

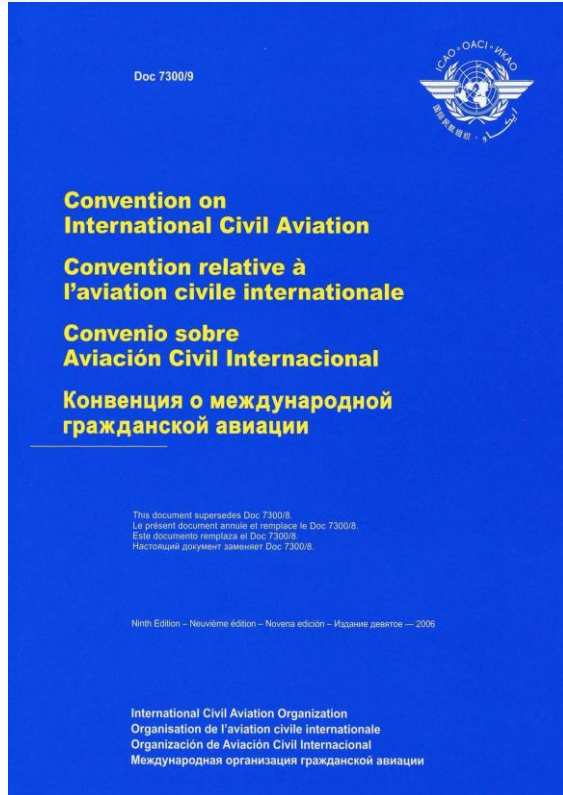


Overview of Air Cargo Services and Operations

Boubacar Djibo

Director, Air Transport Bureau, ICAO

Zhengzhou, China, 5 September 2018



Preamble

.....

THEREFORE, the undersigned governments having agreed on certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically;



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The Air Transport Industry



Air Transport Industry has become:

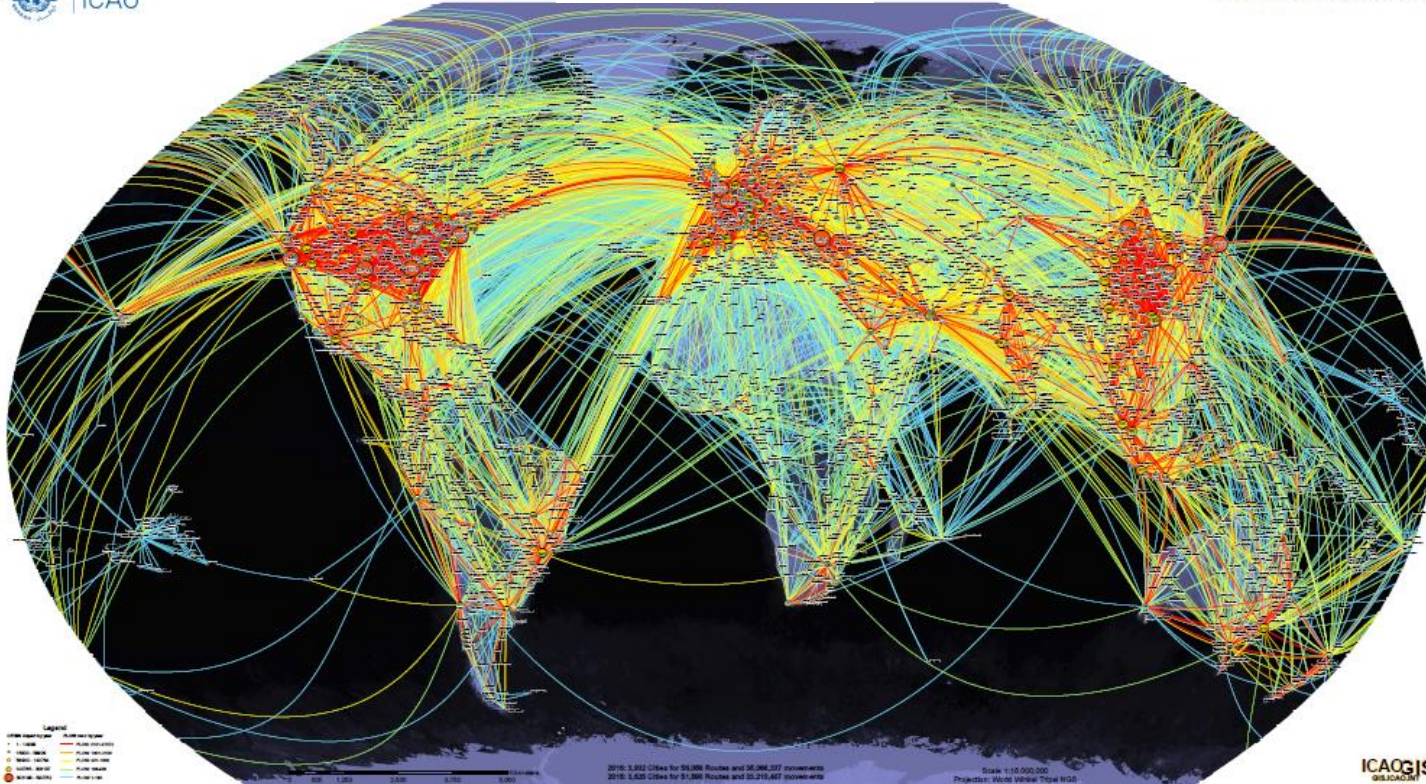
- **A Catalyst for economic development**
- **A vital engine of global socio-economic growth**
- **One of the greatest contributors to the advancement of modern Society.**



- **4.1 billion passengers**
- **37 million aircraft departures**
- **56 million freight tonnes carried**
- **Over 1 400 scheduled airlines**
- **More than 26 000 aircraft**
- **More than 3 900 airports**
- **173 air navigation centres**
- **290,000 pilots* and 82,000 air traffic controllers**

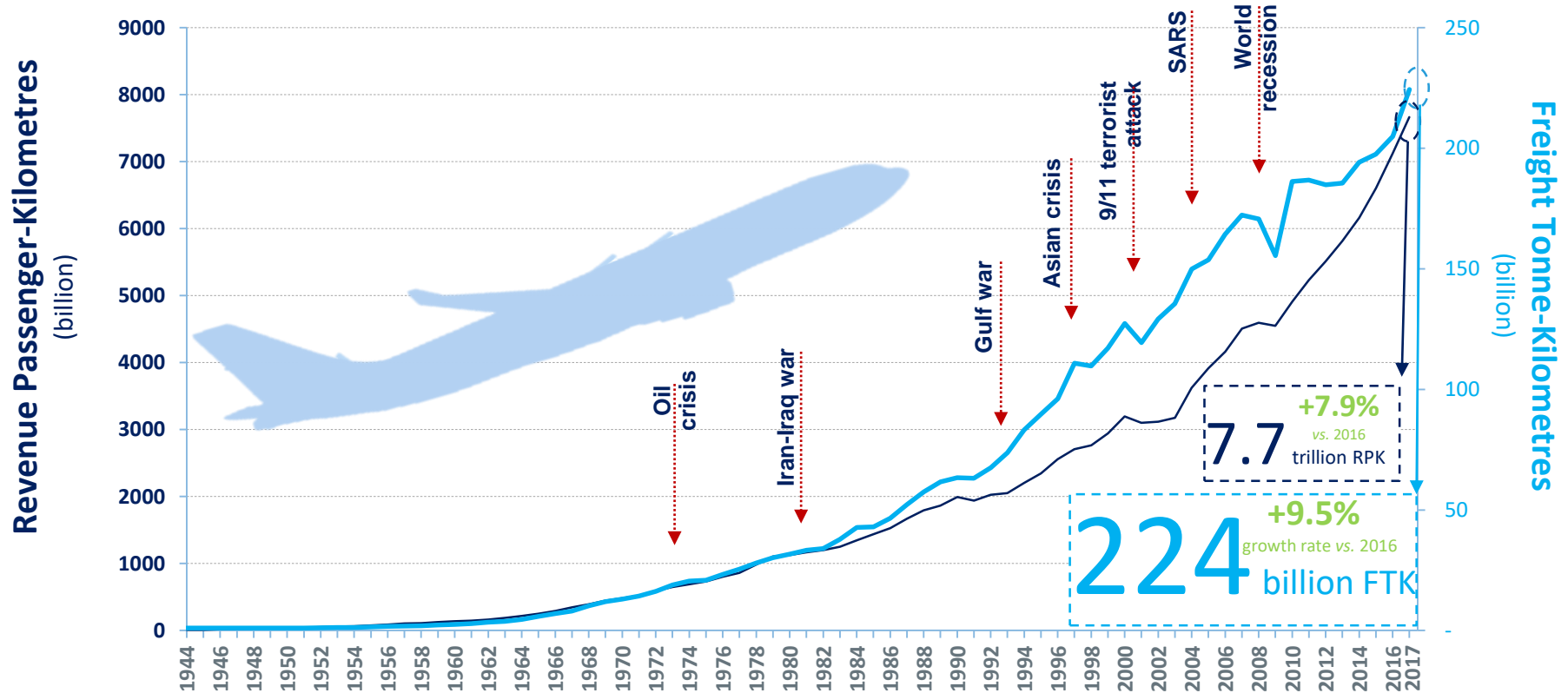


More Info: <http://gis.icao.int>



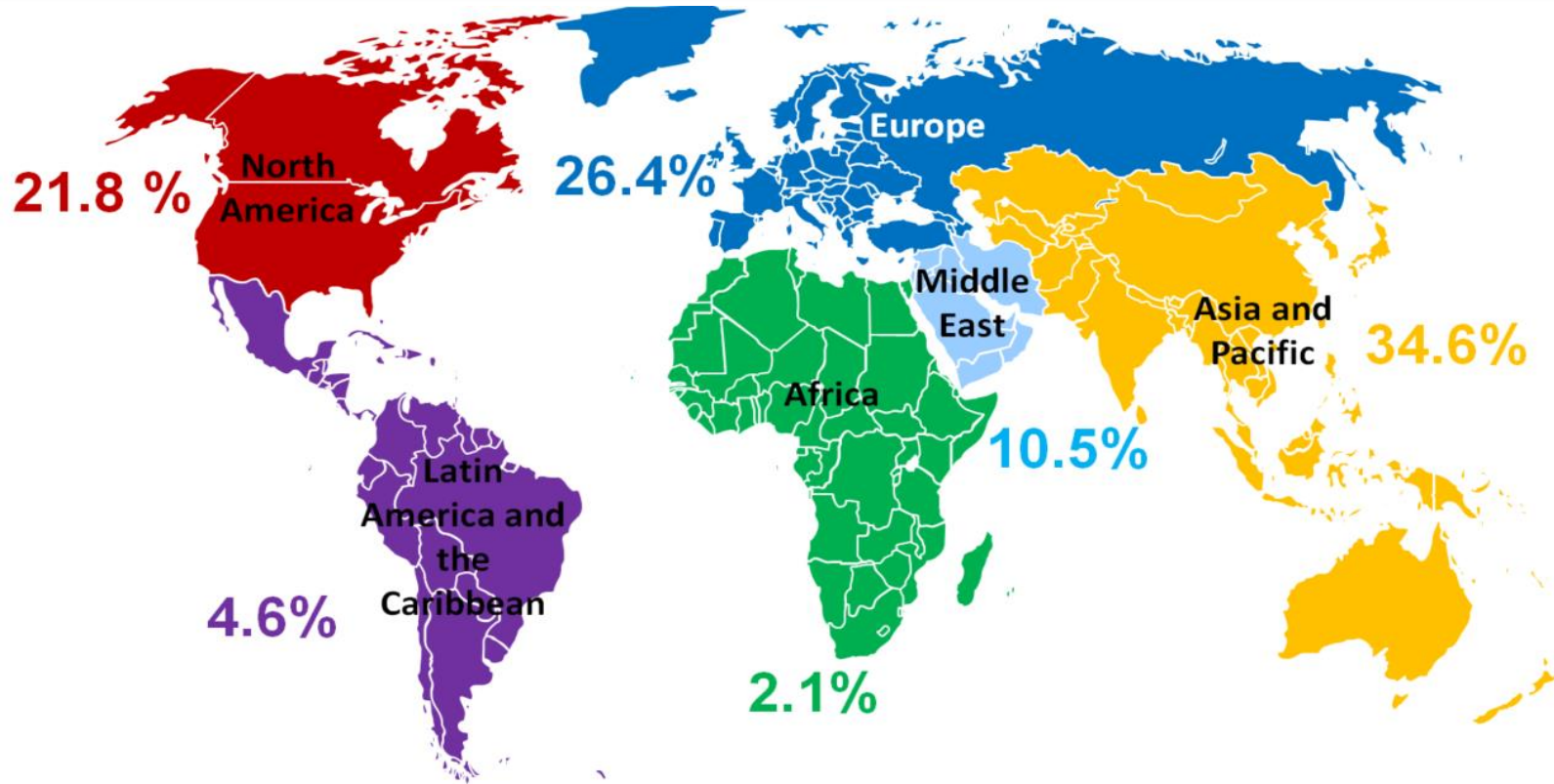


Growth of air transport in 2017





Share of Total Revenue Tonne-Kilometres by region in 2017



International Scheduled Revenue Tonne-Kilometres (RTK)

Rank	State of AOC	RTK 2017 (million)	RTK share (%)	Cumulative (%)
1	China (1)	84,412	12.8318%	12.8318%
2	United States	66,425	10.0975%	22.9292%
3	United Arab Emirates	55,863	8.4919%	31.4212%
4	United Kingdom	35,192	5.3497%	36.7708%
5	Germany	31,789	4.8323%	41.6032%
6	Qatar	24,077	3.6600%	45.2632%
7	Republic of Korea	23,650	3.5952%	48.8584%
8	Turkey	19,669	2.9900%	51.8484%
9	Singapore	19,601	2.9796%	54.8281%
10	France	19,001	2.8885%	57.7165%
11	Japan	18,992	2.8870%	60.6035%
12	Ireland	18,667	2.8376%	63.4411%
13	Netherlands	18,056	2.7448%	66.1859%
14	Canada	16,820	2.5569%	68.7428%
15	Russian Federation	14,824	2.2534%	70.9962%
16	Thailand	11,746	1.7856%	72.7817%
17	Spain	10,772	1.6375%	74.4193%
18	Australia	10,272	1.5614%	75.9807%
19	Malaysia	9,376	1.4253%	77.4060%
20	India	8,940	1.3590%	78.7650%

Rank	State of AOC	RTK 2016 (million)	RTK share (%)	Cumulative (%)
1	China (1)	76,578	12.7123%	12.7123%
2	United States	63,072	10.4703%	23.1826%
3	United Arab Emirates	53,797	8.9306%	32.1132%
4	United Kingdom	33,427	5.5491%	37.6623%
5	Germany	31,027	5.1506%	42.8128%
6	Republic of Korea	22,297	3.7015%	46.5143%
7	Qatar	21,672	3.5977%	50.1120%
8	Singapore	18,671	3.0995%	53.2115%
9	France	18,128	3.0094%	56.2209%
10	Turkey	17,167	2.8498%	59.0707%
11	Japan	16,995	2.8212%	61.8919%
12	Netherlands	16,326	2.7101%	64.6021%
13	Ireland	15,921	2.6429%	67.2450%
14	Canada	14,757	2.4497%	69.6947%
15	Russian Federation	12,202	2.0255%	71.7202%
16	Thailand	10,154	1.6856%	73.4058%
17	Spain	9,865	1.6376%	75.0434%
18	Australia	9,684	1.6076%	76.6510%
19	Malaysia	8,245	1.3687%	78.0197%
20	India	7,566	1.2561%	79.2758%



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Focus on China



23 **+9.0%**
2017 vs. 2016
billion
freight tonne-km performed

Chinese carriers performed
10% of the world air freight
traffic in 2017

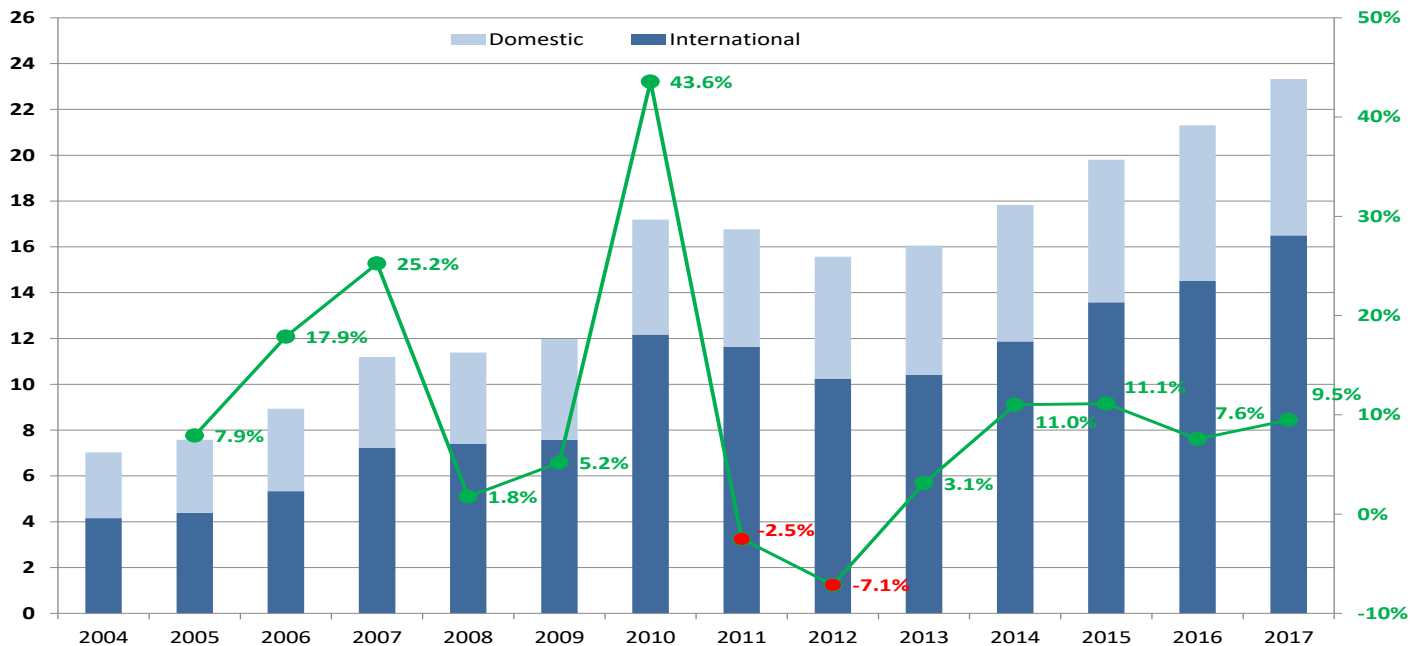
7.0 **+4.0%**
2017 vs. 2016
million
freight tonnes carried

Note: scheduled services, States of AOC holders



Cargo traffic performed by Chinese air carriers

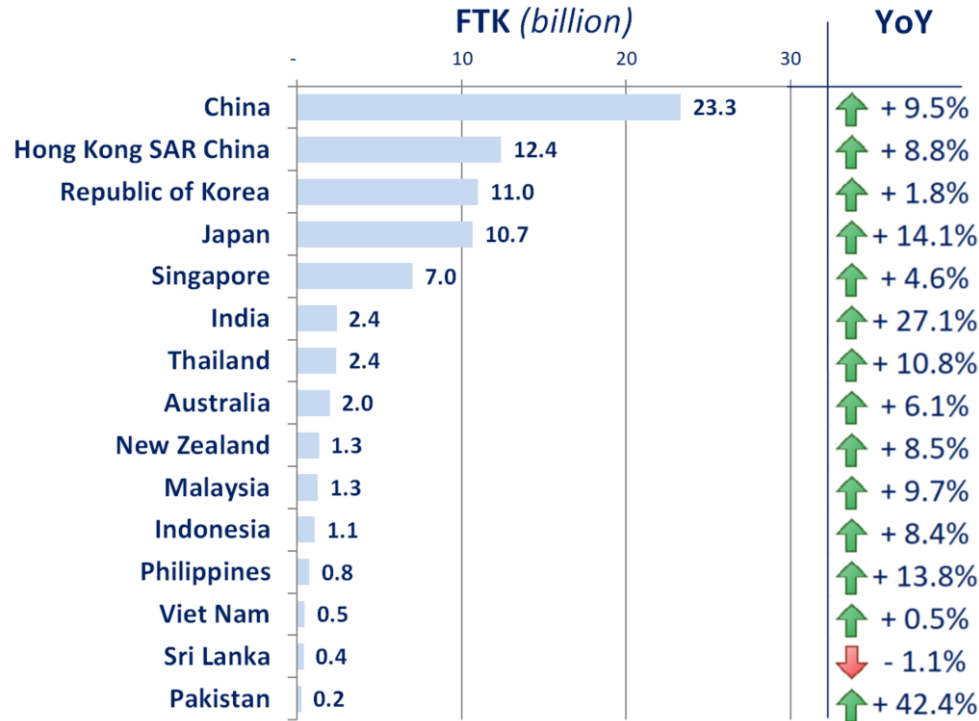
Freight
Tonnes-
kilometres
(billions)



Annual
growth
rate



Top 15 States in Asia and Pacific ranked by cargo traffic in 2017



Cargo traffic performed by airlines registered in the States



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Features of Air Cargo



- *Air cargo* or *freight* refers to any property carried on an aircraft other than mail, stores and passenger baggage (see Annex 9 to the Convention on International Civil Aviation).
- The term air cargo is also used in a broader sense by the airline industry to mean any property (freight, express and mail) transported by air except baggage
- Growth of air cargo services important to **economic development** and **world trade**...
 - transports goods represent approximately 35% of world trade by value
 - Critical for landlocked, island developing countries and States exporting high-value goods or perishables
 - Operational requirements different from passenger service, **needs more flexibility in route/operational rights and commercial freedoms**



Contrary to the passenger pattern, air cargo shipment usually **travels in one direction only**

➔ imbalances between both legs of an air cargo traffic flow

Cargo can be carried:

- in the bellies of passenger aircraft
- in dedicated freighters

➔ Different traffic drivers and services



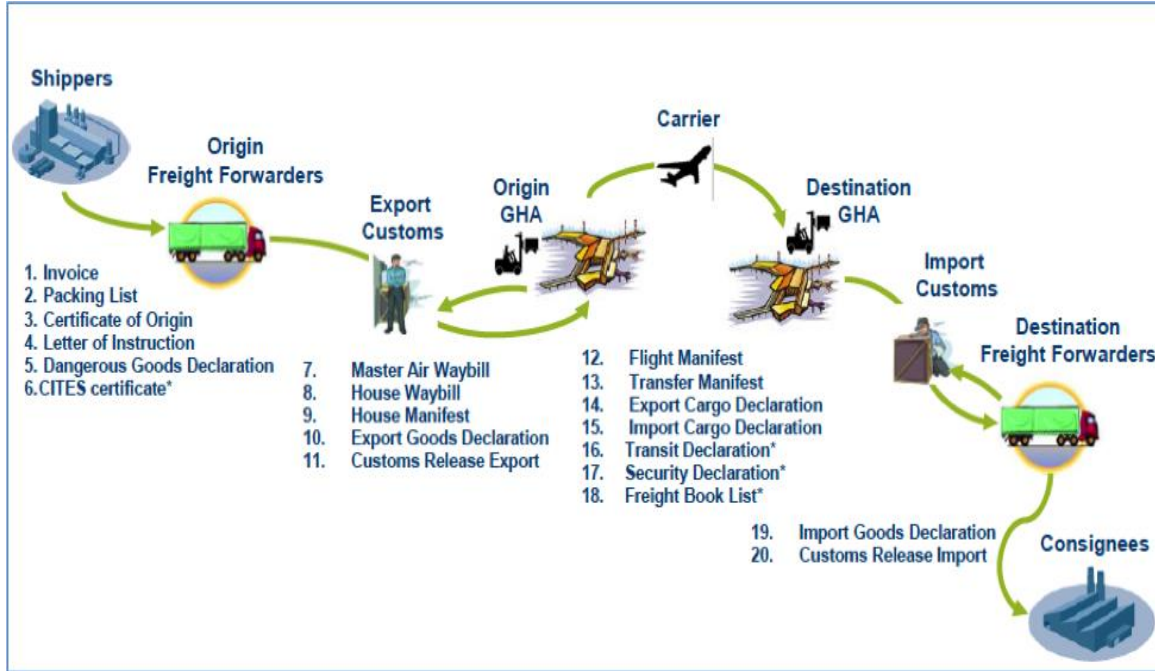
Benefits

- Ability to bring businesses and customers together to expand markets.
- Especially for perishable products, a product segment which impacts the livelihoods of many millions of people today.

Essential drivers

- Liberalized air services agreements between States
- Development of infrastructure such as runways
- Increased connectivity in the form of easier access to point-to-point routes
 - **greatly aids the ability of air cargo companies to deliver these economic benefits to businesses and regions.**

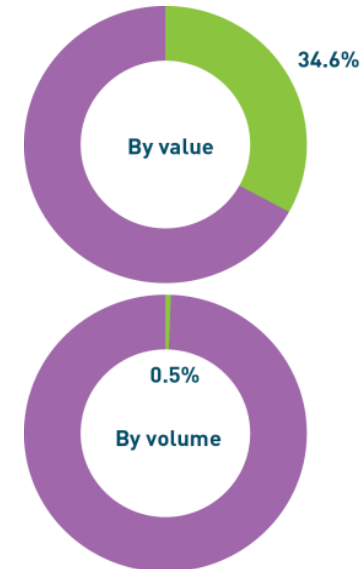
A Cargo supply chain



Growth in passenger aircraft—widebody, in particular—will continue to significantly increase cargo capacity on existing passenger routes through combination services:

- Cargo load factor (in terms of combination of belly and freighter capacity) reached 51.1% in 2017 after 3 years at 47%
- 61% of the FTK are carried in the belly of passenger aircraft in 2017
- Belly hold of a 777-300ER passenger aircraft carries more cargo than traditional freighters

Air Cargo represents





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E-Commerce



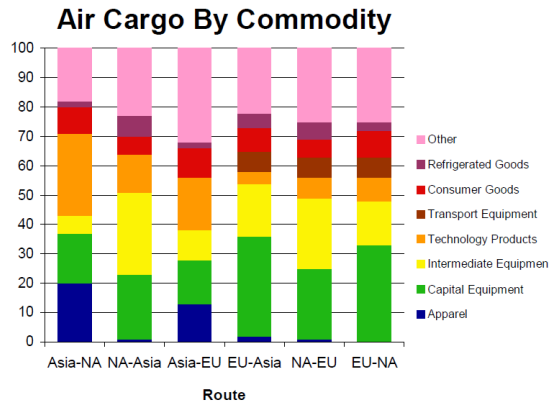
Cross-border e-Commerce is characterized as follows

- online ordering, sale, communication and, if applicable, payment
- Cross-border transactions/shipments
- Physical (tangible) goods
- Destined to consumer/buyer (commercial and non-commercial)

(World Customs Organization, WCO)

Electronic commerce (e-commerce) refers to “the production, advertising, sale and distribution of products via telecommunications networks” **(World Trade Organization, WTO)**

Electronic shopping (e-shopping) refers to “the advertising, sales, payment and delivery of products and services via the Internet, covering the whole supply chain from the seller to the buyer” **(Universal Postal Union, UPU)**



Source: World Bank

Aggregated Tonnage of Postal Shipments (in million)

	total	letter-post	parcel-post	EMS
2013	458	163	168	126
2014	567	214	189	164
2015	656	218	220	218
2015/14	15.8%	2.2%	16.6%	32.8%
2014/13	23.8%	31.0%	12.1%	30.3%

Source: UPU Data on Postal Shipments

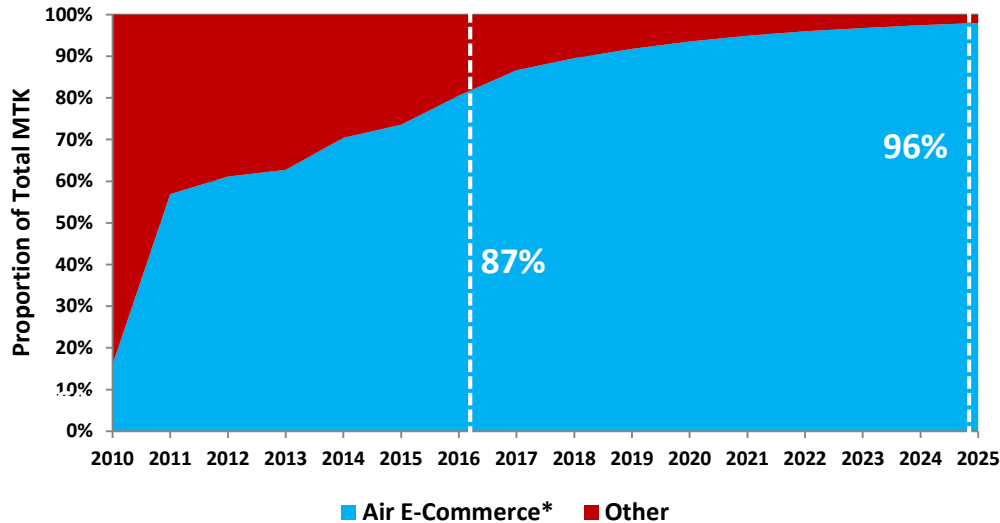
ICAO is cooperating with UPU and UNCTAD to share big data and research reports on e-commerce

- 2/3 of international postal transportation is by air
- Global B2C e-commerce sales hit \$1.5 trillion in 2015
- Double-digit annual growth in the e-commerce market
- High frequencies of E-commerce transactions may improve the load factors of air cargo carriers

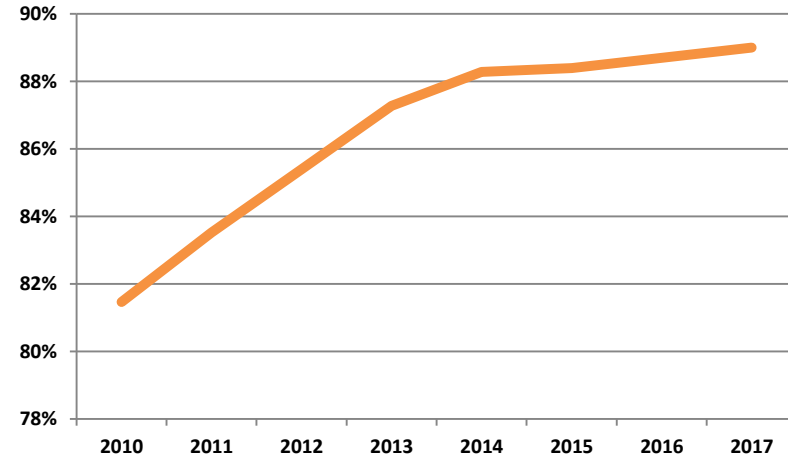


E-commerce development continued in 2017

International Mail Tonnes Kilometres (MTK) breakdown



Percentage of E-Commerce Parcels by Air (Two Ways, Percentage Carried by Air)



- E-commerce share of MTKs grew from 16% to 87% between 2010 and 2017 and is estimated to grow to 96% by 2025

Future of Air Cargo Big Online Retailers? Drones ?



Amazon:

E-commerce giant Amazon has signed up to lease 40 freighters, 20 from Atlas Air Worldwide Holdings and another 20 from ATSG. Amazon also registered a company in the U.S. as a non-vessel operating common carrier (NVOCC), which turned Amazon into a freight forwarder.

Alibaba:

Alibaba's logistics arm, Cainiao Logistics, helped Alibaba rake in a staggering US\$14.3 billion in a 24-hour period on 2015 "Singles Day"!



- **Amazon** announced its drone delivery program "Amazon Prime Air" since December 2013. Amazon has developed drones weighs less than 55 pounds and can carry up to a 5-pound payload.
- UAV (Unmanned Aerial Vehicle) manufacturer **Matternet**, announced its partnership with Swiss WorldCargo and Swiss Post on a project to test its drone aircraft as an automated cargo delivery system for small express packages.
- China's **S.F. Express** has revealed it already has a fleet of aircraft flying 500 parcels a day to remote areas, and it is now looking to double the capacity..
- Chinese online retailer **JD.com** has also tested drone deliveries to the remote countryside.



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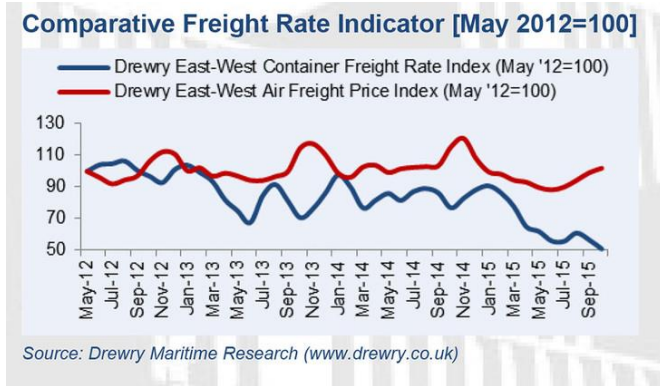
The Air Transport Industry

Challenges for Air Cargo Operators



- Air cargo operators face many constraints
 - A bilateral regimes focusing on passenger and combination services
 - Operational restrictions such as:
 - night curfews
 - limited slots
 - limited ground-handling rights
 - burdensome customs requirements
 - national ownership and control requirements and access to capital
 - More constraining security measures

Intermodal competition



Competitions from Other Modes of Transportation

- Air cargo carriers and liner shipping carriers transport similar commodities and the price gap between sea freight and air freight makes shippers switch from air to ocean
- Railway transportation is gaining more market share. Rail freight makes a 17-day rail journey from China to Europe, at a lower fare than air freight



Moving Air Cargo Globally

Air Cargo and Mail Secure Supply Chain and Facilitation Guidelines



Introduction

Aviation security measures are necessary to safeguard international civil aviation against acts of unlawful interference. Previous attacks on civil aviation committed or attempted by concealing improvised explosive or incendiary devices in consignments demonstrate that it is essential to remain vigilant and apply measures that secure air cargo and mail.

Vulnerabilities in cargo and mail security can provide terrorists and criminals with a route of attack. There are two main threats: placement and/or concealment of an improvised explosive or incendiary device in consignments to be loaded on an aircraft, and seizure of a commercial aircraft which is then used as a weapon of mass destruction.

The highly complex nature of the air cargo and mail operating environment, involving a multiplicity of entities, adds to the difficulties of countering threats. This publication identifies the roles and responsibilities of these various entities and highlights how they can work together effectively to secure air cargo and mail within the regulatory framework.

Moving Air Cargo Globally is destined for a broad audience and for information only. It is neither a legally binding document, nor does it constitute a manual, standards or guidelines.

For the purposes of this publication, the term "air cargo" is understood to include mail.

<https://www.icao.int/Security/aircargo/Moving%20Air%20Cargo%20Globally/Forms/AllItems.aspx>

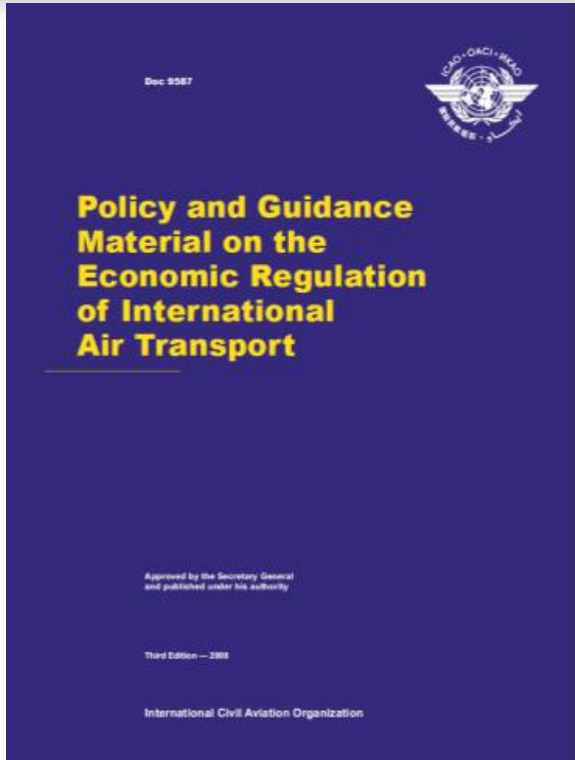


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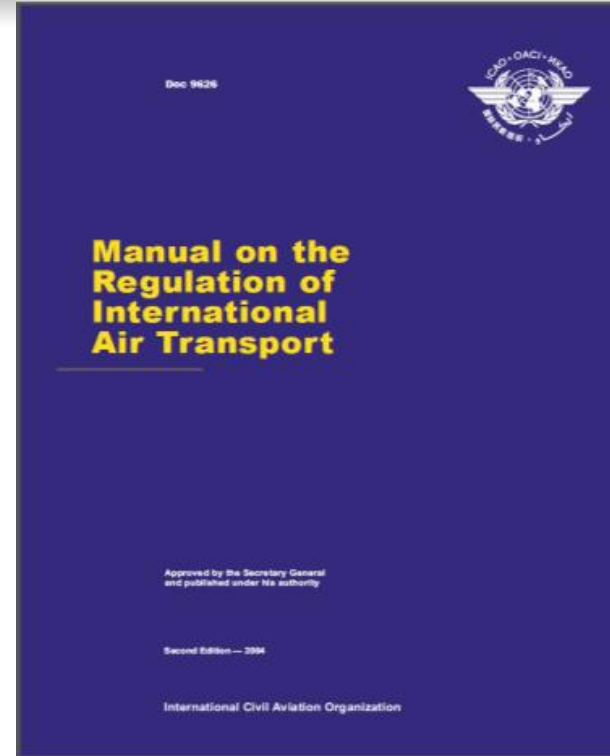
The Air Transport Industry

Regulatory Framework



Doc 9587

**Economic
policy and
regulation**



Doc 9626



- **International Convention**
 - Convention for the Unification of certain rules for international carriage by air (MC99), of 28 May 1999. The Convention entered into force on 4 November 2003 (132 parties).
- **E-commerce**
 - WCO Luxor Resolution on Cross-Border E-Commerce (2017)
 - WCO Cross-Border E-Commerce Framework of Standards (2018)
- **Security and facilitation**
 - Annex 9 (Facilitation)
 - Annex 17 (Aviation Security)
- **Safety**
 - Annex 18 (Safe Transport of Dangerous Goods by Air)



Assembly Resolution A39-15 requests the Council to:

Develop a specific international agreement to facilitate the further liberalization of air cargo services



ICAO Long-term Vision for Liberalization

(Assembly Resolution A39-15)

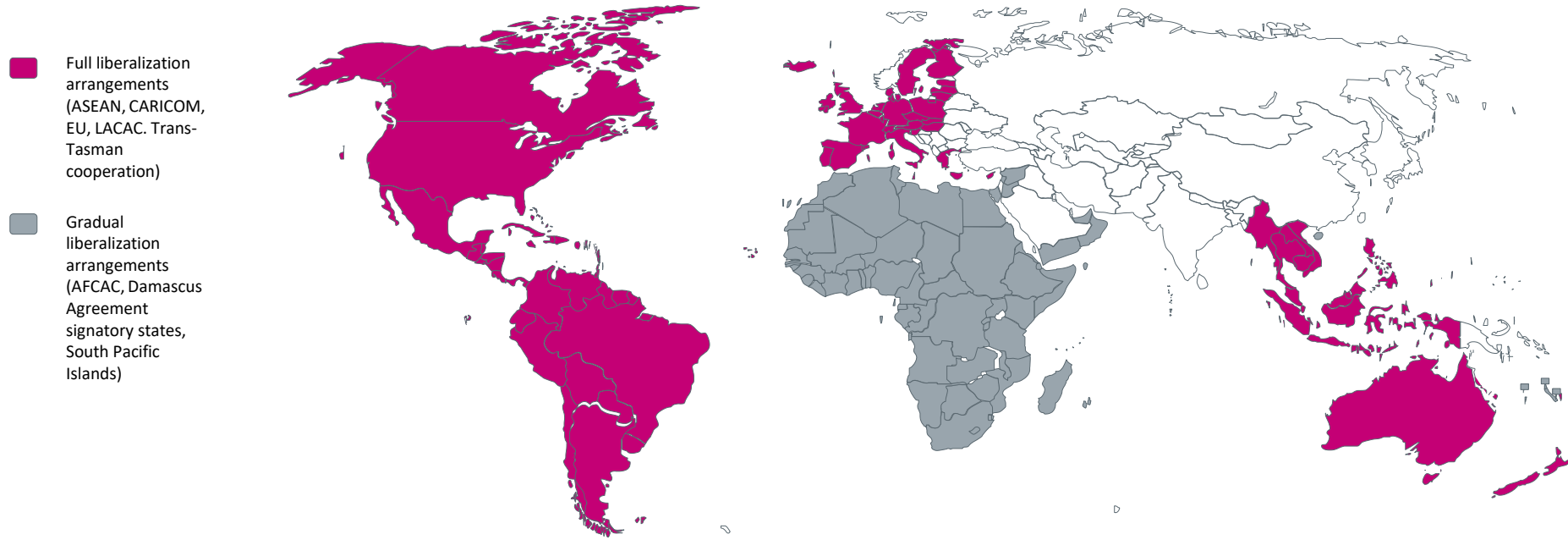
“We, the Member States of the International Civil Aviation Organization, resolve to actively pursue the continuous liberalization of international air transport to the benefit of all stakeholders and the economy at large.

We will be guided by the need to ensure respect for the highest levels of safety and security and the principle of fair and equal opportunity for all States and their stakeholders”.



Regional Liberalization

Regional Liberalization: Most world regions have liberalization programs








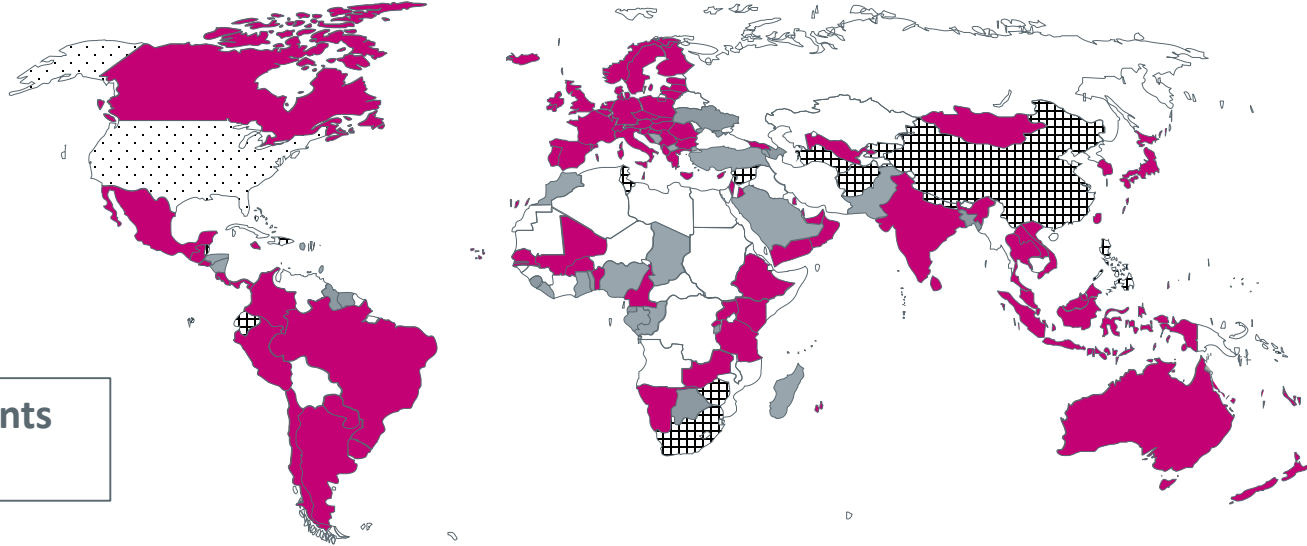
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Bilateral Open Skies (as of June 2018)

-  States which signed open skies agreements with both the US and third countries*
-  States which signed open skies agreements with the US only
-  States which signed open skies agreements with the third countries only

**~300+ Open Skies Agreements
involving 163 States**



*open skies agreement for *all-cargo only* for Argentina, Mongolia, Vietnam



- ✈ ICAO Meeting on Air Cargo Development in Africa
Lomé, Togo, *5 to 7 August 2014*
- ✈ Air Cargo Development Forum, Zhengzhou, China,
2 to 4 September 2014
- ✈ Second ICAO Meeting on Air Cargo Development in
Africa Addis Ababa, Ethiopia, *27 to 29 June 2017*



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The Air Transport Industry

Long-term Forecasts



Projected* Annual Growth of Cargo Traffic (in FTK)

LTF Region	2015-2035 CAGR
Africa	3.8%
Asia and Pacific	4.3%
Europe	2.7%
Latin America and Caribbean	1.6%
Middle East	5.7%
North America	2.8%

2015-2035 CAGR

Global Passenger traffic (RPK): +4.3 %
Global Cargo traffic (FTK): +3.9%



Projected* Annual Growth of Passenger Traffic (in RPK)

RouteGroup	2015-2035 CAGR**	RouteGroup	2015-2035 CAGR
Africa Domestic	5.8%	Europe - Sub Saharan Africa	2.9%
Africa - Asia/Pacific	5.0%	Intra Africa	5.8%
Africa - Middle East	4.5%	Intra Central America/Caribbean	4.3%
Africa - North America	2.9%	Intra China & South West Asia	6.9%
Africa & Middle East - Central America/Caribbean	4.3%	Intra Europe	2.7%
Africa & Middle East - South America	3.8%	Intra Middle East	3.6%
Central America/Caribbean Domestic	4.3%	Intra North America	2.6%
Central America/Caribbean - Europe	4.4%	Intra North Asia	1.7%
Central America/Caribbean - North America	4.0%	Intra Pacific South East Asia	5.4%
Central America/Caribbean - South America	3.6%	Intra South America	3.1%
Central South West Asia Domestic	6.7%	Latin America/Caribbean - Central South West Asia	5.4%
Central South West Asia - Europe	5.5%	Latin America/Caribbean - North Asia & Pacific South East Asia	4.2%
Central South West Asia - Middle East	6.8%	Middle East Domestic	3.6%
Central South West Asia - North America	5.9%	Middle East - North America	3.8%
Central South West Asia - North Asia	7.2%	Middle East - North Asia & Pacific South East Asia	4.0%
Central South West Asia - Pacific South East Asia	6.6%	North America Domestic	2.6%
Europe Domestic	2.7%	North America - North Asia	2.4%
Europe - Middle East	4.2%	North America - Pacific South East Asia	4.4%
Europe - North Africa	4.3%	North America - South America	4.0%
Europe - North America	2.8%	North Asia Domestic	1.7%
Europe - North Asia	2.5%	North Asia - Pacific South East Asia	4.0%
Europe - Pacific South East Asia	4.5%	Pacific South East Asia Domestic	5.3%
Europe - South America	4.2%	South America Domestic	3.1%

Projected* Annual Growth of Cargo Traffic (in FTK)

LTF Region	2015-2035 CAGR
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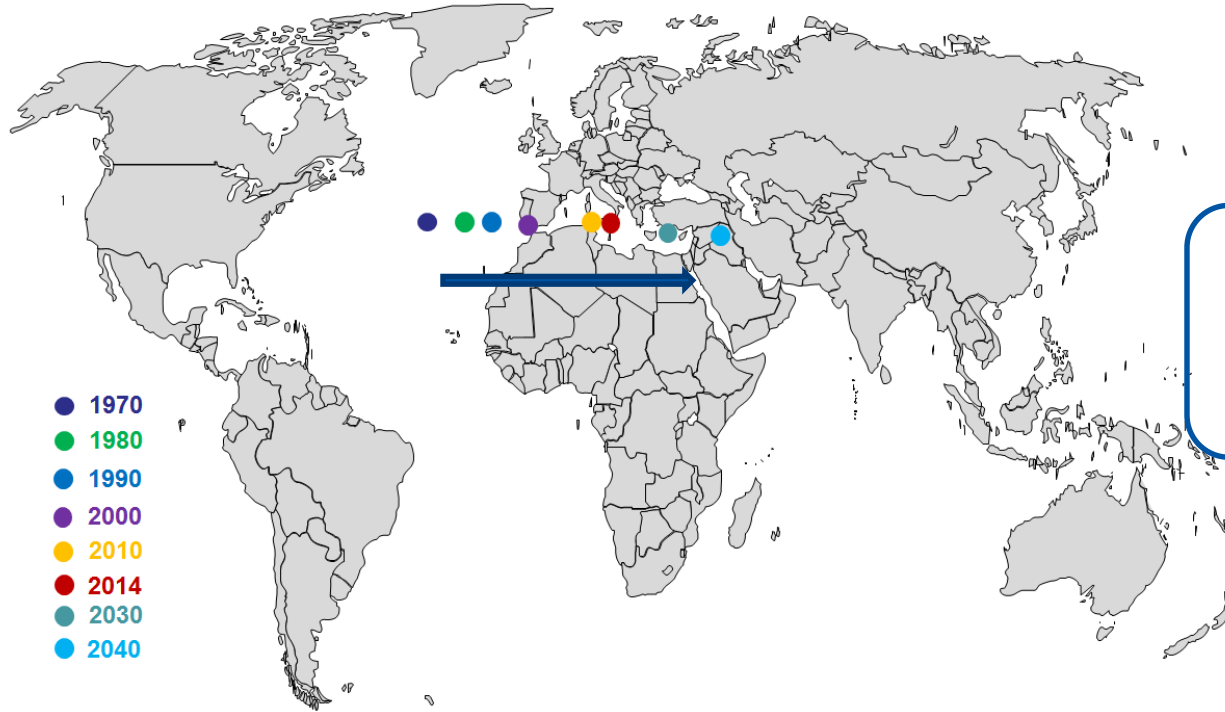
2015-2035 CAGR

Global Passenger traffic (RPK): +4.3 %

Global Cargo traffic (FTK): +3.9%

3 fastest growing route groups in red

Movement of centre of gravity



The centre of gravity has been steadily moving from the middle of North Atlantic to the middle of the Mediterranean sea in the last four decades. It is expected to move further east by 2040.

Geographical centre of gravity of departing/arriving passengers



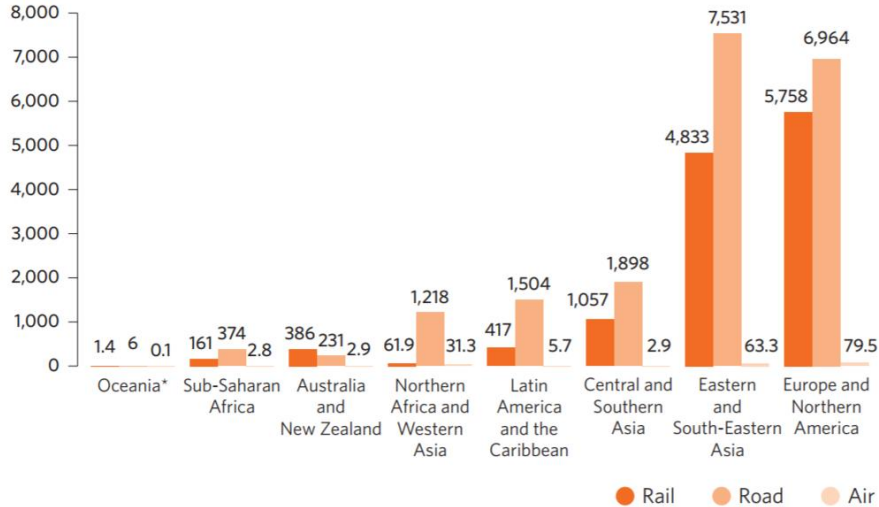
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Sustainable Development Goal (SDG) Target 9.1

Freight transport by rail, road and air, 2015 (billions of freight tonnes-kilometres)



Transportation services provide a vital link to global markets, but are still lacking in some regions

Efficient transportation services drive economic development. In 2015, the global economic impact (both direct and indirect) of air transport was estimated at 2.7 trillion US dollars, or 3.5 per cent of global GDP. Road transport continues to be the predominant form of freight transport globally, accounting for 61 per cent of the total. Europe and Northern America, and Eastern and South-Eastern Asia account for most freight transport (all modes), with Oceania excluding Australia and New Zealand, and sub-Saharan Africa accounting for only a small fraction of the global total. Passenger transport follows a similar pattern. The LDCs, landlocked developing countries and small island developing States represent far less air travel and freight volumes, with each country group accounting for only 1 per cent to 2.7 per cent of the global total.

ICAO is a custodial agency responsible for the global indicator (passenger and freight volumes by mode of transport) of the **SDG target 9.1** – Develop quality, reliable, sustainable and resilient infrastructure with a focus on affordable and equitable access for all.



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Conclusion



ICAO will continue to collaborate with States and other stakeholders to foster the modernization and reform of the regulatory framework of air cargo services



- **United Nations Statistical Commission (UNSC)**
 - Aviation Satellite Account to measure the economic benefits of air transport
 - Global indicator for SDG Target 9.1
- **World Customs Organization (WCO)**
 - Joint communiqué on enhancing air cargo security and facilitation (2012, 2014 and 2016)
 - ‘Measurement and Analysis’ group for cross border e-commerce
- **Universal Postal Union (UPU)**
 - Sharing Big Data of e-commerce and mail transport, as well as joint research on e-commerce
- **United Nations Conference on Trade and Development (UNCTAD)**
 - eTrade for All (Unlocking the potential of e-commerce in developing countries)
- **World Bank**
 - Exchange of economic and aviation indicators
- **International Transport Forum (ITF at OECD)**
 - Air freight traffic forecasts, competition analysis
- **ICM, University of Warsaw**
 - Competition analysis (direct vs indirect flights) by using MIDT, Air Transport Optimizer Tool by using ADS-B
- **The International Air Cargo Association (TIACA)**
 - Joint Communiqué for Enhanced Cooperation in the Field of Air Cargo Transportations
 - Work for Pre-Loading Advance Cargo Information (PLACI) and facilitation of cargo information exchange
- **Other industry organizations (FIATA, GEA, GSF etc.)**



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ICAO Upcoming Event



- Fourth ICAO World Aviation Forum (IWAF/4) in Fortaleza, Brazil from **17 to 19 September 2018**;
- ICAO Air Transport Development Meeting, Georgetown, Guyana from **21 to 23 November 2018**; and
- Eleventh ICAO Air Service Negotiation (ICAN2018) Event, Nairobi, Kenya from **10 to 14 December 2018**



谢谢 Xie Xie
Thank You
شكرا, Shukran
Merci
Gracias
Спасибо, Spasiba