevant indicators of openness for scheduled air passenger services. These include:

a) Grant of rights that defines the rights to provide air services between the two countries. In particular, the WTO study focuses on the fifth freedom, seventh freedom and cabotage. Fifth freedom is the freedom to carry freight/passengers between two countries by an airline of a third country on a route with origin or destination in its home country. Seventh freedom allows carrying freight/passengers between two countries by an airline of a third country on a route with no connection with its home country. Cabotage is the freedom to carry freight/passengers within a country by an airline of another country on a route with origin/destination in its home country (see Table A3).

b) Capacity clause that identifies the regime to determine the capacity of an agreed service. The capacity regime refers to the volume of traffic, frequency of service and/or aircraft type(s). Sorted from the most restrictive to the most liberal regime, three commonly used capacity clauses are: predetermination, Bermuda I and free determination. Predetermination requires that capacity is agreed prior to the service commencement; Bermuda I regime gives limited right to the airlines to set their capacities without a prior governmental approval and free determination finally leaves the capacity determination out of regulatory control;

c) Tariff approval that refers to the regime to price air services. The most restrictive regime is that of dual approval, whereby both parties have to approve the tariff before this can be applied. The most liberal regime is free pricing, when prices are not subject to the approval by any party. The semi-liberal regimes are country of origin disapproval (where tariffs may be disapproved only by the country of origin), dual disapproval (where both countries has to disapprove the tariffs in order to make them ineffective) and zone pricing (where parties agree to approve prices falling within a specific range and meeting certain characteristics, whilst outside the zone one or a combination of the other regimes may apply);

d) Withholding that defines the conditions required for the designated airline of the foreign country to operate in the home country. Restrictive conditions require substantial ownership and effective control, meaning that the designated airline is the “flag carrier” of the foreign country. More liberal regimes are community of interests and principal place of business regimes, when a foreign airline can be also designated by the foreign country. Community of interests regime still requires a vested substantial ownership and effective control of the airline in one or more countries that are defined in the agreement, but principal place of business regime removes the substantial ownership requirement and is thus more liberal;

e) Designation that governs the right to designate one (single designation) or more than one (multiple designations) airline to operate a service between two countries;

f) Statistics that provides rules on exchange of statistics between countries or their airlines. If exchange of statistics is (can be) requested, it is an indicator that the parties intend to monitor the performance of each other’s airlines and is thus viewed as a restrictive feature of an agreement;

g) Cooperative arrangements that define the right for the designated airlines to enter into cooperative marketing agreements (such as code sharing and alliances). This right is considered as a liberal feature because it provides a means to rationalise networks, much in the same way as the liberalisation of the ownership clause. Table 1 gives the detailed combinations of provisions that make up the various types.

Table A4: Types of Air Services Agreements

Type	Freedoms	Designation	Withholding/ ownership	Tariffs	Capacity
A	3rd and 4th	Single designation	Substantive ownership and effective control	Double approval	Pre-determination
B	3rd and 4th	Multi-designation	Substantive ownership and effective control	Double approval	Pre-determination
C	3rd, 4th, 5th	Single designation	Substantive ownership and effective control	Double approval	Pre-determination
D	3rd, 4th, 5th	Single designation	Substantive ownership and effective control	Double approval	Bermuda I

Continued...

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E	3rd, 4th, 5th	Multi-designation	Substantive ownership and effective control	Double approval	Pre-determination
F	3rd, 4th, 5th	Multi-designation	Substantive ownership and effective control	Double approval	Bermuda I
G	3rd, 4th, 5th	Multi-designation	Substantive ownership and effective control <i>or</i> Community of interest <i>or</i> Principal place of business	Free pricing <i>or</i> Double disapproval	Free determination
I Incomplete ICAO coding	<i>If either:</i>		"n/a"	"n/a"	"other"
O All other combinations					

Note: ASAs are classified as "G" also when more than one kind of withholding provision applies (e.g. substantial ownership *and* principal place of business). They are classified as "I" also when capacity is "n/a". The indication "n/a" denotes the non-availability of the relevant information.

Appendix 5

E-Visa

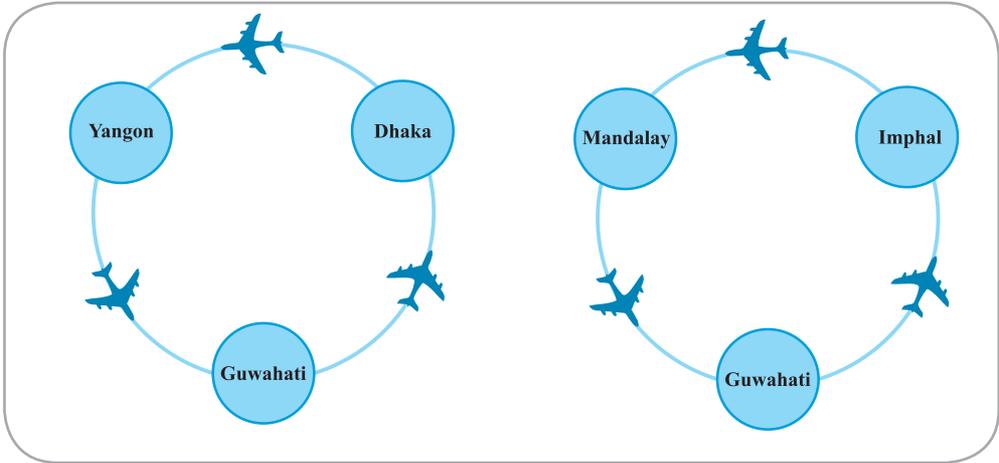
The Government of India has been continuously extending its “visa on arrival” scheme since November 2014. In April 2015, the name of the scheme has been changed from Visa on Arrival to Electronic Travel Authorisation (ETA). Under ETA, tourists have to apply for a visa online 72 hours in advance of the travel and carry a copy of that visa with them when they travel to India. China being the 77th country eligible for e-visa to India, the Government of India intends to hit the number of 150 countries by next year. The impetus behind the relaxation of visa policies is to attract tourists to India. It overcomes the infrastructure and security hurdles by a large extent for the government, especially at the immigration checkpoints.

Despite the advantage, there are, however, practical hurdles that need to be addressed for better implementation. As of now, only nine Indian cities are equipped to handle passengers arriving with the e-visa, which include Mumbai, Delhi, Chennai, Kolkata, Hyderabad, Bengaluru, Kochi, Goa and Thiruvananthapuram.

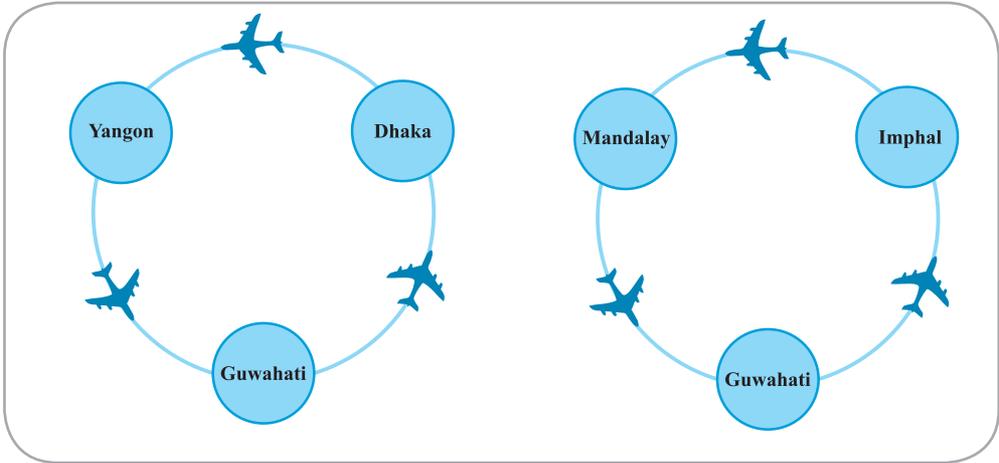
Appendix 6

Proposed Routes between Tier II/Tier III India Cities and ASEAN Cities

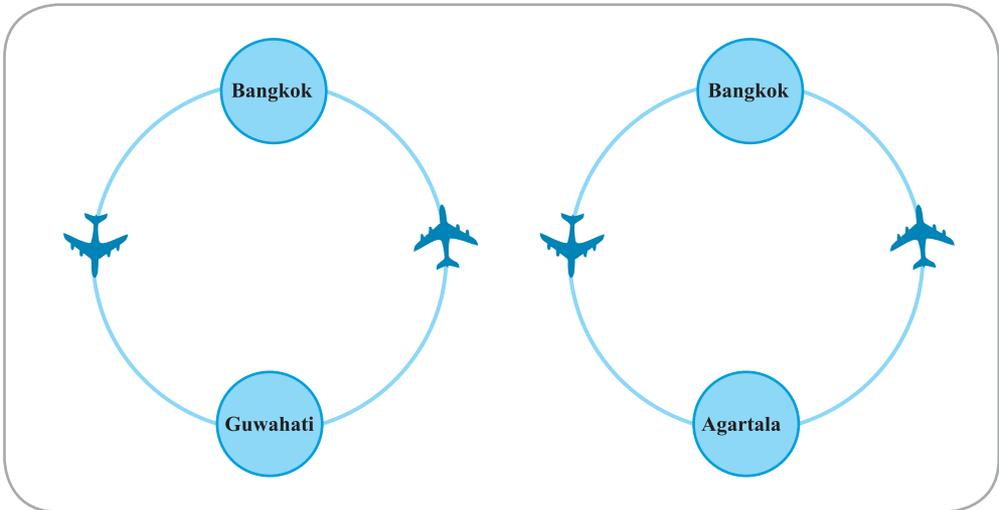
Route 1



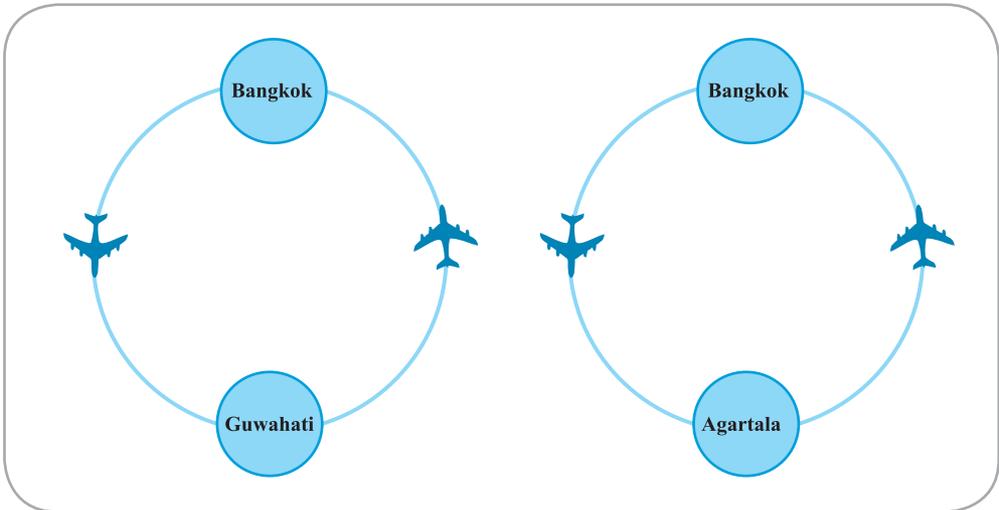
Route 2



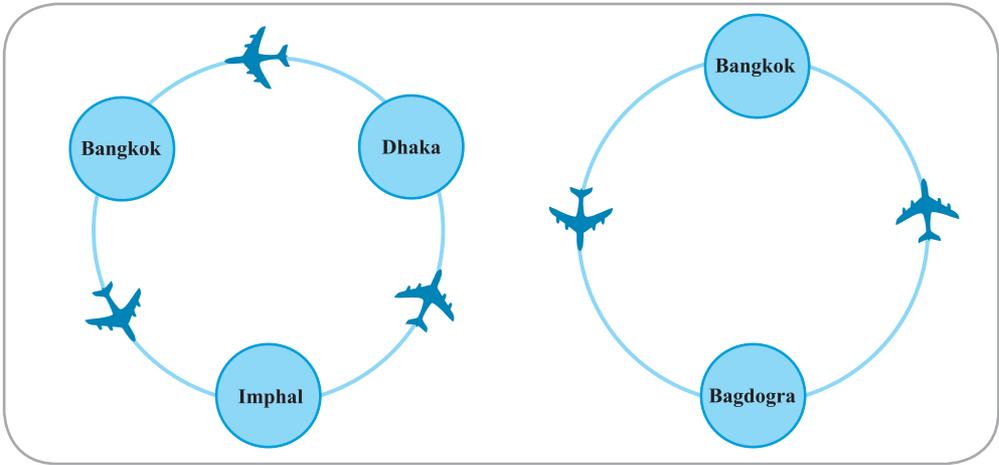
Route 3



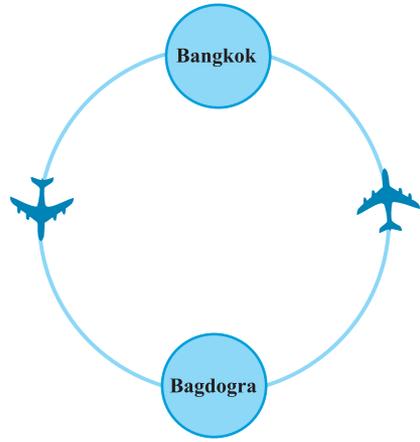
Route 4



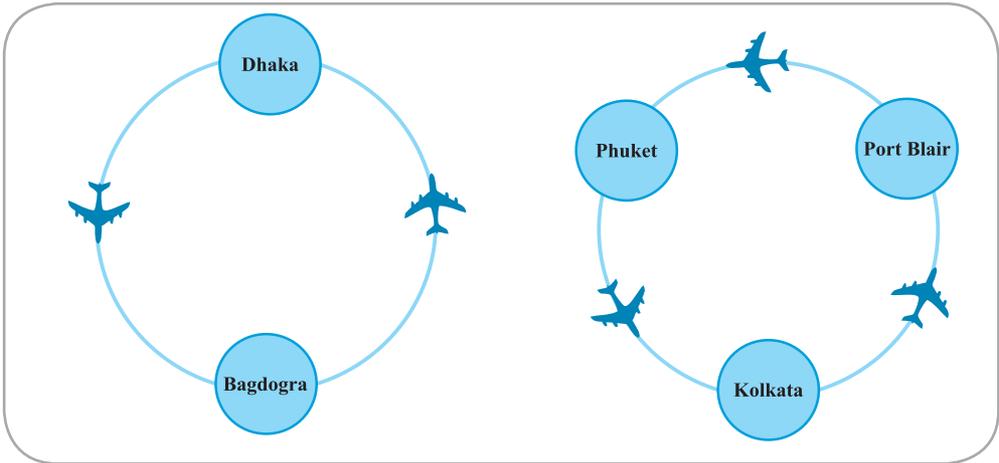
Route 5



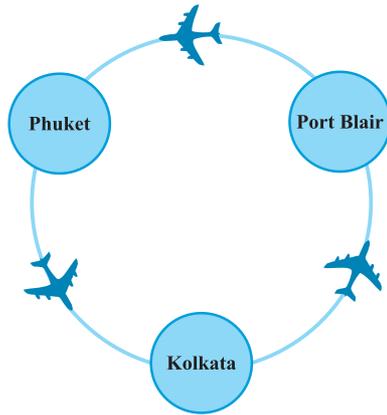
Route 6



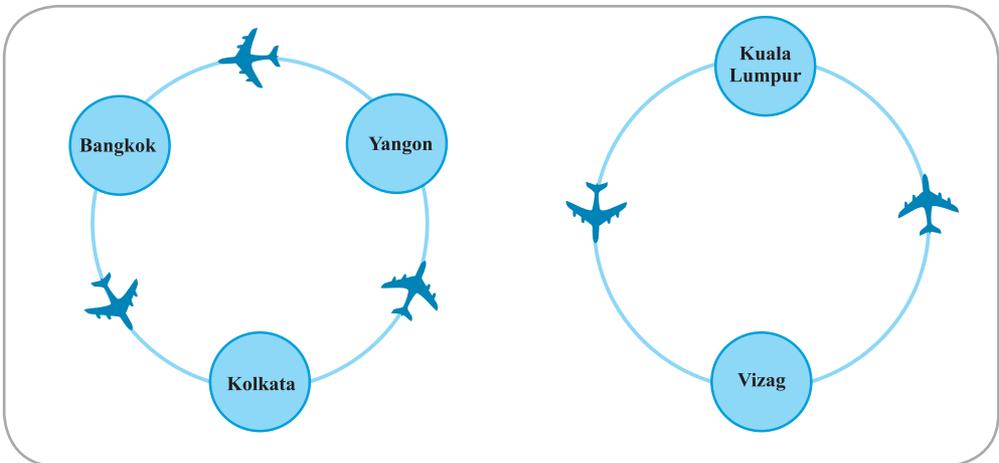
Route 7



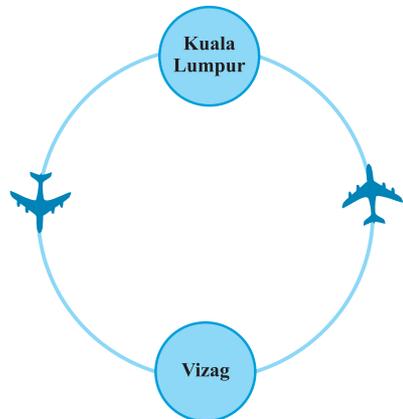
Route 8



Route 9

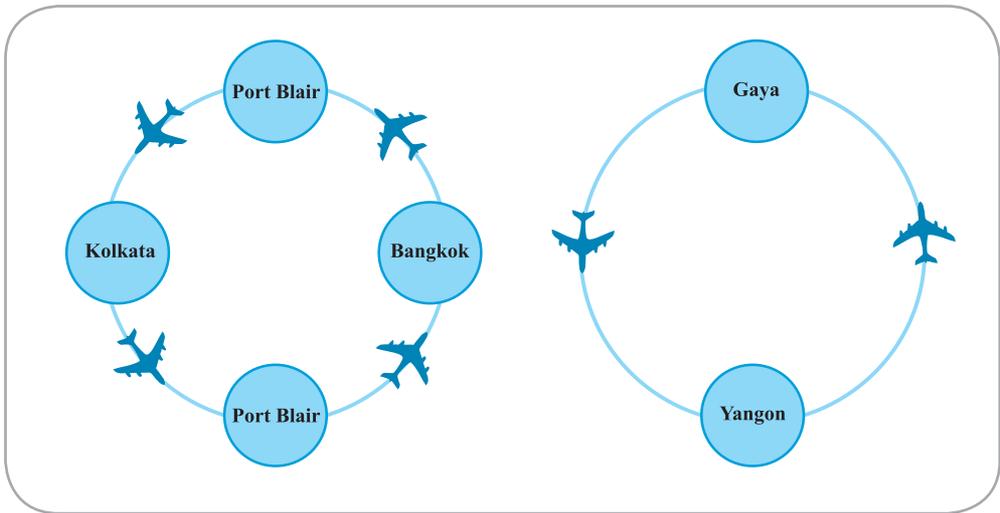


Route 10



Route 11

Route 12

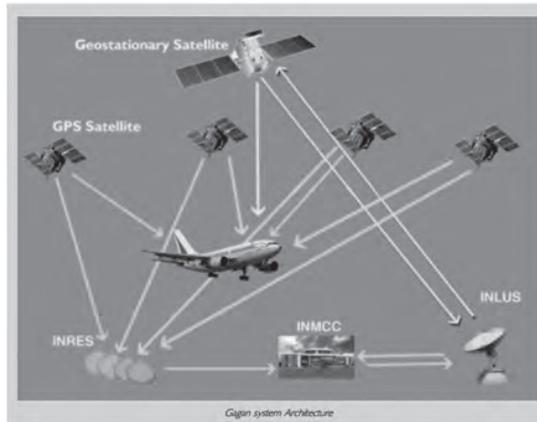


Appendix 7

GAGAN: Satellite Based Navigation System

Global Positioning System Aided Government Navigation (GAGAN) is a satellite based navigation system to provide accurate navigation services over the Bay of Bengal, South East Asia, Indian Ocean, Middle East, and African regions. It is developed by Indian Space Research Organisation (ISRO) in collaboration with Airports Authority of India (AAI). GAGAN works by augmenting and relaying data from GPS satellites with the help of two augmentation satellites and 15 earth-based reference stations. It is compatible with other Space Based Augmentation Systems such as the Wide Area Augmentation System of the U.S., the European Geostationary Navigation Overlay Service and the Multi-functional Satellite Augmentation System of Japan. Therefore, it would provide seamless air navigation service across regional boundaries. India would become the fourth country in the world to adopt this system.

GAGAN Architecture



GAGAN would serve as a low cost substitute for Instrument Landing System (ILS). A Flight Management System (FMS), based on GAGAN, is under development to help civil aircraft operators to save time and money by managing climb, descent and engine performance profiles of aircraft. As fuel cost is a major consideration in the Indian aviation scenario as 45-50 per cent of total cost is dependent on it. Therefore, accurate guidance for planning shorter routes and safer landing patterns is expected to provide the aviation sector cost-saving options. In India, it was launched on 13 July 2015, initially India plans to use the GAGAN system in 40 candidate airports that will require CAT-1 or close to CAT-1 capability. The system will improve airport and airspace access in all-weather conditions while meeting environmental and obstacle clearance constraints. AAI has proposed that smaller aircraft can adopt the new technology and that acquisition norms can be made in such a way that promotes the usage of such a system.

Part II

Roundtable on
ASEAN-India Air Connectivity

28 September 2015
Marigold Hall, India Habitat Centre, New Delhi

AGENDA

01.30 – 02.00 pm : Registration and Tea / Coffee

02.00 – 02.45 pm : Inaugural Session

- Welcome by Prof. Prabir De, Coordinator, AIC
 - Opening Address by Amb. Shyam Saran, Chairman, RIS
 - Special Address by Mr. Anil Srivastava, Jt. Secretary (AS), Ministry of Civil Aviation (MOCA)
 - Keynote Address by Ambassador Anil Wadhwa, Secretary (East), Ministry of External Affairs (MEA)
-

02.45 – 04.15 pm : Session 1: Air Transportation between India and Southeast and East Asia: Presentation on ASEAN-India Air Connectivity Study

In Chair: Dr Sanat Kaul, Chairman, International Foundation for Aviation, Aerospace and Development (IFFAAD), New Delhi

Special Address by Ms. Pooja Kapur, Joint Secretary (AML), Ministry of External Affairs (MEA)

- Presentation of *ASEAN – India Air Connectivity* by Dr. Prabir De, Professor, RIS and Coordinator, AIC

Special Remarks by Dr. Shefali Juneja, Director, Ministry of Civil Aviation (MoCA)

Panellists [arranged in alphabetical order airlines]

- Mr. Mittu Chandilaya, Managing Director and Chief Executive Officer (CEO), Air Asia (India)
- Mr. Jagtesh Saini, Head, Corporate Affairs, Air Asia (India).
- Mr. Anand Pandey, Deputy General Manager (P&A) , Air India
- Mr. Rajan Malhotra, Associate Director – Network Planning, InterGlobe Aviation
- Ms. Ragini Chopra, Vice President - Corporate Affairs & Public Relations, Jet Airways
- Mr. Sumit Kapoor, Executive- Corporate Affairs & Public Relations, Jet Airways
- Mr. Debashis Saha, Associate Vice President - Network Planning (Marketing & Sales), Spice Jet

Open Floor Discussion

04.15 – 05.15 pm : Session 2: ASEAN-India Open Sky: Opportunities and Challenges

In Chair: Mr. Satendra Singh, Former Director-General, Directorate General of Civil Aviation (DGCA), New Delhi

Panellists

- Mr. Kapil Kaul, Chief Executive Officer (South Asia), Centre for Aviation (CAPA), New Delhi
- Mr. Amber Dubey, Head of Defence and Aerospace, KPMG
- Mr. Jitendra Singh, Associate VP – Airline Marketing, Delhi International Airport Ltd.
- Mr. Deepak Dadlani, Former Chairman, Air Cargo Association of India (ACAAI)

Open Floor Discussion

05.15 – 05.30 pm : Wrap-up and Vote of Tanks

- Dr. Prabir De, Professor, RIS and Coordinator, AIC
- Vote of Thanks by Dr. Durairaj Kumarasamy, AIC

05.30 pm : High Tea

KEYNOTE ADDRESS

Ambassador Anil Wadhwa

Secretary (East), Ministry of External Affairs

Amb. Shyam Saran, Chairman, RIS,

Shri Anil Shrivastava, Joint Secretary, Ministry of Civil Aviation,

Representatives of Airlines, Logistics Industries and Industry Associations,

Prof. Prabir De, Coordinator, ASEAN-India Centre,

Ladies and Gentlemen,

I extend a warm welcome to all participants who are present here today to discuss the way forward for air connectivity between ASEAN and India. I compliment the ASEAN-India Centre for organising this Roundtable and for assembling in this room some of the key stakeholders in India's air transport infrastructure.

2. We are told that the sky is the limit, but we are gathered here today to test that limit and expand the horizons of our relations with our eastern neighbourhood, in particular with the ASEAN region. We live in a world where age old barriers have been significantly reduced due to a transformative rise in connectivity, between cities, amongst nations and across continents. Advancements in science and technology have accelerated physical, economic, institutional, social and cultural connectivity.
3. Whilst the world may be connected now more than ever, South East Asia and India have always shared an intimate and long history of economic, cultural and religious exchanges through maritime and over-land routes, which has had a lasting impact on our relations and enriched and shaped our great civilisations.
4. It is against this background of a history of deep association and expansive linkages between ASEAN and India, and a desire to keep pace with a highly integrated and globalised world today, that enhancing connectivity between ASEAN and India has formed a major thrust of our erstwhile Look East Policy, and its more recent and refined version as the Act East Policy today. The Act East Policy envisions increased cooperation in trade, investment, infrastructure development, capacity building, strengthening people-to-people contacts in the region, as well as connectivity, the last of these being the biggest facilitator for achieving the former objectives.

5. Connectivity in all its aspects - physical, digital, institutional and people-to-people, is one of the foremost priorities in the ASEAN-India strategic partnership. Physical connectivity can be split into land, maritime and air connectivity. It is important that today's Roundtable discuss, analyse and try and synthesize the various components that would help us strengthen India's air transport linkages with Southeast Asia to mutual benefit.
6. India's commitment to enhancing its air connectivity with ASEAN became formally established with India's announcement to work towards a Partial Open Skies Agreement with ASEAN in 2003, with a view to liberalising it further over the years, eventually hoping to lead to an Open Skies Agreement. ASEAN-India aviation cooperation framework was adopted at the 14th Transport Ministers Meeting in Makati, Philippines on 6 November, 2008. The Ministry of Civil Aviation has already adopted an Open Sky Policy on Cargo for ASEAN nations. As regards an Open Sky Policy for Passenger Traffic, at present 18 destinations of tourist and business interests are available to ASEAN countries in Tier II and III cities out of which only 7 have been utilised.
7. I personally foresee large economic dividends for ASEAN and India if agreement on reciprocating higher degrees of Freedom of the Air is pursued, especially at a time when ASEAN is moving towards the ASEAN Economic Community and the ASEAN Singular Aviation Market (ASAM), with encouraging signs already shown by Indonesia's recent ratification of ASEAN's Multilateral Agreement on Air Services (MAAS).
8. With the Free Trade Agreement in goods between India and ASEAN coming in effect from 1 January 2010, the ASEAN-India partnership has assumed greater economic depth. Two-way trade between ASEAN and India crossed US\$ 76.53 billion in 2014-15, with ASEAN being India's 4th largest trading partner, and we being ASEAN's 7th largest partner. As ASEAN and India continue to take strides on the economic front with the entry into force of the ASEAN-India Free Trade Agreements on Services and Investment w.e.f. 1 July, 2015 and the ongoing negotiation on the Regional Comprehensive Economic Partnership Agreement (RCEP), it becomes imperative that parallel efforts be made for enhanced connectivity.
9. Two factors that have a significant bearing on trade and investment are connectivity and access to infrastructure finance. Connectivity in all its dimensions is receiving the highest priority on the ASEAN-India cooperation agenda. India supports the Master Plan on ASEAN Connectivity and has annual consultations with the ASEAN Connectivity Coordination Committee. Some key ASEAN-India connectivity projects that are under progress include the India-Myanmar-Thailand Trilateral Highway project,

the Kaladan Multimodal Transit Transport Project and the Mekong-Ganga Economic Corridor, which are developing alongside India's own national connectivity projects. We have just concluded negotiations on a Trilateral Motor Vehicles Agreement, and are also negotiating a Maritime Transport Cooperation Agreement with ASEAN in order to strengthen maritime connectivity.

10. The second factor in trade and investment is access to infrastructure finance. Here, India has also taken steps to ensure that finance is available for infrastructure projects. India is working to create a Special Facility for project financing and quick implementation of connectivity projects with ASEAN, whereby industry could receive government support for investments in connectivity projects with the ASEAN region. This initiative is expected to provide a further fillip to trade and investment as well as to integrating our producers and manufacturers in regional value chains.
11. The Ministry of Commerce and Industry is also working on a Project Development Company to nurture businesses in CLMV countries, with a view of expanding our trade and investment relations.
12. Enhanced air connectivity will play an important role in reaching our trade target of US\$ 200 billion by 2022. Air connectivity is key to sourcing intermediate goods and services, which feed into our industries, and transporting finished goods to the ultimate destinations. It is an important mode of transportation for carrying passengers, high-value fragile goods and perishable commodities from one place to another within a limited time.
13. Given the importance of global value chains and regional production networks, there is a growing demand for air cargo services. Faster movement of raw materials, components, parts and spares help firms in maintaining lower inventories and enhancing production efficacy. Besides, growth of passenger fleets would provide ample belly capacity for cargo movement, both in the domestic and international segments. Therefore, addressing the lacunae in the air cargo segment would enable the promotion of trade integration between ASEAN and India.
14. Minimising time and transportation costs is essential for the sustenance and smooth functioning of stronger production networks. In India, air transport has contributed significantly to the rapid growth in the country's international trade by offering a reliable and faster mode of transport services to move products across long distances. As India strives to transform itself into a global manufacturing hub by building regional production and supply chain networks with Southeast and East Asia,

improved air connectivity would be essential to fulfilling our economic objectives in the region.

15. Increasing the number of airlines participating in air cargo services is one way of liberalising the air-cargo industry. Allowing ASEAN companies in cargo operation could not only bring valuable FDI to India, but also help introduce new technology to the airlines industry in India.
16. Air travel has changed considerably over the last few decades. With major improvements in technology, air travel is not only more efficient, making distances between countries shorter, but it has also become much more affordable. The continued growth of low cost carriers (LCCs) and their increased penetration into both Indian and ASEAN markets has made air travel more accessible. However, India's passenger air travel arrangements with ASEAN countries are not unified at present, with, for example, only 5 out of 10 ASEAN countries having a direct flight connection to India at present.
17. According to the ASEAN-India Centre's study that we will discuss today, there was a near 50 percent increase in the passenger flow between ASEAN and India from 2005-06 to 2013-14, mostly from Singapore, Thailand and Malaysia, countries with which India has a direct flight connection. ASEAN passenger inflow to India has also been increasing steadily over the years. The passenger inflow from ASEAN countries to India is, however, smaller than passenger outflow from India to ASEAN countries.
18. Rising consumer demand needs to be met with joint efforts between ASEAN and India for improved air services. This could also facilitate a larger number of tourists between India and ASEAN and it is especially important as India has already taken the first step by offering e-visa facilities to 9 ASEAN member states. There is considerable interest from ASEAN tourists to visit the North Eastern part of India, in addition to specific Buddhist sites across the country.
19. The Open Skies arrangement in air cargo could also lead to attract higher investment in airport infrastructure in India. One successful example is the new airport in Andal, West Bengal, set up by the Bengal Aerotropolis Projects Limited (BAPS) with technical and financial assistance from Singapore's Changi Airports International (CAI). Similar initiatives in the north-eastern region of India, India's gateway to East Asia, could also attract ASEAN investments in India, whilst also promoting trade and tourism between ASEAN and India.
20. The entry of leading private air cargo companies has also brought in a wave of increasing automation, mechanisation and process improvement initiatives at major air cargo terminals in the country. Air cargo terminals

at Delhi International Airport have done considerably well in improving terminal productivity. Investments in air cargo handling facilities at Indian airports by prominent logistics and cargo companies of ASEAN are expected to yield higher air cargo output and improved services. At the same time, Indian developers are also building airports in ASEAN, and looking forward to invest in the aviation sector in CLMV countries.

21. On the air connectivity front, India and ASEAN carriers are also entering into code share agreements with foreign airlines, such as the one between Jet Airways and Vietnam Airlines. Once the market size becomes bigger, more and more carriers between India and ASEAN could engage in joint ventures, for serving new destinations and promoting sales across borders. Business opportunities are therefore ample. However, to unlock such potential, we need both concrete steps and strategy.
22. I have briefly touched upon some of the key issues pertaining to the ASEAN-India air connectivity agenda. It is our hope that increased air-connectivity will integrate our economies, our region and our peoples towards reaching their shared destiny of a bright and prosperous future.
23. I look forward to the discussions today to identify the way forward on ASEAN-India air transport cooperation. This subject is part of our discussions with the ASEAN Connectivity Coordinating Committee (ACCC), due next month, and your recommendations will prove valuable in our discussions.
24. I wish you all success and hope that the discussions in each of the sessions would emphasize the specifics to help us build a calibrated approach. I would like to, once again, commend the ASEAN-India Centre and RIS for putting together the excellent sessions and panels for discussion today.

Thank you.

SPECIAL ADDRESS

Ms. Pooja Kapur

Joint Secretary (ASEAN ML), Ministry of External Affairs

Dr. Sanat Kaul, Chair of the Session

Amb. Anil Wadhwa, Secretary (East), Ministry of External Affairs

Amb. Shyam Saran, Chairman, RIS

Shri Anil Shrivastava, Joint Secretary, Ministry of Civil Aviation,

Ms. Shefali Juneja, Director, Ministry of Civil Aviation,

Dr. Prabir De, Coordinator, ASEAN-India Centre,

Representatives of Airlines, Logistics Companies and Industry Associations,

Ladies and Gentlemen,

I am pleased to be here at this long awaited Roundtable on ASEAN-India Air Connectivity, providing an opportunity for the public and private sector stakeholders in the aviation sector to come together to brainstorm on how to carry forward this important agenda under the ASEAN India Strategic Partnership, as well as to hear the findings of the ASEAN India Air Connectivity Report prepared by Dr. Prabir De, Coordinator, ASEAN India Centre.

1. Just last week, I was reading an article on “Air Travel in India”, carried by The Economist, which said that according to the International Air Transport Association (IATA), India is the fastest growing aviation market on the planet, but no thanks to the Government! Keeping in mind that both Secretary (East), MEA and JS, Civil Aviation have given us an excellent overview and insight into ASEAN-India air connectivity, I will restrict myself to only making a few key points. I would instead prefer to hear from you, specially from our industry colleagues, as to what their ambitions and expectations in the sector are and the constraints that they face, which we could look to address.
2. For over two decades now, there has been increasing focus on expanding our ties with our eastern neighbourhood and beyond, covering the entire Asia-Pacific region. India’s relations with ASEAN are today one of the cornerstones of our foreign policy and the foundation of our Act East Policy, which, as you are perhaps aware, Prime Minister Modi first enunciated at the ASEAN-India and East Asia Summits in Nay Pyi Taw, Myanmar last November.

3. Our relationship with ASEAN dates back to 1992 when we became Sectoral Dialogue partners, followed by Summit level partners in 2002, and Strategic level Partners in 2012. The relationship stands on three pillars – politico-security, economic and socio-cultural, and the last two decades have witnessed considerable deepening of cooperation across the three.
4. Connectivity is a key component of all three pillars of cooperation, for no relationship can expand without connectivity, especially physical, be it via land, sea or air. India is one of ASEAN's only two dialogue partners which has both land and maritime borders with it. Several projects in developing both overland and maritime connectivity between India and ASEAN are in the pipeline, which Secretary (East) mentioned in his address. However, surprisingly, air connectivity, which does not even require physical proximity, is lagging behind. There are direct flights between India and only 5 out of the 10 ASEAN countries. Of these, as per data available with us, only Singapore, Malaysia and Thailand are connected to multiple cities in India, Vietnam is connected by a flight from Ho Chi Minh City to Mumbai and Myanmar is connected by a flight from Yangon to Kolkata.
5. For any political, business or socio-cultural relationship to expand, people need to travel. In this day and age, specially following the advent of low cost carriers, air travel is the preferred and after the only feasible mode of transport in most cases. Not having direct air connectivity greatly hampers development or even sustenance of a relationship.
6. For instance, the ASEAN Secretariat is located in Jakarta. However, if we have to travel there for meetings, we have to take flight via Singapore or another location, as there are no direct flights! This is despite the fact that Indonesia is our largest trading partner in goods in ASEAN and we share deep historical affinities with the country, including the beautiful island of Bali which is the home of Hinduism in what is the world's largest Islamic country. There are clearly huge opportunities for the air services industry here and we need to examine how the Indian aviation sector can benefit from these.
7. This brings me to next point, which is the economic dimension. ASEAN is India's fourth largest trading partner and we are ASEAN's seventh largest trading partner, with annual trade of over USD 76.53 billion in 2014. Indonesia, Malaysia, Singapore, Thailand and Vietnam are our bigger trading partners in ASEAN, with Singapore having a clear lead both as a source of investment and as a destination for Indian investment. Indian investment in ASEAN was USD 38.7 billion between 2007-08 to 2014-15 while ASEAN investments in India during the same period were USD 32.44 billion. Investors also travel by air rather than by foot or on a sail boat.
8. Secretary (East) spoke in detail about the precise economic benefits of liberalising the air cargo sector, including quick and reliable movement of

high value fragile goods, perishable commodities and even raw materials and finished goods. Enhancing air cargo connectivity with ASEAN could help transform India into a global manufacturing hub by helping us integrate with regional production and supply chain networks in Southeast Asia. The economic logic for enhancing air connectivity is, therefore, self evident.

9. Simultaneously, sharing of expertise and technical and financial tie ups between Indian companies and ASEAN ones in the establishment of airports is another promising area, as is the possibility of more code-sharing agreements between airlines, especially where Indian companies do not find it feasible to fly directly to ASEAN destinations but would nevertheless like to have a presence there, which also helps built their brand image.
10. This brings us to the third and in a sense the most important aspect of ASEAN-India relations, which is people-to-people connectivity. When people visit another country, whether it is for work, study, business or pleasure, they gain infinitely in terms of knowledge and experience. They also develop an emotional connect. Southeast Asia is a favoured destination for India tourists, offering a host of beautiful destinations within a three to five hours flying time, with good infrastructure and affordable quality hotels. As per data, provided by the Ministry of Tourism, 30 lakh Indian tourists visited ASEAN countries in 2013-14, while India received nearly 7 lakh tourists from ASEAN. The figure has, infact, gone up further following the two unfortunate Malaysia Airlines disasters in 2014, following which, while Chinese travellers started favouring Malaysia and other ASEAN countries less (except Thailand), the outflow of tourists from India to ASEAN increased.
11. There remains huge untapped potential in the tourism sector. For example, Angkor Wat is the one of the most visited tourist destinations in the world with a strong historical-cultural linkage to India. The Government of India has also set up a MGC Museum of Asian Textiles in Siem Reap. However, there is no direct air connectivity between Siam Reap and any destination in India, or indeed between Cambodia and India. Why can't our companies plug this gap and benefit from the Buddhist circuit traffic?
12. India supports the Master Plan for ASEAN Connectivity (MPAC) and, for the last two years, has been having annual consultations with the ASEAN Connectivity Coordination Committee. This meeting explores how both ASEAN and India can benefit from the other connectivity initiatives underway in the region as well as plug gaps, wherever feasible.
13. The ASEAN side has pointed out to us that progress on enhancing air connectivity between India and ASEAN has been rather slow. While they are keen to have a Regional Air Services Agreement, our Ministry of Civil Aviation is not entirely convinced about the present being the right time to negotiate and conclude the same.

14. At the second ACCC-India Consultations in September 2014 in Nay Pyi Taw, it was proposed that a Task Force on Civil Aviation matters between India and ASEAN be set up to look into issues such as aviation safety, aviation security, airports and air navigation and human resource development, in addition to point-to-point connectivity for tourism and business purposes and air services arrangement for freight. The Task Force is to be supported by two sub-groups on Air Transport Economic Elements and Air Transport Technical Elements. We have just heard from the Ministry of Civil Aviation that the next meeting of the ASEAN-India Working Group on Air Connectivity would be convened soon so that these sub-groups can take off.
15. What I would request the Ministry of Civil Aviation to look at in particular at this meeting is to bridge the gap between the ASEAN desire to get more access to Tier I cities in India, including the Metros and State capitals, and our own offer of 18 Tier II and III cities to ASEAN, for which there has so far been limited interest, with only 7 cities having been taken up.
16. 2015 is an important year for ASEAN with ASEAN's Open Sky Policy partially having come into effect on 1 January 2015. The ASEAN Single Aviation Market (ASEAN SAM), will result in the ASEAN market opening up to more competition as well as greater connectivity between ASEAN countries, encouraging both higher traffic and improved services quality, while lowering air fares. Perhaps the most important aspect of liberalising of the aviation market would be the guarantee of third, fourth, fifth and seventh freedoms of the air.
17. A comprehensive Regional Air Transport Agreement would help us expand trade and tourism between ASEAN and India, but this may perhaps be most appropriate once ASEAN becomes a Single Aviation Market and we introduce a competition policy. In addition to air services liberalisation, we should also aim to improve aviation safety, aviation security, air traffic management, civil aviation technology and air transport regulatory frameworks.
18. Ladies and Gentlemen, we live in an age where the geopolitical and geo-economic gravity of the world is surely, but slowly, shifting to the Asia-Pacific. ASEAN today is not just important to us as a strategic partner but is also our bridge to the wider Asia Pacific. The Regional Comprehensive Economic Partnership, which we are currently negotiating with ASEAN and its other five FTAs partners, viz. China, Japan, Republic of Korea, Australia and New Zealand, is a high ambition free trade agreement, which will open up immense new possibilities in the region for trade, investment and tourism. We also need to examine how we can leverage our relationship with ASEAN for greater engagement with other regional trading regimes such as APEC. We need to gear ourselves to benefit from these new opportunities.

Thank you.

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SUMMARY

ASEAN-India Centre (AIC) at RIS organised a Roundtable on “ASEAN-India Air Connectivity” on 28 September 2015 at the Marigold Hall, India Habitat Centre, New Delhi. AIC circulated a draft of the Report entitled “ASEAN-India Air Connectivity”. One of the objectives of this Roundtable was to seek comments and suggestions from the stakeholders on this draft.

Dr. Prabir De, Professor, RIS and Coordinator, AIC made the Welcome Remarks. Ambassador Shyam Saran, Chairman, RIS delivered the Opening Address. Mr. Anil Srivastava, Joint Secretary (AS), Ministry of Civil Aviation (MoCA) gave the Special Address. Ambassador Anil Wadhwa, Secretary (East), Minister of External Affairs (MEA), Government of India delivered the Keynote Address. There were two technical sessions dealing with the key issues and challenges on air connectivity, both of passengers and cargo flows between India and Southeast and East Asian countries. Several representatives of leading airlines, government officials, and senior diplomats and practitioners attended the Roundtable. The brief summary of the Roundtable is as follows:

1. In his Opening Address, Amb. Shyam Saran, Chairman of RIS, emphasised the importance of land, maritime, air and digital connectivity in strengthening economic integration. Amb. Saran expressed his concern over no direct air connectivity of India with Indonesia and the Philippines - two prominent ASEAN countries with which India has substantial business and tourism interests. He also emphasised the importance of Air Service Agreement between India and ASEAN, which would facilitate air connectivity between them.
2. In his Special Address, Mr. Anil Srivastava, Jt. Secretary (AS), Ministry of Civil Aviation, addressed the issue of limited supply of cargo airlines of Indian origin. He stressed for the need of more cargo airlines. He also emphasised the importance of ASEAN single aviation market and implications for India.
3. In his Keynote Address, Amb. Anil Wadhwa, Secretary (East), Ministry of External Affairs, presented an overview of the Act East Policy (AEP), which envisions increased cooperation in trade, investment, infrastructure development, capacity building, strengthening people-to-people contacts in the region, as well as connectivity. He highlighted the existing agreements, for instance, FTA in goods, services and investments, as well as ongoing negotiations on RCEP. According to Amb. Wadhwa, two factors that have significant bearing on trade and investment are connectivity and access to infrastructure finance. He also highlighted the ongoing connectivity projects

between ASEAN and India. He emphasised the importance of Open Sky Policy for air cargo and anticipated large economic dividends for ASEAN and India, if agreement on reciprocating higher degrees of Freedom of the Air is pursued. He suggested that addressing the lacunae in the air cargo segment would enable the promotion of trade integration between ASEAN and India. He recommended increasing the number of airlines participating in air cargo services as one way of liberalising the air cargo industry. He further added that allowing ASEAN companies in cargo operation could not only bring valuable FDI to India, but also helps to bring new technology to the airline industry in India. He stressed that rising consumer demand could be met with joint efforts between ASEAN and India carriers for improved air services. Amb. Wadhwa drew attention to India and ASEAN carriers entering into code share agreements with foreign airlines, such as the one between Jet Airways and Vietnam Airlines. Once the market size expands, more and more carriers between India and ASEAN could engage in joint ventures for serving new destinations and promoting sales across borders.

Session 1: Air Transportation between India and Southeast and East Asia: Presentation on ASEAN-India Air Connectivity Study

4. The First Session was devoted on “Air Transportation between India and Southeast and East Asia”, chaired by Dr. Sanat Kaul, Chairman, International Foundation for Aviation, Aerospace and Development (IFFAAD), New Delhi. In this session, Ms. Pooja Kapur, Joint Secretary (AML), Ministry of External Affairs (MEA) gave Special Address, followed by presentation on ASEAN-India Air Connectivity Study by Dr. Prabir De, Coordinator, AIC. Dr. Shefali Juneja, Director, MoCA also gave a Special Address.
5. In her Address, Ms. Pooja Kapur stated that India’s relation with ASEAN is one of the cornerstones of India’s foreign policy. She stressed that connectivity, especially physical via land, sea and air, is a key component of cooperation. However, air connectivity is lagging behind; in spite of the fact that it does not require physical proximity. She gave the example of India and Indonesia. India and Indonesia do not have direct connectivity, even though Indonesia is India’s largest trading partner in goods in ASEAN and India, and share deep civilisation links. She mentioned that there are huge opportunities for the air services industry, and there is a need to examine how the Indian aviation sector can benefit from closer cooperation in the aviation sector. She further stated that enhancing air cargo connectivity with ASEAN could help transform India into a global manufacturing hub, thereby helping us to integrate with production and supply chain networks with Southeast Asia. To build airports, she suggested sharing expertise and technical and financial tie ups between companies of ASEAN and India. Besides, there is a possibility of more code-sharing agreements between airlines, especially where Indian companies do not find it feasible to fly directly to ASEAN destinations but

would nevertheless like to have a presence there, which would also help build brand image. She recommended that the Indian airlines shall make an effort to benefit from the Buddhist circuit traffic. Moreover, she requested the Ministry of Civil Aviation should facilitate ASEAN carriers to connect India's Tier I cities, including the metros and state capitals with ASEAN, and India's offer of 18 Tier II and III cities to ASEAN.

6. Dr. Prabir De in his presentation stated that the air cargo transportation between India and Southeast and East Asian countries would facilitate trade in parts and components. To encourage production network, strong air connectivity between India and ASEAN is vital. His presentation argued that more Indian and ASEAN airlines should be allowed in air cargo transportation between India and Southeast and East Asian countries. He also emphasised on promoting air services between India's Tier II and Tier III cities and ASEAN. Dr. De highlighted several infrastructure bottlenecks in the Indian airports, which need to be addressed in order to facilitate trade between India and ASEAN. He emphasised the importance of ASEAN Single Aviation Market (ASEAN-SAM) and its limitations due to non-cooperation within the ASEAN region. He also proposed several new air routes between Indian and ASEAN cities, and emphasised on greater cooperation in aviation technology and logistics.
7. In her Address, Dr. Shefali Juneja stated that India has offered 22 destinations to ASEAN countries to fly unilaterally, whereas India has only five direct flights with 10 ASEAN countries. She also highlighted that India has now Bilateral Air Service Agreement (BASA) with all the ASEAN countries with recent signing of BASA with Lao PDR. She stated that Singapore, Malaysia and Thailand have utilised all the traffic rights, and presently has covered 7 of 18 destinations in India. These are the airlines picking up most of the traffic from India, which is primarily sixth freedom traffic to USA and Australia (about 30 to 40 per cent of the total traffic). She emphasised that India has to restrict the number of destinations offered to ASEAN countries in order to benefit the India's airlines. However, she proposed daily direct flights to each of the capital cities of all the ASEAN countries. She stated that connectivity is primarily driven by market trends and cannot be imposed artificially. She also emphasised the need of uniformity in code sharing, and stronger technical and economic cooperation in the aviation sector between India and ASEAN.
8. Dr. Sanat Kaul underlined the equivalence of route dispersal guidelines. He stated the limitations of BASA on facilitating air connectivity. Dr. Kaul recommended that private companies should be endorsed with opportunities and certainty of earning revenue or at least covering cost during initial

- stages. He also suggested equal opportunities to all airlines of Indian origin.
9. Mr. Anand Pandey of Air India emphasised that Air India's utilisation of seats to Singapore, Thailand and Malaysia has gone up. He also discussed the scope of increasing traffic between Delhi, Kolkata and Yangon. He suggested the need of viability gap funding from the Indian government to connect to Northeastern states of India and some of the ASEAN countries like Vietnam, Cambodia and Lao PDR by air in the initial stage of operation.
 10. Mr. Jagadish Saini of Air Asia stated that there is a potential scope to increase the traffic flow between India and ASEAN countries. When the ASEAN countries demand for more slots, which itself shows a rising potential of traffic flow between India and Southeast Asian countries. Therefore, airlines based in India have the potential to grow with the growing demand of air traffic between India and Southeast Asian countries.
 11. Ms. Ragini Chopra of Jet Airways stated that the markets are adequately served and told that there is a substantial increase in the traffic between ASEAN and India in the last two to three years. There are huge opportunities of taking traffic to ASEAN cities through third country code share and route flexibilities. She also endorsed for viability gap funding in order to connect to some of the ASEAN cities from India.
 12. Mr. Debashish Saha of Spice Jet said that Spice Jet has been doing well between Kolkata and Bangkok. To connect Northeastern states of India with ASEAN cities, Indian government's support is very much required. According to him, once ASEAN countries utilise fully the India's offer of 18 destinations, India may consider extending it to other destinations.
 13. Mr. Rajan Malhotra of IndiGo Airlines emphasised that to connect to the Northeastern states of India and covering some of the ASEAN cities, government may offer viability gap funding for at least two to three years to start with, which would help airlines of Indian origin to slowly capture the market.

Session 2: ASEAN-India Open Sky: Opportunities and Challenges

14. Second Session had a panel discussion focused on "ASEAN-India Open Sky: Opportunities and Challenges", chaired by Mr. Satendra Singh, Former Director General, Directorate General of Civil Aviation (DGCA), New Delhi. The panel of experts were from the organisations like Centre for Aviation (CAPA), KPMG, Delhi International Airport Limited, Air Cargo Association of India (ACAAI), etc.
15. Mr. Satendra Singh explained the background of the Open Sky Policy of 1992. He said that though India unilaterally offered the Open Sky in cargo operation, the country has eventually failed to attract major private operators in air

cargo segment. He highlighted the bottlenecks for the failure; for instance, high customs duties and long dwell timing, as it used to take several days to get the clearance from the customs authority due to which the cargo continued to be dumped at the airports.

16. Mr. Kapil Kaul of the Centre for Aviation (CAPA) emphasised the need for air liberalisation and a proper framework to execute in the Indian aviation market. It is important to identify the several countries experience on Open Sky Policy across the world and measures adopted by them. He also emphasised the preparedness for Open Sky Policy in terms of regulatory framework, infrastructure capacity, security structures, etc., and follow a transition approach towards air liberalisation. It is also necessary to identify the competitiveness of Indian carriage, and to formulate the required policies for the benefit of domestic airlines.
17. Mr. Amber Dubey of KPMG put his stance against the policy of protectionism being practiced in India. He supported his argument by putting forward the examples of Emirates, Etihad Airways, Qatar Airways, etc., which are currently dominating the aviation sector in the world. He emphasised that these airlines were never given support or favours from their governments. Rather, they faced the competition in the market due to which they stand as the winners today. He stressed that there is a time for the change in mindset. The myth should, now, be broken that if India doesn't support its nascent industries then they will fail to survive the world competition.
18. Mr. Jitendra Singh of Delhi International Airport Limited (DIAL) stated that India and ASEAN countries should enjoy equal rights of operations. He also emphasised that to utilise most of the destinations offered by India to ASEAN countries effectively, these destinations could be clubbed between India and ASEAN airlines through code share of the seats, which may make it more viable and profitable for airlines.
19. Mr. Deepak Dudlani, Former Chairman of the Air Cargo Association of India (ACAI) stated that air cargo has a unidirectional nature as compared to the passengers, which usually has two-way traffic flow since air cargo traffic primarily depends on trade flow between the nations. Therefore, he asserted that cargo economics is drastically different from passenger economics, and hence, we should deal it differently. He also highlighted the hub airports like Dubai and Hong Kong, which have leveraged their full potentials. India too has the potential to become a hub airport and the benefits can be derived from its geographical location. He also suggested that our airports should be competitive as well as marketable just as any other commodity. Also, he proposed to include air cargo in the New Aviation Policy.
20. The concluding session of the Roundtable was addressed by Prof. Prabir De. Dr. Durairaj Kumarasamy, Consultant, AIC extended the Vote of Thanks.

About RIS

Research and Information System for Developing Countries (RIS) is a New Delhi-based autonomous policy research institute that specialises in issues related to international economic development, trade, investment and technology. RIS is envisioned as a forum for fostering effective policy dialogue and capacity-building among developing countries on global and regional economic issues.

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About AIC

ASEAN-India Centre (AIC) has been working to strengthen India's strategic partnership with ASEAN in its realisation of the ASEAN Community. AIC at RIS undertakes research, policy advocacy and regular networking activities with relevant public/private agencies, organisations and think-tanks in India and ASEAN countries, with the aim of providing policy inputs, up-to-date information, data resources and sustained interaction, for strengthening ASEAN-India Strategic Partnership. For more information about AIC, please visit its website: <http://aic.ris.org.in>



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