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Editorial

Salvatore Sciacchitano
Executive Secretary of ECAC

At the last Forum, held in Paris on 2 December 2015, ECAC Directors General chose to focus on the crucial issue of "Connectivity and economic development". Through presentations, panel debates and discussions, the seventy participants examined questions such as: how can regulators and the industry come together to address not only Europe's connectivity with the other regions of the world but also the connectivity between the regions within Europe? How do we maintain air routes that are vital for the economic development of the regions? Are public service obligations the only solution for some remote destinations? How does competition impact on connectivity?

Given the increasing timeliness and relevance of the topic, and the interest triggered by the debates, we decided to bring to our readers the main take-aways from the event and make the topic of "Connectivity and economic development" the highlight for this quarter. In this issue of ECAC News, the Forum moderators, Silvia Gehrer, ECAC Focal Point for Economic matters and Director General for Civil Aviation, Austria, Dan Simonić, former Director General for Civil Aviation, Croatia, and Gerold Reichle, Director General for Civil Aviation, Germany, present their insight on the matter from an ECAC Directors General perspective: what makes it such a hot topic, the specific challenges facing Southeast Europe, and the possible solutions to take European connectivity to the next level. Some examples from our ECAC Member States are also explored through the cases of Portugal, with its experience of the use of Public Service Obligations for its insular territories of Madeira and the Azores, and Iceland, for whom connectivity is highly critical given its geographic situation.

Beyond ECAC Member States, an ICAO take on connectivity, through the voice of Moumouni Dieguimde, Ambassador Representative of Burkina Faso to the ICAO Council, also provides an insight on the experience of his own State, and how connectivity could be the key to harvest the benefits of Burkina Faso's natural assets on the continent. Jonathan Wober, from the CAPA-Centre for Aviation, discusses the examples of Turkey and the Gulf States, and to what extent their connectivity choices can be replicated, while Jaap de Wit (Pintail Aviation Economics) considers the definition and measurement of air connectivity, its impact on the economic growth of States and regions, and aeropolitical controversies.

Finally, we have invited the industry to join the debate, through the perspectives of Olivier Jankovec (ACI EUROPE) and Simon McNamara (European Regions Airline Association). They take a look at the need to bring connectivity to the heart of the European aviation agenda with some facts and figures highlighting the airport connectivity situation, today's challenges in relation to regional connectivity and the short and longer-term solutions.

Through the variety of approaches selected to tackle this critical issue, our attention is drawn to the need to create a more level playing field, and the possible strategies to improve air connectivity to the benefit of all.

We hope you enjoy this special edition on Connectivity!

Participants at the 8th ECAC Forum

An ECAC Perspective on Connectivity

Silvia Gehrer
Director General of Civil Aviation of Austria

Dan Simonić
Former Director General of Civil Aviation of Croatia

Gerold Reichle
Director General of Civil Aviation of Germany

Many will agree that connectivity is one of the major topics in aviation policies and strategies nowadays. It is being discussed in several fora at international, regional and national levels. It was an important, if not the most important, aspect of the ICAO World Aviation Forum that took place in Montreal in November 2015, and it was on the agenda of the ICAO Air Services Negotiation Event (ICAN/2015) in October 2015. Moreover, the ICAO Air Transport Regulation Panel (ATRP) established a working group in order to elaborate a multilateral air transport agreement with the overall goal of improving connectivity. Currently a number of key issues, such as market access, safeguards, and ownership and control that are of importance to many ICAO Member States are examined. During the ICAO Assembly a progress report will be discussed.

Improving connectivity is also one of the key challenges tackled by the European Union's Aviation Strategy for Europe, that was presented and discussed by the Dutch Presidency, Transport Commissioner Violeta Bulc and EU Ministers during the EU Aviation Summit at Schiphol Amsterdam Airport, on 21 January 2016. Already last year, the public consultation for the preparation of the new strategy showed very evidently that connectivity matters for a wide range of stakeholders: 97 percent of the respondents answered that connectivity is somewhat or completely relevant for the overall economic development. Last but not least, national governments must also deal with the issues pertaining to connectivity and take it into account in their strategies (e.g. Austrian Aviation Road Map).

Connectivity: a Cornerstone to Air Travel

Connectivity is important for leisure and business travellers. It is also critical to business activities, business locations, and the overall economic development of cities, regions and States.

Connectivity enables contacts between people, which has become more and more important in times of high mobility. In the European Union, the freedom of movement of persons has resulted in many leaving their home countries to work and live in other places. For them, it is highly important to be well-connected to their home countries – families, relatives and friends. Over the past decade, the world has become better connected: today, one does not want to travel as long as a full day or even more to visit family living on the same continent. Hence, the benefits of air connectivity are not limited to economic ones; its social dimension should be emphasised as well.

Furthermore, if connectivity is primarily of direct value to a number of sectors, first and foremost to the tourism industry, it is also highly relevant to the leisure traveller himself/herself. Free time is limited and travellers are reluctant to spend a lot of it at the airport, waiting five hours for a connection – they would rather spend it at the beach, in the mountains or exploring other cities and countries. Indirect routes requires the passenger

Map of the current flight connections from Vienna

to change planes, which will make the journey longer and less comfortable. For example, a direct flight from Vienna to Bangkok takes approximately 10 hours, while alternative indirect connections via hubs in the Middle East may take up to 31 hours. These indirect connections may sometimes be cheaper, but they can cause other inconveniences, such as missing planes in the event of delays.

The same goes for the business traveller for whom time may be even more critical than for the leisure traveller. For instance, the business traveller may need to reach several destinations in a row within a short period of time. A desired location may be served directly from an airport, but it may be necessary to take an indirect routing, or be faced with no available practical routing at all. A business traveller is even more likely to prefer the direct routing in order to decrease the risk of journey delays, and to reduce travelling time significantly.

Air connectivity is not only important for airlines and airports, but also has an impact on the activities of companies in many sectors, making it therefore a critical factor when it comes to a business location. In this sense, connectivity plays a highly important role when attracting new firms to a business location, a region or a State. Companies have to be able to distribute their goods as fast as possible all around the globe. A well-connected location, for air passengers and cargo networks, is crucial for a business. But not only are the current connections at an airport important, also the potential to expand its network in the future is very valuable. Air connectivity increases the trade of goods and services, creates jobs and also attracts investment to well-connected regions. In conclusion, connectivity, especially direct connectivity, enables and ensures economic growth. In this regard, hub airports are key to maximising connectivity by combining point-to-point and transfer traffic.

The western or central parts of Europe may benefit from more favorable conditions when it comes to fast travelling and well-connected cities. The situation in Central Eastern and South-Eastern Europe looks different. The European Commission took note of this situation and launched a study regarding connectivity in this region.

Connectivity in Central Eastern and South-Eastern Europe

During the last decade, the European aviation system has changed dramatically. Connectivity has significantly improved and numerous airlines have started operations using various business models. Nevertheless, it is clearly visible how different regions in Europe have experienced different consequences while asking for similar connectivity benefits. The European Commission therefore tasked PricewaterhouseCoopers (PwC) with preparing a study entitled: "Overview of air transport and current and potential air connectivity gaps in Central Eastern and South-Eastern Europe (CESE) region" (December 2014).

PwC was engaged by the European Commission Directorate-General of Mobility and Transport to depict a clear portrait of the current state of play in the Central Eastern and South-Eastern European (CESE) market and to analyse the key considerations to be taken in the event of an airline bankruptcy. According to this study, the financial situation of network carriers in the Baltic States and in Central, Eastern and South-Eastern Europe is fragile. At present, a number of state-aid cases of air carriers in this region are being investigated by the European Commission, whilst other airlines in the region might face similar difficulties.

The study has observed that despite significant growth in air connectivity in the CESE region over the last decade, connectivity still lags behind that of EU15 coun-

Silvia Gehrer has been Director General International since 2013 and has headed the Department of Strategy and International affairs in the Austrian Civil Aviation Authority since 2009.

Ms Gehrer initially worked with the Ministry for Economic Affairs and joined the Austrian Permanent Representation at the EU in Brussels in 1995, the year of Austria's accession to the EU, as Trade Policy Attachée. Ms Gehrer also worked at the US Embassy in 1999 before joining the Austrian Ministry for Transport in 2000 where she headed the unit for EU and International Aviation. From 2004 to 2007, she represented Austria on the Council of the International Civil Aviation Organization as a member of the ABIS Rotation Group (Belgium, Ireland, Luxembourg, The Netherlands and Switzerland). Ms Gehrer received a master's degree in Business Administration specialising in Aviation and Trade from Vienna Economic University and holds a master's degree in Public Relations.

tries – across all modes of transport, even accounting for population differences and relative income levels. The aviation market in the region is still relatively 'immature' compared to the rest of the EU15 States, making it more challenging for airlines operating in the region, given the scale of operations. Connectivity has been significantly affected by the ceasing of operations of a number of airlines in the region. Intra-CESE connectivity, in particular, has been lost, despite low cost carriers (LCC) taking market shares from struggling and defunct flag carriers. Long haul connectivity remains limited with nearly 99 percent of all flights being short haul. The loss of network/flag carriers has also reduced hub traffic within the region. Previously Budapest and Prague were the key hub airports in the CESE region. Today, the primary hubs serving indirect traffic from CESE are Frankfurt, Munich and Vienna, with Vienna, Warsaw, Munich and Frankfurt being the key hubs for intra-CESE traffic. A high number of routes in the region remain quite thin and might not be sustainable from a commercial perspective.

There is no doubt that air transport connectivity is the channel for the economic flow of tourists, workers, goods, investment and ideas, creating social cohesion, competition and diversification of market players and to bridge to distant markets. In South-Eastern Europe (SEE), nevertheless, the undeveloped economic and air transport market and weak connectivity are calling for improvement. Compared to the whole European network, only 10 percent of existing routes are oriented within SEE, with less than one daily flight on average on half of the SEE routes. At the same time, other modes of transport are also significantly behind EU15 countries, especially highways and high-speed railway infrastructures. Bearing in mind the significant financial investment that has been made in road and rail infrastructures, the introduction of a regional public service concept is worth analysing.

The moderators of the 8th ECAC Forum: Dan Simoñic, Gerold Reichle and Silvia Gehrer.

Additional complexity in the SEE market is added through the adverse seasonality effect. In Croatia, for example, the third quarter of the year produces the same number of air travellers as the remaining three quarters. Similarly, during the summer season, up to 100 airlines operate to and from Croatia, whereas during the winter period of low demand, this figure drops to less than 10. Huge seasonal differences create a compound-planning environment with an impact on fleet, resources and investment planning.

Cooperation between the existing players in the whole aviation value chain following a consolidation in the sector could be a way to go. It is necessary to understand the importance of privatisation, acquisition, merging and integration processes, and therefore, the efforts of the European Commission towards changing the EC Regulation No 1008/2008 on common rules for the operation of air services in the Community are very welcome.

To conclude, and such was the result of recent discussions in different fora, connectivity is a key precondition for social and economic development and the cohesion of different regions, especially in these areas where there is no commercial interest from the private sector or without adequate transport mode alternatives. Market liberalisation and fair competition are key preconditions for the improvement and sustainable development of connectivity while all European citizens and regions should be integrated and internationally connected, with special focus on the remote, isolated, underserved and underdeveloped areas. Territorial connectivity should not be based only on profitability. In that sense, public service obligation (PSO) systems at national and regional levels are recognised as generating substantial positive results and are considered to be fit for purpose. However, socio-economic impact must be properly analysed in order to define the minimum level of appropriate territorial connectivity and to prevent negative consequences (e.g. over-compensation, monopoly, etc.).

Dan Simonić was the Director General of Civil Aviation for Croatia and Assistant Minister of Maritime Affairs, Transport and Infrastructure from 2012 until January 2016.

During that period, Mr Simonić was also the Chairman of the National Civil Aviation Security Committee and co-Chairman of the National Civil Aviation Safety Committee. He began his professional career within the Directorate General of Civil Aviation of the Republic of Croatia in 1995, primarily in the areas of aviation security, international relations, civil-military co-ordination and flight authorisations. In his 15-year career in Croatia Airlines, he held various managerial positions in information technology with a special focus on aeronautical and passenger information systems. During his career in the national airline, he was a member of several Star Alliance expert teams and sounding boards and was responsible for many different projects, mostly in the flight operations line of business. Mr Simonić graduated from the Faculty of Transport and Traffic Sciences, specialising in air transport management and air traffic control.

How to Further Connectivity in Europe

Although situations are different in the various ECAC Member States, they share the common goal of improving connectivity.

Connectivity is reflected in the number of air links and their quality. For European citizens, this means that they can reach more destinations in Europe and beyond. Apart from the aviation industry, improved connectivity is also beneficial to other industries, such as trade and tourism. It contributes directly to economic growth and the creation of jobs. In order to ensure a high level of connectivity, it is necessary to improve the relevant general conditions and strengthen international competitiveness.

The economic evolution of the European aviation industry situation in the last few years and the dramatic changes it triggered could weaken connectivity. European airlines and airports are facing fierce international competition from their non-European counterparts. If Europe does not want to be left behind in the international competition, it has to face the challenges and develop appropriate solutions in order to ensure competitiveness for the long term and defend its industry's leading position in the global aviation market.

The European Commission's Aviation Strategy has identified the challenges and taken the first step in the right direction. It includes the plan to support further the liberalisation of the global aviation market in order to improve connectivity. Indeed, to ensure that the European industry exploits its opportunities to expand where they appear, it is essential to open up new markets (e.g. China, the Gulf or ASEAN states), which will offer an enormous potential for growth in the coming decades. Whenever air services agreements are negotiated, they have to be based on the principle of reciprocity and on a uniform regulatory framework. The latter, in particular, must not apply only to individual agreements in the long term. Moreover, a fair and transparent competitive environment on a global scale has to be created, so that all companies, as far as possible, act on a level playing field.

When it comes to opening up new markets and thereby improving connectivity in European air transport, air carriers have a major role to play. However, when we compare the amounts of taxes and charges paid by air carriers worldwide, there are many differences. European States should avoid national and isolated solutions in the long run. Therefore, taxes and charges paid by air carriers should be critically reviewed. Only then can a worldwide level playing field be established in the future, and consequently connectivity be improved.

Capacity- and efficiency-related bottlenecks are also an impediment to a high level of connectivity and must therefore be reduced. If Europe wants to adjust to future developments of air transport demands, react to congestion in European air space and optimise the use of the busiest EU airports, it must not only conclude the Single European Sky, but also, for instance, push ahead with the revision of slot regulation and the development of common technical standards.

A comprehensive European air transport network must also ensure that remote regions are accessible and can be integrated into the existing network. If the market does not allow certain European regions to provide air services to an acceptable extent, Member States could consider a public service obligation in order to guarantee connections to and from regions with unsatisfied demand. However, in order to avoid a distortion of competition, the Commission must make sure that the strict European preconditions are met.

To guarantee the best possible connectivity, air transport should also be understood as an integral part of an intermodal transport network. Efficient co-ordination of the interface between air transport and rail transport can help improve the connectivity of European air transport as a whole, because the European rail network can create new transport options, for instance, by serving as a feeder to the hubs.

Improving global connectivity in air transport is a long-term goal. If we want to improve the connectivity of the European aviation industry, it is imperative that all States work together towards the future. ■

Gerold Reichle was appointed Director General of the Civil Aviation Directorate of the German Ministry of Transport and Digital Infrastructure on 1 January 2010.

Mr Reichle began his carreer with the German Administration of Posts and Telecommunications (Deutsche Bundespost) where he worked until 1991. Then, he joined the Federal Ministry of Posts and Telecommunications, first as Assistant Head of Division for European Telecommunications Policy and then as Assistant Head of Division in the Minister's Office, before heading up the Office of the Federal Minister of Posts and Telecommunications in 1995. In 1998, after the dissolution of the Ministry, Mr Reichle started at the Federal Ministry of Economics as Head of Division for questions of principle in postal policy, and continued his career as Director for Posts and Telecommunications. In 2004, he was appointed Director General for Posts and Telecommunications. In 2008, Mr Reichle took over the Directorate General for Technology Policy in the Federal Ministry of Economics and Technology. In 2009, Mr Reichle was active in the Executive Board of the German Aerospace Centre before being appointed to his current position in 2010. Mr Reichle studied electrical engineering at the Munich Technical University where he received his diploma in 1984.

Public Service Obligations: a Contribution to Enhance Connectivity

The case of Portugal and the Autonomous Regions of Madeira and Azores

Luis Miguel Ribeiro
Chairman of the Board of the Portuguese National Authority of Civil Aviation (Autoridade Nacional da Aviaçao Civil, ANAC)

Air Transport – Regulatory Framework

The regulatory framework for international civil aviation was established by the Chicago Convention in 1944. Since then, a complex network of bilateral air services agreements concluded between ICAO Member States allows airlines to provide international air services all over the world.

For domestic air services, it is up to each Member State to regulate its own nationnal framework according to its own needs.

In the early days of aviation, air transport was only accessible to a privileged sector of the population. However, the continuous technological advancement of the aeronautical industry, the pressure from the airlines interested in expanding their businesses and from the public to travel further with more comfort and less time, combined with the vision of Member States to use air transport as a driver for the development of their economies, boosted air transport as an industry of the masses and a strong contributor to improving connectivity.

In this regard, the regulatory framework has been adjusted at international and national levels in order to accommodate the varied and specific needs of the different regions and Member States. Member States' greater flexibility in their approach to negotiating bilateral air services agreements, and the opening of market access at the international, regional and also domestic levels have significantly contributed to the continuous growth of air traffic worldwide.

On 1 January 1993, date of the entry into force of the third air transport package, the European Commission changed not only the international air services but also the domestic air services within its Members States, and strongly boosted the European air transport sector. The third air transport package included the three regulations that allowed the liberalisation of the air transport sectors at three different levels: ownership and control of airlines, market access and airfares.

According to the Council Regulation (EEC) No 2408/92 of 23 July 1992 on access for Community air carriers to intra-Community air routes, *"the Community air carriers shall be permitted by the Member State(s) concerned, to exercise traffic rights on routes within the Community"*. However, an important safeguard, known as 'public service obligation', has been included *"in respect of scheduled air services to an airport serving a peripheral or development region in its territory or on a thin route to any regional airport in its territory, any such route being considered vital for the economic development of the region in which the airport is located, to the extent necessary to ensure on that route the adequate provision of scheduled air services satisfying fixed standards of continuity, regularity, capacity and pricing, which standards air carriers would not assume if they were solely considering their commercial interest"*.

A Member State, after having informed the Commission and air carriers operating on the route, may impose a public service obligation in respect of scheduled air

services to an airport. The adequacy of scheduled air services shall be assessed by the Member States taking into consideration (i) the public interest; (ii) the possibility, in particular for island regions, of having recourse to other forms of transport; (iii) the airfares and conditions which can be quoted to users; and (iv) the combined effect of all air carriers operating or intending to operate on the route.

If no air carrier has commenced or is about to commence scheduled air services on a route in accordance with the public service obligation which has been imposed on that route, then the Member State may limit access to that route to only one air carrier for a period of up to three years, after which the situation shall be reviewed.

The right to operate such services shall be offered by public tender either singly or for a group of such routes to any Community air carrier entitled to operate such air services. The Member State may reimburse an air carrier, that has been selected, for satisfying stan-

dards required by a public service obligation imposed. Such reimbursement shall take into account the costs and revenue generated by the service.

In order to ensure a more efficient and consistent application of Community legislation for the internal aviation market, and based on the experience of the implementation of the third package, a series of adjustments to the current legal framework was required. On 1 November 2008, the Regulation (EC) no 1008/2008 of the European Parliament and of the Council, on common rules for the operation of air services in the Community, entered into force.

Portugal and the Autonomous Regions of Madeira and Azores

Portugal, a country whose achievements in maritime navigation are very well known, also had some outstanding pioneers in aviation and was one of the founding members of ICAO and signatories of the Chicago Convention.

Portugal is a country in the south west of Europe, located in the Iberian Peninsula and being bordered by the Atlantic Ocean to the west and south, and by Spain to the north and east. It holds sovereignty over the Atlantic archipelagos of the Azores and Madeira, which are autonomous regions.

The Autonomous Region of Azores is composed of nine volcanic islands located in the North Atlantic Ocean, west of the mainland, and it is noted for its landscapes, fishing villages, green pastures and a blue sea where whales and dolphins delight the visitors. Its main economic activities are agriculture, dairy farming, livestock ranching, fishing and tourism.

The Autonomous Region of Madeira is also located in the North Atlantic Ocean, west and slightly south of Portugal. The region is a popular year-round resort, tourism being a very important economic activity. It is noted for its Madeira wine, flowers, landscapes and embroidery. Its annual New Year celebrations feature one of the largest firework shows in the world. The main harbour in Funchal is an important port in cruise liner docking, being a stopover for commercial and trans-Atlantic passenger cruises between Europe, the Caribbean and North Africa.

In this context, air transport connectivity is of the utmost importance for the economic, social and territorial cohesion of the Portuguese territory and its population, and represents a specific need of the populations of the Autonomous Regions of Azores and Madeira.

Public Service Obligations Imposed on certain Air Scheduled Services between Mainland Portugal and the Autonomous Regions of Azores and Madeira

To tackle the need to ensure the economic, social and territorial cohesion of the Portuguese territory and of its population in order to reduce disparities between the levels of development and comply with the EU regulation, Portugal has developed two decades of sound experience on public service obligations between the mainland and the two Autonomous Regions of Azores and Madeira.

In 1995, Portugal imposed public service obligations on scheduled air services to the airports serving the peripheral regions of the Azores and Madeira, in order to satisfy fixed standards of continuity, regularity, capacity and pricing.

Air Services between the Mainland and the Autonomous Region of Madeira

The scheduled air services between the mainland and the Autonomous Region of Madeira were subject to public service obligations from January 1995 to April 2008.

During that period, two different models were implemented. First, from 1995 to 1998, a limited access to a community airline selected through a tender procedure, with a three-year contract and an established amount of financial compensation to be paid from the national budget was put in place.

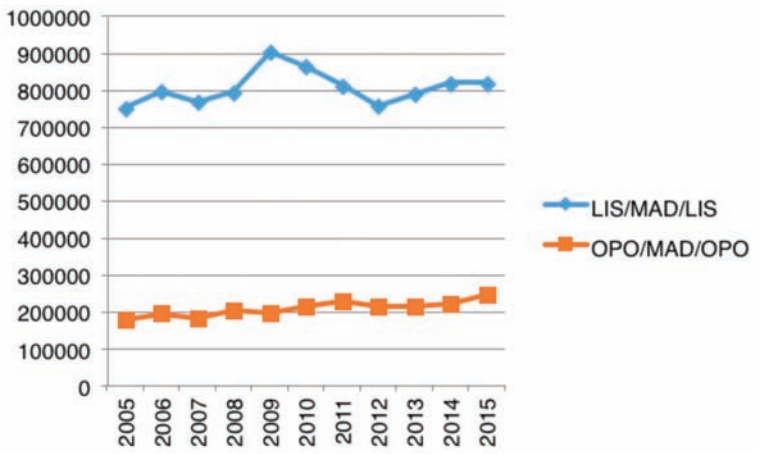
Between 1999 and 2008, the traffic between the mainland and Madeira was quite stable, with a range from between 750 thousand and 800 thousand passengers per year on the Lisbon/Madeira route, and between 180 thousands and 196 thousand passengers per year on the Porto/Madeira route.

During that period, the scheduled air services were open to the community air carriers which had to comply individually (frequency, continuity, regularity and airfares) and globally (total capacity imposed) with the public service obligations in place. This model established a cap on the airfares to be paid by residents (EUR 151) and by students (EUR 113). It also introduced a cap on the subsidy to be paid from the national budget to each airline for each passenger carried on their flights: resident (33 percent of the paid airfare with a cap of EUR 118) and student (40 percent of the paid airfare, also with a cap of EUR 118 [1]).

Some Portuguese airlines operated the scheduled air services but no significant competition at the level of the airfares was acknowledged. In fact, the caps imposed on airfares and on the subsidy per passenger allowed airlines to earn the highest revenue from the passenger and also from the national

(1) The amounts indicated were in force between 2003 and 2008.

Volume of passengers Lisbon/ Madeira – Porto/ Madeira



Source: ANAC

budget. Hence, this model showed that there was no incentive for airlines to reduce airfares. Only at the beginning of the operation, in order to build their own market share, did the airlines offer lower airfares, but after a certain period of time they usually matched the overall airfares.

Recognising that passengers would benefit from having more airlines providing air services, offering different and attractive products, and improved competition on prices, the Portuguese government decided to liberalise the market access between the mainland and the Autonomous Region of Madeira. However, considering the specific needs of the resident population of the region, a social subsidy of a maximum of EUR 60 was established and paid directly to the passengers (residents and students) for each round trip, for any airfares above that amount.

The liberalisation of market access had an important impact on traffic growth on the Lisbon/ Madeira route, in particular in 2009 and 2010, ,with 901 thousand and 862 thousand passengers respectively. The decrease in traffic in the period 2011-2013 can be related to the economic factors that impacted the European region, in particular Portugal. With the economy regaining some of the loss of the previous years, the impact on traffic in 2014-2015 has already been positive, at the level of 818 thousand passengers, per year on this route. As for the Porto/Madeira route, it achieved a significant growth of 13 percent (approximately 24 thousand passengers) in 2008. Since 2009, the traffic has grown very steadily and in 2015 it has already reached 248 thousand passengers.

Since 2008, the threshold of 1 million passengers has been exceeded between the two gateways in the mainland and Madeira airport (only in 2012 this number has not been reached). Also, since then, one of the major European low-cost carriers (LCC) has been operating the Lisbon/Funchal route (Madeira airport).

Air Services between the Mainland and the Autonomous Region of Azores

The particular geography of the Azores, composed of nine islands scattered along a 600 km stretch of ocean from Santa Maria to Corvo and approximately 1 600 km from the mainland, creates different and specific needs in terms of air transport connectivity.

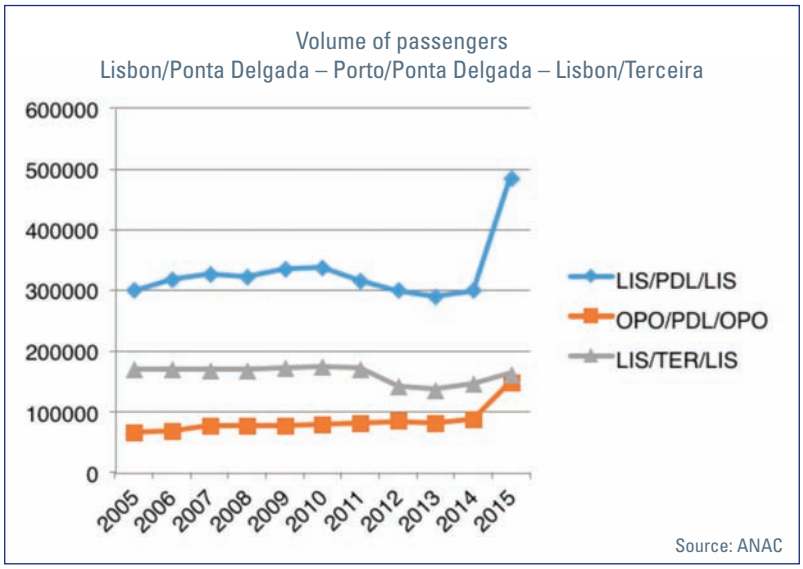
From 1995 to 2004, the four routes between the mainland and the Autonomous Region of Azores were operated under a regime of public service obligations, with limited access for two community airlines selected through a tender procedure (one airline per route), with a three-year contract and an established amount of financial compensation to be paid from the national budget.

In 2005, in order to provide a wider offer from different airlines and develop competitiveness in the market, which would eventually benefit passengers, a model similar to the one established for air services between the mainland and the region of Madeira was implemented.

This model opened the market to the community air carriers that had complied individually (frequency, continuity, regularity and airfares) and globally (total imposed capacity) with the established public service obligations. A cap on the airfares to be paid by residents (EUR 199) and students (EUR 155) was established as well as a fixed subsidy (EUR 86 [2]) to be paid from the national budget to each airline for each passenger (resident and student) carried on their flights.

Prior to 2005, only the three gateways of Ponta Delgada, Terceira and Horta had direct flights from the mainland. Since 2005, Lisbon has direct flights to five

(2) The amounts indicated were in force between 2011 and 2015.



gateways in the region. The main routes are Lisbon/Ponta Delgada, followed by Lisbon/Terceira, Lisbon/Horta and Porto/Ponta Delgada. The traffic between the mainland and those gateways has steadily remained at the same level, with some decrease during the period 2012-2014 due to the above-mentioned economic factors.

Considering that two of the five gateways in the Azores had already reached a certain maturity, and aware of the positive impact of market access liberalisation between the mainland and Madeira, the Portuguese government decided to liberalise the market access on the routes between Lisbon/Ponta Delgada, Porto/Ponta Delgada and Lisbon/Terceira from the start of the 2015 IATA summer season.

In this case, as for Madeira, due consideration to the specific needs of the resident population of the region was given, resulting in a social subsidy to be paid directly to the passengers. The amount of the social subsidy is the difference between the price (fares and charges) paid by the passengers (residents and students) and a fixed value of EUR 134 for residents and EUR 119 for students.

Two of the major European LCCs are now operating the Lisbon /Ponta Delgada route. The rates of traffic growth in 2015 had an important impact on regional airports, in particular on the Ponta Delgada airport which, according to ACI, had a 29.5 percent increase in passenger traffic in 2015 compared to 2014.

From 2014 to 2015 the total number of passengers travelling to and from the Azores and the mainland increased by 49 percent, from 533 thousand to 795 thousand passengers.

Conclusion

A period of 20 years has elapsed since the implementation of the public service obligations regime to the market access liberalisation between the Portuguese mainland and the Autonomous Regions of the Azores and Madeira.

The change of models from the public service obligations to market access liberalisation was carried out in a structured and sustainable way and has only been applied to those markets considered to be mature. Those changes were made in compliance with the need to ensure the economic, social and territorial cohesion of the Portuguese territory and of its population in order to reduce disparities between the levels of development.

The markets had steady growth which allowed for the entry of new operators with a diversified offer of services and lower fares, presenting improved options for passengers and increasing the business of airports and air navigation services providers. Eventually, market access liberalisation resulted in a significant improvement in air transport connectivity, a driving force of regional economic development, in particular in the case of those territories for which the tourism industry is particularly critical. ■

Luis Miguel Ribeiro was appointed Chairman of the Portuguese Civil Aviation Authority in July 2015.

Mr Ribeiro began his professional career in 1995 in the Ministry of Finance as a senior adviser. Between 2005 and 2008, he was a member of the Cabinet of the Secretary of State for Treasury and Finance and, from 2008 to 2010, became Deputy Director of the General Directorate of the Treasury. During that period, he also served as a member of the Audit Committee and Chairman of the general assemblies of several State-owned companies. In 2010, Mr Ribeiro was appointed member of the Board of Metropolitano de Lisboa (State-owned company for underground transport in the region of Lisbon). In August 2012, Mr Ribeiro ceased functions to assume the position of a member of the Board of ANA - Airports of Portugal, S.A., (the Portuguese airport network manager). With the ANA Group - Airports of Portugal, S.A., he held the posts of Chief Financial Officer of the group, member of the Board of ANAM (Madeira Airport Manager) and Managing Director of Portway (Ground Handling Company) until the appointment to his current position last July. Mr Ribeiro has a degree in Economics from Lisbon University (1994).

Importance of Air Transport Connectivity for Iceland

Halla Sigrun Sigurdardottir
Deputy Director General of Civil Aviation

This article seeks to highlight the importance of air transport connectivity for Iceland, with an emphasis on economic benefits.

How can a nation survive on an island in the middle of the North Atlantic Ocean? In earlier days, the main means of travel was by sea, hence the culture of seafaring remains very strong in Iceland. However, the need for a faster way to connect has also built up a strong aviation culture.

Since the early days of aviation in Iceland, the importance of the sector has been growing steadily. During World War II, two rather well-equipped airports were established in Iceland, one in Reykjavik and the second in Keflavik, both located on the south-west corner. The continuous air traffic growth during the early years gave a clear indication of the future: Iceland would become an important link on the route over the North Atlantic Ocean.

Keflavik International Airport

Background - Towards an Open Strategy

Iceland took part in the Chicago conference in 1944 where the foundation of the International Civil Aviation Organization (ICAO) was laid. This was a significant milestone marking the beginning of international cooperation in aviation. In 1948, an agreement was signed on the initiative of ICAO concerning the provision of air navigation services in the area surrounding Iceland. This service is still provided, under the auspices of ICAO.

Even though Iceland is not a member of the EU, it is a full member of EASA and most of the legislative work concerning aviation is implemented into Icelandic law through European Economic Area (EEA) arrangements. The Icelandic transport strategy has put the emphasis on creating an environment where safety is number one but competition is also encouraged.

Right from the start Icelandic authorities have appreciated the value of open air service agreements. This has been of great benefit to Icelandic air operators using traffic rights to broaden their network around the world, as well as to consumers in Iceland. Emphasis has been placed on making open air service agreements with interested States with mutual future value in mind, both for passenger and cargo operations.

Importance of Connectivity

Today, Iceland relies heavily on connectivity by air. The economy is small and everyday business is tightly bound with partners overseas. Iceland has four international airports; the biggest is Keflavik International Airport where 99 percent of international traffic passes through. The other airports are in Reykjavik, Akureyri (in the north) and Egilsstadir (in the east).

Icelanders use air transport to travel abroad for professional and personal reasons, as options to travel by scheduled passenger ferries are very limited. Even though the far bigger part of cargo import and export is transported by sea, the value of the cargo transported by air is proportionally higher or about 35 percent of international trade, as put forward in a report by Oxford Economics 2012 on *the Economic benefits of air operations in Iceland*, at the request of IATA. For example, air cargo is critical for the export of fresh fish and vital for just-in-time delivery of products where road or rail transport is not possible. Looking at the tourism sector, it was calculated in 2010 that more than 84 percent of foreign tourists used air transport to get to Iceland. In 2012, the number had risen to 98 percent.

The Economic Impact of Aviation

The economic impact of air transport connectivity in Iceland has been calculated to some measure, e.g. in the previously mentioned report of Oxford Economics. It demonstrates that in 2010, about 5.5 percent of the Icelandic workforce was employed by companies in the air transport sector. Including the tourism sector, the number rose to almost 13 percent of the Icelandic workforce. Compared to neighbouring countries, the economic value of aviation is considerably higher in Iceland, or 6.6 percent of the Icelandic GDP. Since then, the growth has been continuous, contributing directly and indirectly to the recovery of the economy after the crisis in 2008.

The picture below shows the production value of different industries in Iceland in the period 2007-2012. It also demonstrates that although Iceland´s most commonly known products are based on fisheries and its renewable energy sector, the contribution of the air transport sector is very high.

Although the main emphasis has been on the value of international aviation adding to connectivity, the importance of domestic connectivity should not be underestimated. In 2013, a research administrated by the Ministry of the Interior was conducted on the socio-economic impact of domestic flights in Iceland to give foundation for further decision-making in the field. The results were not surprising. Strong connection was identified between the value of quality of life (health, education, employment and access to services) and connectivity by air. Opportunities were also identified to further cooperation between air transport operators and tourism where this would be a possible factor in bringing down the prices of air fares for the users and distributing tourists more evenly on the island. The use of state aid or public service obligations (PSO) in domestic air transport has to be investigated further, but research evidence suggests that where PSO´s are used, the users of air transport are more diverse, giving more people the opportunity to connect. The research showed that domestic air transport plays a critical role in the region where people chose to settle down.

Connectivity and the Icelandic Network

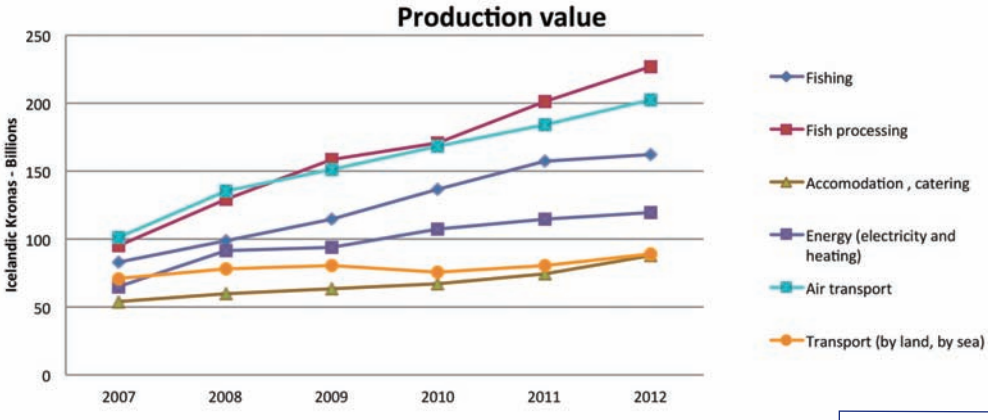
After the economic crisis in 2008, a united effort was initiated by Icelandic tourism authorities and travel operators. Among many factors, one of the results of the drastic devaluation of the Icelandic currency (ISK) was that travelling to Iceland became cheaper. Strangely to some, the volcanic eruptions in Fimmvörduhals and Eyjafjallajökull, known to all in the industry, also triggered an increase of tourism in Iceland.

Based on the efforts of many players, passenger numbers have been growing, as can be seen in figure on the following page provided by Isavia, the airport operator and provider of ANS services in Iceland. It shows the passenger number (PAX) in and out of Keflavik Airport between 2012 and 2015, with the forecast for 2016.

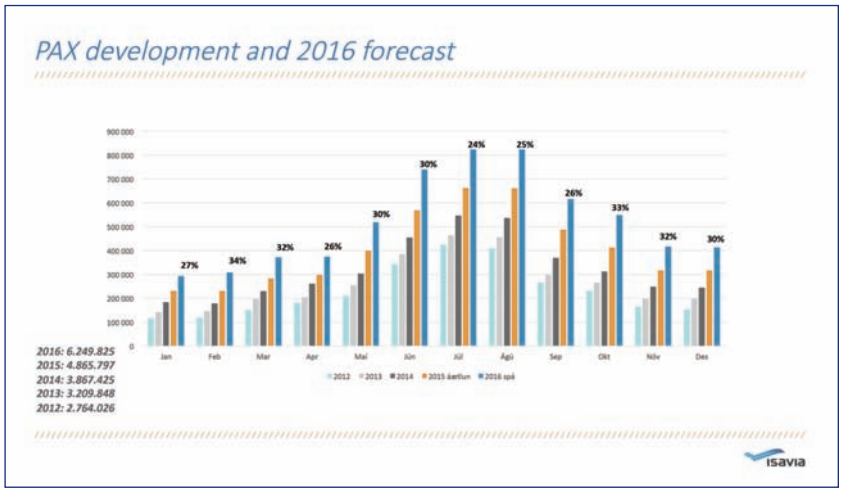
Evidently, not all passengers are flying to Iceland as a final destination. The number of passengers connecting to other destinations is growing, and in the future this bulk of passengers is estimated to grow significantly.

In percentages, there has been a sharp growth of passengers at Keflavik Airport. The increase since 2010 (alone) is 135 percent and estimated numbers for 2016 indicate an increase of more than 28 percent compared with 2015.

The network connecting Iceland to other countries is steadily growing. In 2005, two operators offered all-year-round scheduled flights to Iceland, while in 2015 this number had increased to nine operators. Simultaneously, the network of destinations has grown from 56 airports in 18 countries in 2012. In 2016, 80 destinations are on offer, served by 25 airlines. Some operators are offering a niche product, connecting passengers to and from Greenland. A positive sign for the Icelandic economy is the fact that Icelanders themselves have now started to travel again and the numbers are reaching the heights of the years before the economic crisis.



PKM, 2014 Statistics Iceland



Reykjavik domestic airport

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Current and Future Challenges

The constant growth has not been without challenges. As in many other countries, the budgets of governmental agencies have been cut, making it ever more necessary to use resources smartly. Further emphasis has been placed on companies' safety management systems, and that applies to all sectors of the travel industry. However, it does not replace the need for effective oversight. Infrastructures have to be maintained and an ambitious masterplan for a bigger airport in Keflavik is on the table. Facilitation at the airport has become ever more important as good cooperation is needed between all partners, airport, customs, airport police and others. The increasing number of tourists is a challenge, although the economic benefit is obvious. There is a debate to be held regarding the correct levels of capacity and mass tourism *versus* the quality of the travellers' experience. That discussion shall be left in another forum.

In conclusion, the value of air connectivity is very significant to the Icelandic economy. The direct value can be calculated but it is vital to keep in mind the indirect value of connectivity – economically, socially and culturally. ■

Halla S. Sigurdardottir is Director of the Facilitation and Co-ordination Division at the Icelandic Transport Authority, deputy to the DG and a Deputy Director General of Civil Aviation.

Ms Sigurdardottir started her career at the Icelandic Civil Aviation Administration in 2004. After a reorganisation of the ICAA in 2007, she was appointed Director of Administration. A new governmental institution, Icelandic Transport Authority, was established in 2013 with the merger of four governmental institutions, there among the ICAA. As director of the Facilitation and Co-ordination Division, she is responsible for international co-ordination, especially with ICAO and ECAC (in aviation); for the State's safety programme in aviation, maritime and road traffic; facilitation and consumers' affairs; legal affairs; environment; research and development and transport statistics. She is the National Safety co-ordinator, responsible for Iceland's portfolio in the ICAO CMA database. Ms Sigurdardottir holds a BA degree in Organisational Behavior and Industrial Studies and Anthropology from the University of Iceland and an MBA from the University of Strathclyde in Glasgow. She also has a DELF diploma in French from the Université de Caen, France and a diploma in Public Administration from the University of Iceland. She participated in the ICAO Familiarization Course 2005 and the US International Visitor Leadership Program on International Aviation and Security in May 2011.

Reflections on Connectivity

Moumouni Dieguimde
Ambassador Permanent Representative of Burkina Faso to the ICAO Council

In its report [1], the International Civil Aviation Organization (ICAO) Aviation Data and Analysis Panel defined connectivity as: "The movement of passengers, mail and cargo involving the **minimum of transit points,**

- which make trips as **short as possible**
- with **optimal user satisfaction**
- at the **minimum price possible."**

There are other contributions to the definition and understanding of connectivity, including:

a. The World Bank's correlation of connectivity with liberalisation and Gross Domestic Product (GDP);
b. The availability of the network to move passengers from their origin to their destination seamlessly (Hayley Morphet; Claudia Pottini, 2014).

The advantage of ICAO's definition is that it proposes a comprehensive, holistic and customer-centric approach to air transport. Essentially, what this definition establishes is that connectivity is the ultimate objective and fundamental value of air transport, its *"raison d'être".*

To play this fundamental role, the aviation industry value chain includes five direct key players: (1) regulators and services of Member States; (2) airlines; (3) airports (aeronautical and non-aeronautical services); (4) air navigation and meteorological services; and (5) the users, whether human, cargo or mail.

Hence, connectivity could stand best defined as a harmonised system of the first four key players (within the supporting framework of ICAO) by which they enable the move of the fifth player (the user) from point A of origin to point B of destination with the best ratio of price/quality service/time spent, associated with the optimal social and environmental impacts, to all of which one should consider adding the availability of other intermodal transport systems in complement to the air services.

Such a definition implies and encompasses (1) the network's concentration as an indicator; (2) the social and environmental elements for sustainability; (3) the inclusion of inter-modality as complementary; and, ultimately (4) the implication of the air transport system's key players 1, 3, and 4, described previously, to efficiently and effectively meet the best experience and satisfaction of key player 5, the user.

Why is Connectivity such a Critical Issue?

ICAO has supported the efforts of States and industry stakeholders to recognise air transport connectivity as an essential enabler of economic development. According to some studies, every 10 percent increase in global air connectivity generates a USD 5 billion increase in global outputs each year.

It appears to be not only an indicator of network concentration (ICAO), but also a system of intelligent, economic, social, and environmental teamwork between key players of the aviation industry in a given geographic zone. Under such a perspective it goes from a mere market-centered approach to a sustainable triple bottom-line approach [profit – society/the people – the planet – (Jayachadran & Al., 2014)].

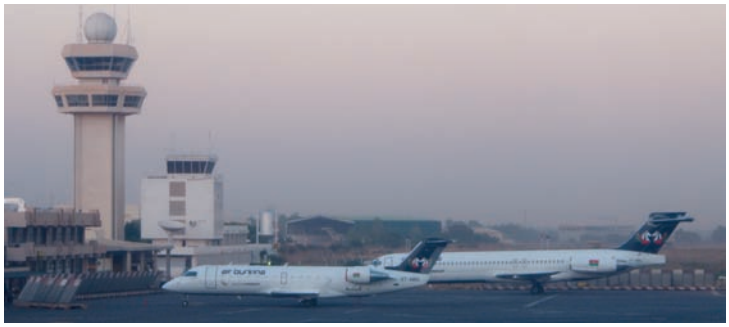
So, aviation connectivity becomes critical in the sense that it can be the means by which the industry seriously challenges its drawbacks rooted in the market-centered approach, which is the current economic model, based on market liberalisation, privatisation and other forms of free market policies. Deeper research on connectivity and its benefits become a must for an integrated, profitable and sustainable aviation industry.

Through connectivity, many elements are taken into account, the first of which are market access, sustainable ways of fostering liberalisation (social and environmental considerations), and complementarity with intermodal transportation systems; all for the best experience and fidelity of the user. Thus, good connectivity becomes an enabler and strengthener of the following elements:

a. "Convenience zone" for various types of interactions between individuals, people, businesses at the global level, whether cultural, intellectual, health, to name but a few;
b. Tourism in its various forms;
c. Trade, since air transport alone contributes to around 35 percent of world trade by value although less than 1 percent in volume;
d. Economic growth and social development; and, not the least,
e. Business longevity and sustainability.

(1) Report of the Aviation Data and Analysis Panel, Montréal, Canada 14-17 April 2014, concl. 9.3.1 refers.

Ouagadogou Airport



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ICAO Initiatives on Aviation Connectivity

Connectivity requires the existence of a favourable regulatory framework. In its continuous effort to foster the emergence of a sustainable and efficient air transport system, the international civil aviation community cooperates through ICAO on different activities that all contribute to the furthering of connectivity, including:

- Market access liberalisation: international agreements (including on cargo services);
- Air carrier ownership and control: international agreement to liberalise the current restrictions;
- Aviation system block upgrades (ASBUs): improved access, better use of available capacity, reduced fuel burn;
- Facilitation: ease or expedite transit through the air transport system for passengers and cargo;
- Consumer protection: ICAO to foster regulatory convergence through core principles (including price transparency);
- Fair competition: ICAO to facilitate exchange of best practices (ICAN competition conferences) and comparison between national and regional competition policies/practices (compendium of competition policies and practices);
- User charges key principles – cost-relatedness, transparency, consultation with users, non-discrimination;
- Taxation in line with ICAO policies – "Not to kill the goose that lays the golden eggs";
- Environmental basket of measures for cleaner air, noise reduction, better habitat, waste management, reduction of CO2 in the atmosphere.

In summary, ICAO, as a specialised United Nations (UN) Agency, strives to meet the overarching Sustainable Development Goals (SDGs) of the UN as well. The attention of States was drawn to the need for effective implementation of ICAO's policies through the dissemination of high-level declarations or statements adopted in the context of global or regional meetings, such as the *Declaration on the Development of Air Cargo in Africa* (August 2014) and the *Declaration on the Sustainable Development of Air Transport in Africa* (March 2015).

ICAO has a clear mandate to *"define, in a cooperative manner, key strategies to overcome impediments to a sustainable air transport"* [(2)]. By adopting a proactive, comprehensive and continuous strategy, ICAO will be in a better position to assume its leadership role in the modernisation of air transport's regulatory framework.

To support the implementation of these Declarations by the States, ICAO has developed a new system, named "State Air Transport Action Plan System" (SATAPS). This interactive online secure portal, once successfully adopted by States, could become a permanent tool, which could be extended to all ICAO regions, as required by ICAO Standards. In conducting this work, the Organization will follow a structured process, consisting of four components: monitoring, promoting, guiding and implementing.

- Monitoring involves the proactive identification of the needs of States and the industry. This will be carried out through the use of the SATAPS interface, as well as ICAO's other data and analysis capabilities.
- Promoting involves continuous efforts to publicise and showcase ICAO's policies and guidance and the critical role of aviation for sustainable economic development, not only to Member States but also in cooperation with external entities, particularly in the context of the No Country Left Behind (NCLB) initiative and the UN Sustainable Development Goals (SDGs).
- The guiding component involves taking more responsive action to cater to changing situations of States, including through the development of specific guidance tailored to the needs of States and adapted to the industry's dynamic nature.
- Implementation, which obviously falls under States' responsibility and sovereignty, is the most critical component for bringing about tangible results. It may involve technical assistance for States and regional bodies to implement ICAO's policies and guidance, and decisions and/or commitments made for the economic development of the Member States.

(2) (ATConf/6 recommendation 1.1/1 f refers)

Vision for Burkina Faso's Aviation

One can easily note that in the region of the Economic Community of West African States (ECOWAS), Burkina Faso offers one of the best radius from capital to capital, including to Central African capitals. This unique comparative advantage has not yet been exploited to its full potential whereas it could offer service opportunities to the country as a whole and increase the traffic of the two international airports of Burkina Faso (Ouagadougou and Bobo-Dioulasso) significantly.

My vision for Burkina Faso's aviation dwells on making the most of the specific geographical position of the country to facilitate regional connectivity, through the Yamoussoukro Decision in particular as a supporting framework, and to foster regional economic development in complementary and sustainable ways. The success of such a project requires Burkina Faso to genuinely bring back by all means, political stability as a patriotic precondition to harvest the ripple effects of its unique regional comparative advantage.

Burkina Faso, as a landlocked country in the middle of the ECOWAS region, in West Africa, has been part of the following major African aviation institutions: ASECNA (1959); Air Afrique (1961 - 2002); ICAO (1963); Air Burkina (ex. Air Volta – 1967); AFCAC (1964); AFRAA (1968). Air Burkina (ex. Air Volta) has managed to continuously function since its creation as Air Volta in 1967, when many Sub-Saharan major airlines disappeared. Nevertheless, Air Burkina certainly needs to be more proactive in its governance and commercial approaches. This company could have taken full advantage of the Yamoussoukro Decision in filling the gaps created by the bankruptcies of many regional airlines. Vision and diplomacy are critical driving forces when it comes to the process of enabling Air Burkina to grasp the full potential of its natural assets.

The intrinsic aviation potential of Burkina Faso resides in its geographical position to facilitate regional and African inter-state connectivity as defined by ICAO, in a sustainable way. This comparative advantage also has an economic added value of regional extent as it would further economic development for all neighboring countries and contribute to regional poverty alleviation, hence support the UN SDGs. The existing airports of Ouagadougou International and Bobo-Dioulasso International, and soon the new airport of Donsin, could be easily specialised to better meet regional connectivity needs while developing its untapped international air services potential.

Message to ECAC Member States

First, I wish to recognise the dedication and determination of our European aviation partners for a safe, secure, and sustainable international aviation, and furthermore their capacity-building endeavours, which are very much in line with the spirit of the No Country Left Behind (NCLB) initiative now implemented by ICAO. I also salute their continuous efforts to correct and avoid any form of unilateralism. Therefore, our European partners should carry on triggering, whenever necessary, initiatives and projects on the issues that seem to be untimely addressed by the international community.

At ICAO, Europeans have a unique and inclusive representation that involves all primary stakeholders: States in the ICAO Council Groups 1, 2 & 3; a representation of the European Union. In a very organised manner, all European representatives work together not only on the on-going issues at stake in the civil aviation community, but also on the lessons learnt and how to be more proactive and constructive for the future. The outcome of the EU-ETS, CCP3, Resolution A38-19, and the current CASE Project are illustrative examples of the initiative-taking I mentioned.

Perhaps what needs to be looked at and encouraged is the avoidance of duplication of efforts and resources on assistance projects. It could seem that some bilateral programmes, for instance on security, have yet to be harmonised for more efficient results, but I leave this to the wisdom of the donors.

A last issue I wish to suggest in view of supplementing ICAO's assistance efforts worldwide is to make sure initiatives and efforts are gap-fillers for the most struggling States, but within a determined time frame, and not nurtured to be implemented endlessly. ICAO could be encouraged to put together a gap-filling framework by which donor countries' offers of funds worldwide would be well-organised, managed and delivered in a timely manner to all regions of the globe. Financial resources are more and more scarce, therefore the rationalisation and close monitoring of the resources spent on capacity building within assistance projects are critical success factors to achieve a safe, secure and sustainable civil aviation worldwide. ■

Moumouni Dieguimde is currently the Ambassador Permanent Representative of the Permanent Mission of Burkina Faso & West African States on the Council of the International Civil Aviation Organization (ICAO).

From November 2014 to January 2015, Mr Dieguimde was appointed Minister of Infrastructures, Land Access and Transport in the Interim Government of Burkina Faso. He started in the aviation industry in 1984 as a space controller and was successively promoted inspector, assistant manager, then manager of sales, public relations and airport operations. In January 2004, he joined the Cabinet of the Director General of the Agency for Air Navigation Safety in Africa & Madagascar (ASECNA), in Dakar, Senegal, as an advisor. He then became Head of the Bureau of External & Diplomatic Relations and also the President of the Association of Expatriates, a key branch of the workers' union. In 2008, the government of Burkina Faso appointed him Director General of the Civil Aviation and Meteorological Authority. As Director General, he also played a key role in the first election of Burkina Faso on the Council of ICAO during its 37th Assembly in October 2010. Burkina Faso was re-elected at the 38th Assembly of ICAO in October 2013 and Mr Dieguimde reappointed as permanent representative in Montreal. Mr Dieguimde studied mathematics, physics and technology at the National Universities of both Côte d'Ivoire and ex Upper Volta, now Burkina Faso. Thereafter, he obtained a Bachelor of Science (BS) degree in Airport Management from the Vaughn College of Aeronautics & Technology of LaGuardia, New York, and a Master of Arts (MA) from the City College, City University of New York.

Connectivity in Europe: the EU and its Airlines Could Learn Lessons from the Gulf and Turkey

Jonathan Wober
Chief Financial Analyst, CAPA - Centre for Aviation

Connectivity is a function of many things. Broadly, and over the longer term, connectivity grows as air traffic grows. This means that connectivity is closely related to economic wealth; both drive each other. But connectivity is also subject to other factors that can both constrain and stimulate it.

These include aviation infrastructure, taxation, regulations on market access and airport charges, all of which are influenced by governments. Geography and geopolitical issues also play a part. Related to all of these factors, but also having a separate existence, are airline strategies.

According to a 2015 ACI report, total airport connectivity in Europe increased by 39 percent from 2005 to 2015, but this relied more on indirect connectivity (up 51 percent) than on direct connectivity (up 18 percent). Indirect connectivity through the Gulf and Turkey has been responsible for much of this growth. Authorities and airlines in the EU could learn much from the supportive aviation policies and ambitious strategies of airlines in those countries.

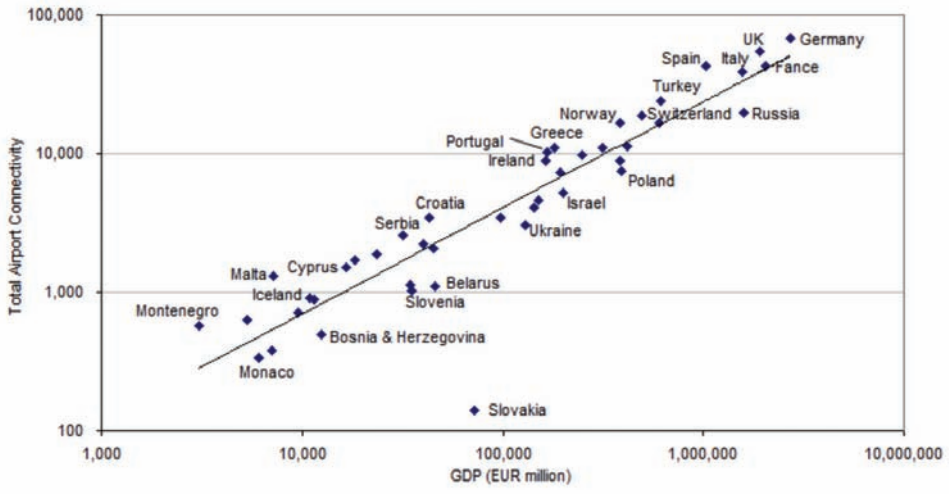
Airport Connectivity is Correlated with GDP

The ACI EUROPE Airport Industry Connectivity Report 2015 defines the connectivity of an airport as "the weighted number of weekly flights to non-stop destinations and to one-stop destinations involving flights of the same airline or of two airlines in an alliance or code share". Direct jet connections have a weighting of one, while indirect connections are weighted from one down to zero depending on total journey time. Turboprop flights are weighted less than one, even if direct, since they take more time.

There is a correlation between the size of a country's economy, measured by gross domestic product (GDP) and its airport connectivity level (see chart below). This highlights the economic importance of having air connections to other countries, since the causality is two way.

Having a wide range of connections facilitates trade and business, in addition to leisure travel opportunities, and this brings economic growth. At the same time, economic expansion increases the demand for air travel and widens the range of destinations that can be profitably connected to a country.

Airport connectivity (2015*) *versus* GDP (2013)



**weighted number of direct and one-stop weekly flights, third week of Jun-2015* – Note: logarithmic scales
Source: CAPA - Centre for Aviation, ACI Europe Airport Industry Connectivity Report 2015 (with SEO Aviation Economics)

Aviation Infrastructure Constraints Can Impede Connectivity

Growing demand for air travel must be met by sufficient infrastructure capacity, both on the ground and in the air. On the ground means not only airport capacity – terminals, runways and aprons – but also surface access to bring passengers and freight to and from the airport (by road and rail). Airport infrastructure constraints in Europe are growing (in contrast with the Gulf and Turkey, for example, where they are being addressed).

Such constraints reduce the number of possible flights, with a consequent impact on connectivity. According to EUROCONTROL, two million flights will be lost to European airport capacity shortages by 2035. More than 20 airports will be capacity constrained for six or more hours a day, compared with 3 such airports in 2012, adding an average delay of 5-6 minutes per flight. This could cost 434k to 818k jobs and EUR28 billion to EUR52 billion in EU GDP by 2035, according to the European Commission's Dec-2015 Aviation Strategy document [1].

Capacity constraints at some of Europe's larger airports have increased their reliance on indirect connectivity. At London Heathrow, for example, total connectivity rose by 51 percent from 2005 to 2015, but direct connectivity fell by 1 percent and indirect connectivity was up 72 percent.

Much of the growth in indirect connectivity at Europe's big hubs comes from one stop connections through hubs in the Gulf and Turkey. However, this reliance on the indirect places connectivity in the hands of someone else.

Aviation infrastructure also includes the management of air space. The additional costs related to the fragmented nature of Europe's air traffic control system are estimated at EUR5 billion annually, but the Single European Sky project has dragged on for more than a decade without reaching its goal of implementing a truly unified ATM system.

The European Commission says that the project would triple the effective airspace capacity, allowing significantly higher growth in traffic and connectivity over time. The single sky would also improve safety tenfold, reduce ATM costs by 50 percent and reduce CO2 emissions by 10 percent.

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Connectivity is Boosted by more Liberal Market Access

Restrictions on market access also restrict connectivity. Outside the liberalised European Common Aviation Area, market access is subject to a complex web of bilateral agreements between governments. The new EU Aviation Strategy seeks to increase the number of countries and regions with which it has EU-level air transport agreements that allow more liberalised market access. It also recommends new aviation dialogues with important aviation partners such as India.

These proposed new agreements are generally where growth in air travel is rapid: China, ASEAN (Association of Southeast Asian Nations), Turkey, Saudi Arabia, Bahrain, UAE (United Arab Emirates), Kuwait, Qatar, Oman, Mexico and Armenia. Relaxing restrictions on traffic rights would provide EU airlines with increased growth opportunities and open up new connections. The markets targeted include all the nations that are home to the super-connector airlines (Turkey, UAE and Qatar).

The Removal of Aviation Taxes Stimulates Demand

Taxation aimed at aviation, typically in the form of passenger levies, has long been a bone of contention across Europe. There have been some reductions in the UK's air passenger duty, but the continent's airlines are calling for its complete removal. Moreover, they are dismayed by a recent increase in passenger taxes at Italian airports.

The issue has received renewed attention following the launch of Europe's newest airline trade body, Airlines for Europe (A4E) [2].

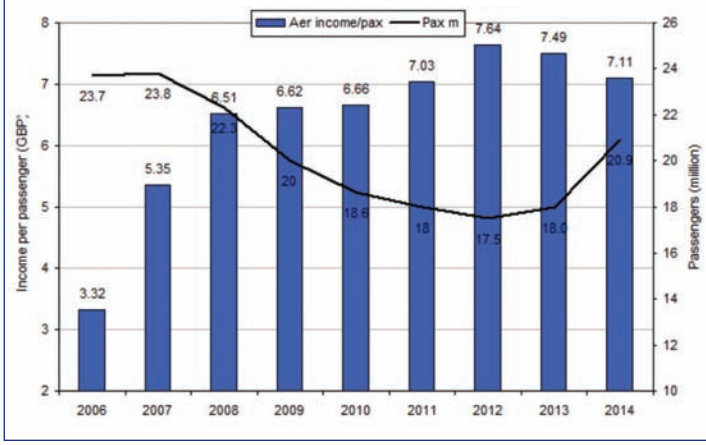
A4E justifiably points to the positive impact on traffic from the removal of similar taxes in the Netherlands in 2009 and in Ireland in 2014. Such taxes add to the cost of air travel and reduce demand in a price-sensitive market. This can only have a negative impact on connectivity.

(1) See related report: New EU Aviation Strategy avoids key issues as Asia Pacific and Middle East claim the future.
(2) See related report: Airlines for Europe: number of trade bodies grown by Big Five from six to seven. Unity increased?

Note: data shown for 2013 and 2014 are for the year to the following March, after a year end change.

Source: CAPA – Centre for Aviation, London Stansted Airport annual accounts (from Heathrow Airport website to 2012), Manchester Airport Group (for 2013 and 2014), Civil Aviation Authority.

London Stansted Airport aeronautical income per passenger (GBP) and passenger numbers (million) 2006 to 2012



Airport Charges Are part of the Cost of Travel and Affect Demand

A4E has also highlighted another contentious issue, namely airport charges, calling for more effective EU regulation of monopoly airports. It cited an Aviation Economics study showing that charges at Europe's 21 largest airports have increased by 80 percent since 2005, while its airlines have lowered air fares by 20 percent.

ACI EUROPE countered that airlines pay below-cost prices for airport facilities, arguing that there was nothing for the consumer or for Europe's connectivity in A4E's agenda.

Whichever side of this debate is taken, airport charges are an input into the cost of air travel and can influence demand. Many airlines attempt to absorb increased charges, but may suffer lower load factors or even cut capacity on less profitable routes, thereby reducing connectivity.

A stark example of this came when Ryanair cut its seat capacity at London Stansted by 21 percent from summer 2007 to summer 2013 after airport charges more than doubled. When Stansted, under new owner MAG, subsequently lowered its charges, passenger numbers at Stansted jumped by 20 percent in two years. Ryanair offers 133 destinations from Stansted in 2016, up from 102 in 2012 (3).

(3) See related report: London Stansted: traffic growth is resurgent thanks to lower airport charges; Ryanair dominates.

Geographical Factors Can Lead to Higher Connectivity

Geography can also have a major bearing on connectivity. Island nations such as Cyprus, Malta and Iceland rely on air travel for their links with the rest of the world and this has given rise to a much more developed aviation market than would otherwise be expected for a country with an equivalently sized economy. The earlier chart showing connectivity versus GDP clearly shows that these three countries are above the trend line.

In addition, geographical factors can also influence a country's appeal to tourists, typically because of its climate (Europe's Mediterranean nations benefit relative to its northern nations in this respect), but also due to factors such as natural beauty and other attractions, such as cultural and historical sites.

A third geographical factor is where an airport's location gives it advantages as a hub attracting global traffic flows. The resulting sixth freedom possibilities are an essential ingredient.

Historically, a combination of factors typically accumulated on the back of geography to contribute to the establishment of international hubs. Where bilateral market access constraints were severe, larger more powerful countries were able to drive harder bargains on market access, allowing their home airlines much greater leverage than others. These countries too naturally had more substantial third and fourth freedom traffic flows, synergistically helping to reinforce the emerging sixth freedom flows and building the early hubs. At the same time, controls on airline entry reserved most of these benefits to a single national airline, usually government-owned (and subsidised).

Yet it was not these major countries that drove the change in the 1970s. Prompted by their flag carriers, they in fact resisted it actively, insisting that all traffic flows should be built exclusively on third and fourth freedom flows. It was only when Amsterdam/KLM and Singapore/Singapore Airlines - each holistically supported by their governments – developed sixth freedom operations into such an art that the larger European airlines were forced to adopt similar network models. It was the "Singapore Inc" model that Dubai first used to formulate its strategy. The expansion of liberalisation helped accelerate this process.

The most obvious modern-day European example is Istanbul Ataturk (Turkey sits above the trend line on the earlier chart). Geography has also been vital in the development of the other non-European hubs, Abu Dhabi and Doha. Unlike the UAE and Qatar, Turkey had the advantage of a substantial home market as well.

The ACI EUROPE report highlights the growth in hub connectivity (the indirect connectivity which is channelled through hub airports) of the Gulf hubs and Istanbul *versus* the major EU hubs over the past decade.

At London Heathrow, it was up 28 percent; at Frankfurt, it was up 26 percent; and at Paris CDG, hub connectivity rose 26 percent from 2005 to 2015. Contrast these figures with those for the global super connector hubs: Dubai up 418 percent, Abu Dhabi up 3 249 percent, Doha up 1 088 percent and Istanbul up 1 039 percent. The top three EU airports still have a much higher absolute level of connectivity than the three Gulf airports (3.3 times in aggregate), but Istanbul now has almost the same level as London Heathrow.

Government and Regulatory Policy is Crucial to Connectivity

Many of the factors discussed are influenced by government and regulatory action. Geopolitical events, although not always controlled by governments, can significantly affect demand for air travel (typically adversely). This helps to explain why countries such as Israel, Ukraine and Russia sit below the trend line on the earlier chart showing connectivity *versus* GDP.

Certainly, economic growth and issues such as infrastructure, market access, taxation and airport charges can be shaped by governments [4].

The UAE, Qatar and Turkey have been blessed with a natural geographic advantage in developing global air connectivity. But, beyond this, their national authorities have been more proactive in designing policies that stimulate growth in air traffic than most of their EU counterparts.

It is enlightened aviation policies, rather than any alleged direct financial support, that have facilitated the success of the four global super connectors Turkish Airlines, Emirates, Qatar Airways and Etihad [5].

More locally, EU Member States may subsidise routes deemed vital to regional economies, but not commercially viable without government support, subject to competitive tender open to all EU airlines. Most public service obligation routes are domestic and none extend beyond the European Common Aviation Area. In long-haul markets, the concept is rare and not EU approved, but may be a possible tool to increase connectivity if consistent and transparent rules could be agreed with destination countries.

Airline Strategy also Plays its Part

Even when geography or government policy creates conditions conducive to connectivity growth, airlines need a strategy to seize the opportunity. Emirates, Qatar Airways and Etihad have done so with notable success, leaving more established airlines in the same region with some of the same advantages, such as Gulf Air, trailing in their wake.

The intra EU liberalisation of the 1990s gave equal market access to all EU airlines, but only the upstart low-cost carriers took advantage of this. Seizing the opportunity means ensuring a competitive cost base, in addition to tapping market demand. Ireland sits above the trend line in the connectivity versus GDP chart almost entirely because of Ryanair.

However, intra EU liberalisation did not open up opportunities in long-haul markets, where (particularly to the east) EU airlines were wrong footed by the super connectors. This has been compounded by government and regulatory vacillation.

The interests of EU long-haul airlines, and the cause of EU connectivity, would be served by the creation of a more level playing field. This does not mean raising protectionist barriers, which serve no one in the long run (certainly not the consumer), rather the adoption of more supportive aviation policies by the EU and its Member States. ■

(4) See related report: Air travel rises with a country's wealth. Law of nature, or can government policy make a difference?

(5) See related reports: Turkish Airlines' targets for 2016 display its confidence in spite of unit revenue risks; and Emirates: The strategy reshapes in 2016 – partnerships, China growth, smaller widebodies.

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Previously, he spent 13 years as an equity research analyst covering airlines and airports for Société Générale, HSBC and Deutsche Bank and BAE Systems. Mr Wober holds a bachelor's degree in Mathematics and Physics from the University of Bristol and a masters in Business Administration from London Business School.

CAPA, Centre for Aviation, is the leading independent supplier of global aviation knowledge, delivering market analysis, data and information services. He is now also responsible for developing financial analysis product.

Connectivity in Air Transport Networks

Jaap de Wit
Emeritus Professor of Transport Economics, University of Amsterdam

Introduction

Networks play an important role in many research areas, such as neural networks, global financial networks, social networks, energy and telecom networks, information networks, and last but not least transport networks. Each of these networks consists of nodes and connections between them. It is obvious that networks raise questions such as 'how well connected are the nodes in the network?' and 'can we discover a spatial structure in the connections?' These questions essentially reflect a key concept of networks: "connectivity".

This concept plays an increasingly important role in air transport networks. The nodes are the airports, and the connections between the nodes are the air routes served by the airlines. The connections or links in air transport networks are different from many other transport modes because they do not need an infrastructure. Only a nodal infrastructure is sufficient, because connections between the nodes are realised by the transport means themselves. Costly line infrastructure, such as in road and rail transport, is absent. Consequently, air transport networks are much more dynamic than surface transport. Air routes can easily be opened and closed as demonstrated by low-cost carriers (LCCs) in Europe. These dynamics make the analysis of air transport networks more challenging. Different airline business models provide different types of networks and different levels of connectivity in the airport nodes. The subject is all the more interesting since the connectivity is also strongly related to the regional economic development of the area surrounding the airport.

Airline Network Characteristics

Most airline inflight magazines clearly show the passenger that they usually offer a starburst network. LCCs, for example, have chosen a rapidly increasing number of crew and aircraft bases all over Europe after the liberalisation of the European air transport market (See exhibit 3 for the example of Ryanair). The simple reason for such a development is the stationing of aircraft and crews at a limited number of airports during the night and the availability of some maintenance facilities at these bases. Each base on its own is a starburst network.

The former flag carriers in Europe also operate starburst networks, be it that each of them is mainly focused on one single node, the hub airport. Such a radial network is like a wire wheel, of which the national airport is the hub and the routes are the spokes. The essential difference between a starburst hub and a starburst LCC base is the level of connectivity. Both types of networks are spatially concentrated at one or more nodes, but a hub-and-spoke network also shows a temporal concentration of flights at the hub in terms of arrival and departure waves. This enables passengers to get connecting flights to their final destinations via the hub. Several hubs in Europe are now able to accommodate 40-50 percent of their passengers on connecting flights.

Hence, it is obvious that the spatial route structures of an LCC base and a network carrier hub are very similar and only different in scale, but the connectivity in both networks is fundamentally different. The reasons for operating a hub network are also different from an LCC base. These are not primarily operational but much more aeropolitical and marketing-based. Traffic rights for many non-EU destinations cannot be used from a foreign home base elsewhere in Europe and a daily served intercontinental network requires a substantial number of transfer passengers to become viable.

Both airline business models clarify that connectivity in the respective networks is a key issue to fully understand the differences between these business models. However, it can be helpful to refine the connectivity concept in an accessibility and centrality aspect.

One Facet of Connectivity: Accessibility

Connectivity can be interpreted as the question: "how well can a passenger from airport X (see exhibit 2) reach any other airport in the airline network?" This concerns one of the two facets of connectivity, i.e. the accessibility of one specific node in a network from all the other network nodes.

For example, accessibility is particularly relevant to airports in remote regions. Do they provide a direct connection to the national airport, in order to be able to take connecting flights to airports elsewhere? Or is the airport only connected to an LCC base without any viable onward connection? Accessibility levels can be calculated on the basis of the shortest or quickest paths for the consecutive links in airline networks. For these calculations, one has to take into account the various values of the direct and indirect connections due to their difference in quality. A direct connection can be assigned the maximum value of one connectivity unit. Any indirect connection for the same city pair will have a connectivity value lower than one, depending on the extra time incurred by the detour, the Minimum Connecting Time (MCT) and intermediate transfer time. More elaborated models also assign higher penalties to transfer time than to 'in-vehicle' time (see exhibit 1). Adding together all values of direct and indirect connections between airport X and any other destination in the network determines the level of accessibility of airport X and its surrounding region. Sometimes, the accessibility of an airport can strongly expand within a few years if an LCC decides to make it a base, resulting in a rapid increase of the number of high-valued direct point-to-point connections. However, some bases have also seen an implosion of their accessibility if the base carrier decides to end the base status of an airport. This can be explained by the substantially higher churn in LCC networks than in the networks of the incumbent network carriers in Europe.

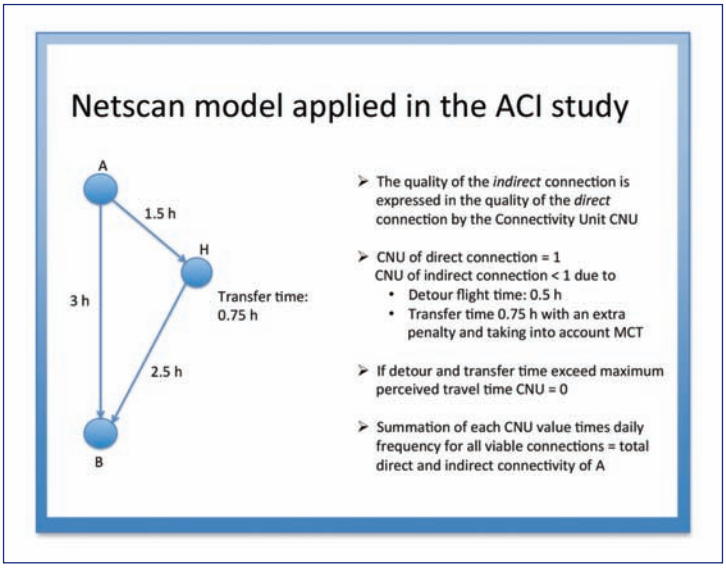

Exhibit 1

The accessibility aspect of connectivity and, more specifically, the direct connections of an airport, are often considered as the main drivers of an airport's contribution to the regional economic development (see below).

The other Facet of Connectivity: Centrality

The other facet of connectivity concerns the number of transfer options provided by airport X (see exhibit 2). This hub connectivity (or 'centrality' in graph-theoretical terms) not only concerns the direct connections at the hub but also the indirect connections via the hub. Actually, these indirect connections are the fundamental 'raison d'être' for the hub phenomenon, since they disproportionally grow with the number of direct connections. In mathematical terms: if the number of direct connections is *n*, a maximum of $n(n-1)/2$ indirect connections can be made via the hub. Adding direct and indirect connections together, a maximum hub connectivity of $n(n+1)/2$ city pairs is theoretically possible. For example, a hub with seven direct connections, or so-called spokes, enables a maximum of 28 city pairs to be served. Ten spokes already amount to 55 city pairs, etc.

The key words here are 'maximum' and 'theoretically'. First of all, every direct and indirect connection has to be served and marketed by only one airline, or its alliance and code-sharing partners. But even if that is the case, if one has to wait at the hub for twelve hours to get a connecting flight, it is likely that other hubs will provide better transfer times in this city-pair market. The viability of that connection is therefore small. The same holds for a too-lengthy backtracking flight: a passenger travelling from Brussels to New York will clearly prefer Heathrow instead of first flying back to Frankfurt before starting his connecting transatlantic flight to New York. These examples show that the actual connectivity of a hub will probably be substantially lower than the theoretical maximum connectivity. One has to take into account backtracking, minimum and maximum connecting time at the hub, etc.

Backtracking not only plays a role in travellers' behaviour due to extra travel time but also as a psy-

chological factor. The connectivity of cargo express hubs is less sensitive to backtracking without such a psychological factor. The transport of parcels only has to fit in the timeframe of the nightly connection waves at the cargo hub.

It has to be emphasised here that the connectivity concept applied in network analysis is mostly distance-based. In other words, the travel impedance of any city pair A-B is only measured in travel time or distance. Travel costs or airfares do not play a role here. As a consequence, the direct connectivity of an airport may be underestimated if, for example, it concerns LCC connections. In that case, lower airfares should also be taken into account to reflect the travel impedance more adequately. The same holds for the level of accessibility of a remote airport if the airfares are regulated by public service obligation arrangements. Anyhow, the role of pricing deserves more attention in future connectivity measurements, especially if competitive conditions change in the air transport network (see below).

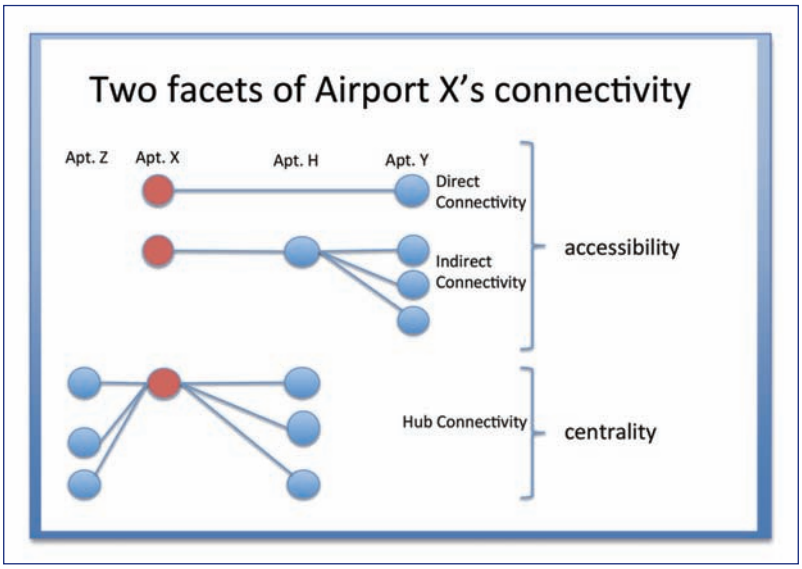

Exhibit 2

Connectivity and Economic Development

How do these connectivity categories contribute to economic development in the hub region X? Direct connectivity is the most important factor for the regional development of region X, as reflected in the maximum value of connectivity units. Indirect accessibility for the region strongly depends on the quality of the connections at hubs elsewhere, but often contributes substantially less to the hub region X. The hub connectivity (see exhibit 2) is the least related to the economic development of the hub region X, since it only concerns the transfer of passengers from elsewhere to elsewhere. However, these transfer passenger volumes from Z to Y often strongly contribute to the viability of direct connections from X to Z or Y. The other way around: if you eliminate the transfer passenger volumes, the network of the home-based network carrier will dramatically shrink. In other words, hub connectivity is an important enabler of direct connectivity at X.

Connectivity and Airline Competition

Variation in accessibility and centrality values can also implicitly result in aeropolitical conflicts of interest due to the evolution of the competitive conditions arising from these network changes. The impact of the Gulf carriers on the centrality of the European hubs and the accessibility of European regional airports is a good example of this. Assume that the first daily frequency of Etihad is opened between Frankfurt and Abu Dhabi. This will improve Frankfurt's direct connectivity, even more so if the airfares go down due to the new competition in this city-pair market (not reflected in the connectivity). It also improves the indirect connectivity of Frankfurt to destinations beyond Abu Dhabi, especially with regard to the unique new ones. Although the direct and indirect connectivity of Frankfurt airport improves and the economic development of the region benefits from this improved connectivity, the home-based network carrier Lufthansa will meet more competition in its network.

The controversy further increases if, for example, Etihad starts an operation between Abu Dhabi and Hamburg airport in the German hinterland. The accessibility as well as the economic development of the Hamburg region will obviously benefit from this operation. However, the city pair Hamburg-Frankfurt-Abu Dhabi served by Lufthansa will now face competition from the new direct Etihad connection Hamburg-Abu Dhabi. In addition, Frankfurt and Abu Dhabi become competing hubs for passengers in the Hamburg area. All in all, the accessibility of Hamburg airport substantially improves and the Hamburg region directly benefits from this new connection, whereas the centrality of the Frankfurt hub may be put under more competitive pressure due to this new Etihad connection.

Concluding Remarks

The similarity in the spatial network structure of various airline business models sharply contrasts with the connectivity or centrality in these networks. Only by analysing these network characteristics can the social value of each business model be understood.

The potential and existing accessibility of airport nodes in a network is important with regard to the economic development of the airport region involved. The connectivity concept has much appeal to airport operators. However, this concept deserves to be more enriched by economic aspects such as airfares and competitive consequences for the home-based carriers. Only then could the affinity of airlines with this concept become comparably high. ■

Some recommended literature:

- Redondi, R., Burghouwt, G. (2013) Connectivity in air transport networks: an assessment of models and application, *Journal of Transport Economics and Policy, vol. 47, nr. 1, January 2013, 33-53.*
- Grimme, W. (2011) The growth of Arabian airlines from a German perspective – A study of the impact of new services to Asia, *Journal of Air Transport Management, vol. 17, issue 6, November 2011, 333-338.*
- Wit, J. de, Veldhuis, J., Burghouwt, G., Matsumoto, H. (2009) Competitive position of primary airports in the Asia Pacific rim, *Pacific Economic Review 14 (5) 639-650.*

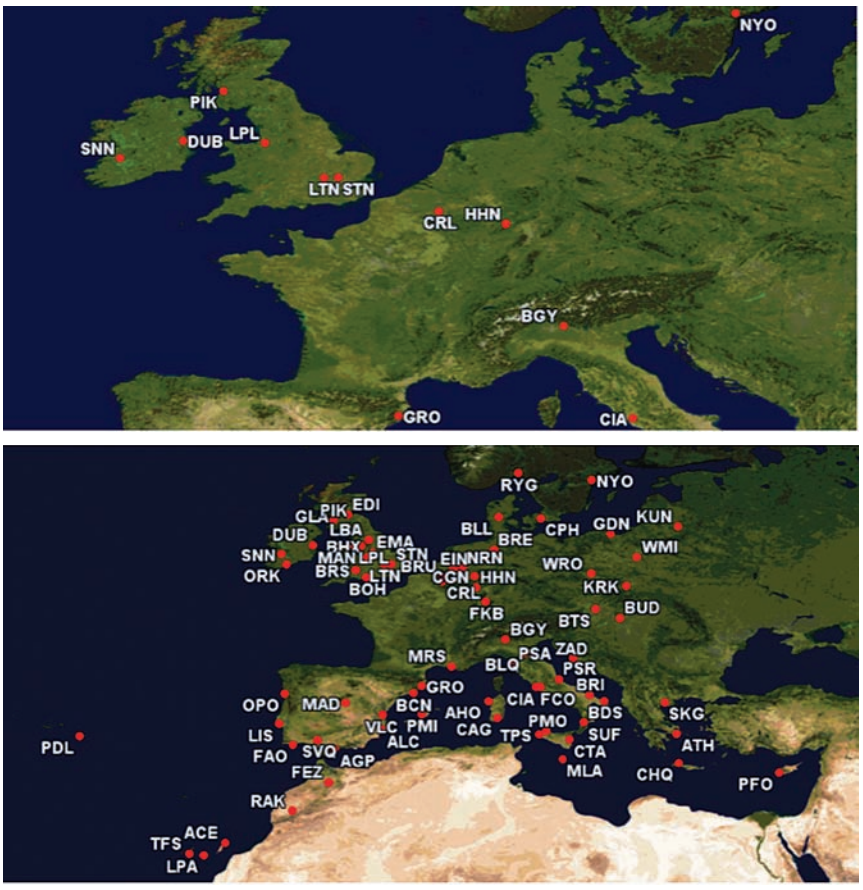

Exhibit 3: Ryanair's bases in 2005 and 2015.

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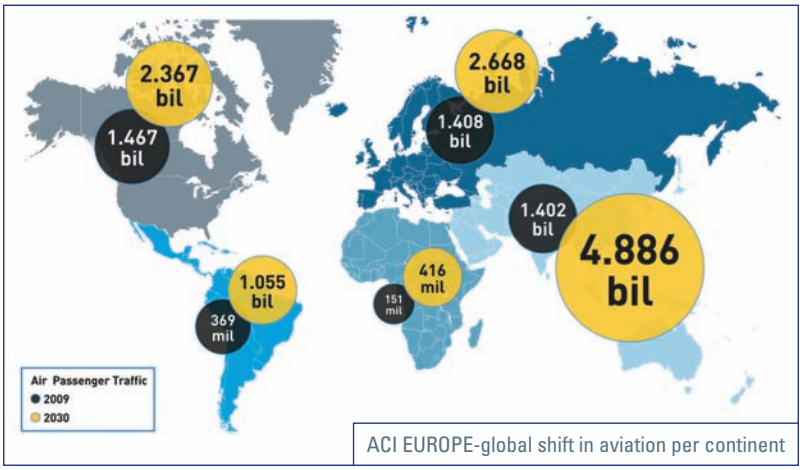
Previously, Mr de Wit held different positions within the Netherlands Civil Aviation Authority, Delft University of Technology and the Netherlands Railways. As Director of Pintail Aviation Economics, he currently advises governments in various countries as well as airport authorities and airlines on strategic policy issues. He is a networking member of the Air Transport Research Society and the Editorial Board of the Journal of Air Transport Management. His field of research strongly focuses on the economic issues of the aviation industry.

Putting Connectivity at the Heart of the European Aviation Agenda

Olivier Jankovec
Director General of ACI EUROPE

In recent years, connectivity has become a kind of a buzzword in aeropolitical circles and beyond. As Europe has struggled to recover from the financial-turned-sovereign debt crises and with emerging markets now accounting for more than 50 percent of the global economy, being (well) connected by air to new and future sources of growth has become a much-discussed topic.

Of course, the way the Gulf States have come to rely on air connectivity to diversify their economy and establish their wider global positioning is part of that discussion - with an interesting mix of controversy and envy. In many ways, their formidable outreach is emblematic of the strategic relevance of air connectivity in the 21st century. But as we all know, there seem to be limits as to how Europe can emulate such success. What works very well there, does not necessarily work to the same extent here – starting with geography. The location of the Gulf hubs is second to none for connecting emerging countries and expanding air routes along growing South-South trade flows. Policy choices also come into play. For better or worse, long gone are the days when European governments consciously used aviation as an instrument of soft power. Similarly, vertical integration between airlines, airports and civil aviation authorities is no longer conceivable for us.



ACI EUROPE-global shift in aviation per continent

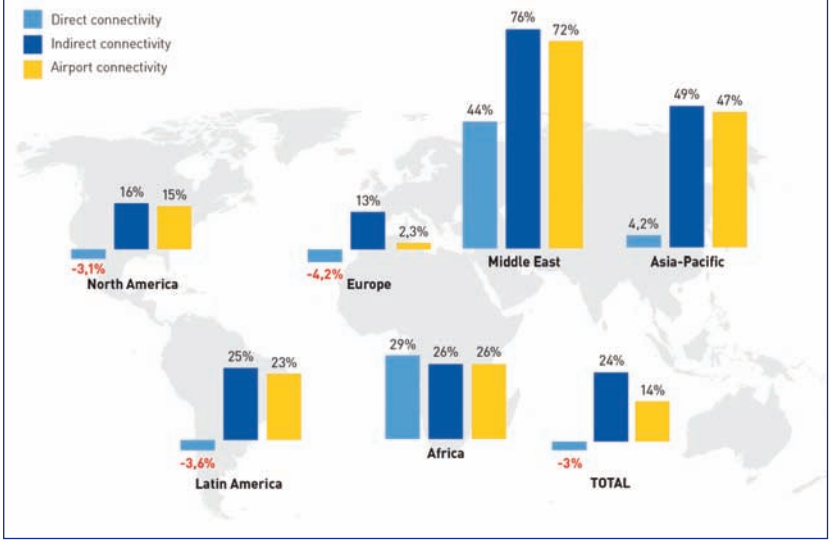
All the same, the value of air connectivity for spurring growth and adding jobs for Europe is now undisputed: every 10 percent increase in air connectivity yields 0.5 percent in additional GDP per capita [1]. This means that despite all our differences with the Gulf, there is a need to look at how policy making and regulations in Europe can do a better job of supporting air connectivity. This is precisely what the European Commission has set out to do with its recently adopted Airport Package.

For airports, developing air connectivity is of the essence. It is where their business mandate - developing air traffic to maximise revenues and return for their shareholders – perfectly coincides with their social mandate – offering more destinations and increased frequencies to their communities. Connectivity is also what airports compete for, as attracting new air services is something they need to fight for (and very often incentivise).

This is why we, at ACI EUROPE, have sought to better understand air connectivity through our Airport Industry Connectivity Report released in 2014 and 2015. With these reports, produced with the support and expertise of SEO Aviation Economics, we have not only measured the connectivity of Europe's airports but also looked at its evolution over ten-year periods. The proven connectivity indexes we have used (direct, indirect, total airport and hub connectivity) are thus becoming new indicators of business performance – along with traffic volumes. The story they tell has also contributed to informing policy makers and interested stakeholders of the changing dynamics of air connectivity in Europe.

(1) Economic Impact of European Airports – InterVISTAS (January 2015)

10 Direct, indirect & airport connectivity from EU airports by world region (2015 vs. 2008)



Looking at the last edition of our report [2], these dynamics can be summarised as follows:

- **Total airport connectivity in Europe had increased by +39% between 2005 and 2015,** with the largest increases being registered between Europe and the Middle East (+123%), Asia Pacific (+91%) and Africa (+57%). This reflects the more mature status of the intra-European and transatlantic markets.
- **80% of European airport connectivity remains ensured by EU airports,** although the connectivity share of non-EU airports has increased from 14% to 20% since 2005 – pointing to a progressive rebalancing between EU and non-EU airports.
- The **2008 financial crisis** has significantly altered the dynamics of airport connectivity in a number of ways:
  - **Traffic and air connectivity developments are no longer aligned** – i.e. whereas passenger volumes and connectivity followed similar growth patterns up to 2008, the strong recovery in passenger volumes post 2009/2010 has not been matched by a similar recovery in air connectivity. This reveals a trend for air traffic to become more concentrated with passenger growth occurring less through network expansion and more through network restructuring and the use of larger aircraft.
  - **The direct connectivity of EU airports remains -3% below its 2008 peak,** whereas non-EU airports have seen their direct connectivity grow by +41,2% over the same period. Most of these EU losses in direct connectivity relate to intra-European direct connectivity as well as direct connectivity to North America and Latin America, while the growth in direct connectivity to Asia Pacific has been suboptimal. Conversely, there have been strong direct connectivity gains for EU airports to the Middle East and Africa.
  - While **small regional airports** [3] led connectivity gains prior to 2008, they have been the **most affected by direct connectivity losses** in the wake of the global financial crisis. 32% of them still have direct connectivity levels below their 2008 peak. This confirms the earlier comment about the concentration in the recovery of air traffic post 2008. The recent move upmarket of low-cost carriers as well as the lack of step change in the fuel efficiency of regional aircraft points to continued connectivity challenges for small regional airports.
  - **Large hubs have shown resilience** and have generally been **growing their hub connectivity since 2005.** Conversely, secondary hubs have experienced diverse performance, with some significantly increasing their hub connectivity (Rome-Fiumicino, Helsinki, Brussels, Lisbon, Athens, Dusseldorf and Berlin-Tegel) and others losing grounds (Vienna, Copenhagen, Milan-Malpensa, Barcelona, Prague and Budapest). This is yet another indicator that hub competition is intensifying in Europe.
  - The strong **correlation between hub connectivity and direct connectivity** (i.e. gains/losses in hub connectivity yield gains/losses in direct connectivity) **remains but is not systematic** – as shown by the examples of Helsinki, Barcelona, London-Heathrow and Paris-Charles de Gaulle airports. This is due to different factors including the development of point-to-point low cost models, airport capacity limitations and a strong airline emphasis on maximising connections through schedule optimisation.
  - **Established larger hubs are also facing increased competitive pressures from new & rising hubs in Turkey and the Gulf in terms of hub connectivity.**

These developments show that air connectivity follows its own dynamics. In particular, one should no longer assume that increasing volumes of passenger traffic automatically translate into connectivity gains – especially as regards direct connectivity. The lack of recovery in direct connectivity for EU airports is of specific concern, given

(2) Link to the report to be added.
(3) Airports with less than 5 million passengers per annum.

that direct connectivity is usually considered of higher value from an economic standpoint. Indeed, direct connectivity comes with reduced travel times compared with indirect connectivity, and generates productivity and efficiency improvements. At the same time, the global hub positioning of EU hubs is being challenged.

Overall, this means that air connectivity should not be taken for granted and that beyond market forces and technological advances – which are primary forces in shaping air connectivity – public policy and regulations also have an important role to play. Looking at the EU in particular, a number of considerations come to mind:

- The changes underway in the world economy and the resulting reconfiguration of global transport systems – in particular air transport – come with air connectivity challenges for Europe. These challenges mainly result from emerging nations embracing aviation as a strategic tool of economic development and resorting to State capitalism to support and develop their airlines and airports.
- The traditional focus of the EU on creating an integrated aviation market is no longer sufficient and some of our rules/policy choices result in competitive handicaps when facing these developments. Our focus needs to shift towards addressing the external dimension and adapting our own rules where necessary, based on a long-term strategic vision aimed at unleashing the potential of air transport to support growth and jobs.
- This implies moving aviation policy from airline-centric approaches to truly connectivity and consumer-centric approaches. As part of that, many issues need to be addressed:

i) Open Skies at EU level with key trading partners and emerging countries are a necessity. Protectionism and restricting market access has never been a winning business strategy. This would only risk isolating Europe. This should come hand in hand with more liberal and facilitated visa regimes to make it easy for international tourist to choose Europe as their preferred destination.

ii) Aviation taxes in the UK, Germany, France, Austria and Italy should be abolished. Norway would be well-advised to refrain from going ahead with its own aviation tax. The net economic impact of these taxes is negative and hurts air connectivity.

iii) Airports not only need their licence to grow, they also need to be incentivised to modernise and develop their facilities. Airport congestion hinders air connectivity in many ways. It prevents the opening of new air services and also drives air fares upwards – by allowing airlines to build dominant positions at airports. The ambitious developments of airport capacity in the Gulf, Turkey and also China [4] will only intensify competitive pressures on European airports. In this regard, the demands from the largest incumbent European airlines to tighten the regulation of airport charges are akin to a protectionist agenda. It flies in the face of growing airport competition and the need to normalise airport-airline relationship based on commercial and market dynamics.

iv) Regulatory-driven costs need to be curbed, wherever possible. This is the case in particular as regards security. Contrary to what happens in the US and in most of the rest of the world, European airports generally bear most of the security costs. This represents a significant competitive disadvantage for European aviation – and ends up making air connectivity more onerous [5].

v) The costs and operational efficiencies of the Single European Sky need to be delivered – at last.

An effective and timely implementation of the Aviation Strategy should help resolve these issues. For its part, ACI EUROPE plans to keep tracking the evolution of air connectivity in the coming years. This year, we will focus in particular on hub connectivity, with our 2016 report expected to be released at our 26th annual congress & general assembly in Athens next June. ■

(4) Sixty-six new airports will open their doors in China in the next five years. In 2016, Chinese airlines are set to start operating more than 200 new international routes.

(5) In 2012, Europe's airports directly levied €4.9 billion euros on airlines in user charges (landing, parking and lighting charges). Of that amount, 90 percent (€4.2 billion) were absorbed by security costs.

Olivier Jankovec became Director General of the European Region of the Airports Council International (ACI EUROPE) in September 2006.

Mr Janovec first joined ACI EUROPE in March 2006 as Director of Strategy & Communications. He has over 20 years of governmental and lobbying experience, having worked for Alitalia (2002-2006), Air France (2000-2002) and the Air Transport Directorate of the European Commission (1994-2000). Immediately prior to joining ACI EUROPE, Mr Jankovec was the Director of Institutional Relations for Alitalia where he was in charge of governmental affairs at national, European and international levels. During this time, he was also chair of the Association of European Airlines Policy Committee. In 2006 and 2007, Mr Jankovec participated in the EU's High-level Group on the future of aviation regulation in Europe. He is also a member of the Advisory Board of the World Tourism Forum.

The Importance of Regional Connectivity by Air

Simon McNamara
Director General, European Regions Airline Association (ERA)

Over the last 70 years, air transport has evolved dramatically. Once the preserve of the seriously rich, only the minority could afford to fly. Nowadays, however, this mode of transport is taken for granted as a highly accessible and routine method of getting either passengers or freight from A to B. Today, almost all of society uses air transport, whether for business, to visit friends and relatives or to send and receive parcels.

However, in the more remote parts of Europe where geography or distance mean that other modes cannot compete, air transport plays a critical role in the life of its citizens. Attempting to reach the Azores, the Faroes or even the Canary Islands, by any mode of transport other than air from mainland Europe is either impossible or extremely time-consuming.

Regional Air Travel – The Numbers

Regional airlines provide this essential connectivity within Europe. The members of the European Regions Airline Association (ERA) collectively transport over 45 million passengers each year, operating more than 960 000 flights per year on over 1 200 routes across Europe. They fly, on average, just over one-hour flights in a mix of jet and turboprop aircraft, with an average seating capacity of 67 seats.

Regional aviation generates over 280 000 direct, indirect and induced jobs within Europe, and contributes in the region of €47 billion to Europe's GDP. It is therefore a significant driver of European success and is an industry which should be nurtured by governments and regulators which have significant impact in the future success of the business.

Highs and Lows of the Regional Development

The recent history of the regional business illustrates that the industry has not always had an easy ride. Regional carriers were created by deregulation – during the late 80s and early 90s a series of new airline brands were conceived with almost all posting double digit growth in their early years. But in the mid-90s the low-cost carrier arrived in Europe with a very loud bang and the aviation landscape changed yet again, with the inevitable upheaval. Regionals were squeezed out of the niche and mainstream markets they had opened up and were forced to retrench back to their traditional niche routes, often in peripheral regions. Many brands disappeared through bankruptcy or were swallowed up by the rapidly evolving network carriers who were restructuring (and still are) to compete with the low-cost threat to their short-haul networks. In the face of this relentless competition regionals faced the very real threat of extinction.

During the 2000s and early 2010s, the airline landscape in Europe changed yet again and became increasingly dominated by a small number of extremely large carriers and groups that grab the media attention (aided and abetted by their outspoken and media-savvy CEOs). While these mega carriers have cast a long shadow over the aviation landscape, in the near distance a reinvented and healthy regional air transport industry is clearly visible.

Regionals Provide Capacity

In total, ERA has 50 airlines in membership and more than 130 associate and affiliate members from the entire supply chain. Regional airlines no longer just serve niche routes, many now spread their risk and operate across multiple markets including passenger and freight services, long- and medium-term sub-charter, ad hoc charter, franchise and own-brand point-to-point services in Europe and worldwide.

Across Europe, five airline groups (IAG, KLM/Air France, Lufthansa Group, easyJet and Ryanair) have 54 percent of the market share on intra-European seats. While such impressive statistics make these carriers very powerful, it also makes them increasingly slow to react to market demand as corporate complexity and union power weigh them down. Many regional carriers aren't burdened by such bureaucracy – they are agile and flexible and therefore able to fill the gaps for these carriers on low volume, operationally complex routes. They provide capacity to these carriers (and others) on a flexible basis for seasonal peaks or short-term shortfalls where the ability to be able to step into and out of a market is essential. Often regionals can provide capacity to large operators (even low-cost carriers) at significantly lower unit costs as they are not bound by the crippling union legacy that inhibits many large carriers. This is in addition to regionals' expertise in servicing traditional regional and peripheral routes.

The Role of Governments and Regulators

Governments and regulators have a key role to play in nurturing and strengthening the aviation industry. The European Commission's Aviation Strategy, published in late 2015, is a positive recognition of the value of the industry to Europe in that it accepts aviation as a key driver of economic growth, jobs, trade and mobility and that a strategic review of the sector is needed to ensure that European aviation maintains its leadership on the global market.

Some of the strategy's proposals are positive and will lead to a stronger (and safer) industry. But, sadly, many of the actions proposed in the strategy are short term, have no distinct timelines and do not provide a strong and clear action plan to strengthen Europe's aviation industry. The challenge now is to empower the strategy, and the Commission, Parliament and Council must focus on defining strong, actionable and time-scalable deliverables to implement the intent of the strategy and definitive milestones in order to monitor their progress. As a vital part of the business the regional industry is ready to help to strengthen the strategy.

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The Future of the Regional Business

As the market evolves there is an increasingly bright future for regionals. Network carriers and the newly reinvented low-cost carriers are fighting it out in Europe with low-cost carriers upgrading their products while traditional network carriers are stripping them away in a quest to attract business in a market where there are, arguably, still too many seats sold too cheaply.

Away from this battleground, regionals have refocused and found their niche and ERA is the focal point where they meet to network, learn, do business together and take advantage of the power that comes from being small, agile and flexible in what is a rapidly consolidating market.

Regional carriers fulfil an essential and diverse role in Europe and will remain an essential part of European transport and its overall success. ■

Simon McNamara was appointed Director General on 1 January 2013.

Mr McNamara is responsible to ERA's board for the delivery and implementation of ERA's work in the field of policy, events and communications. Under his leadership ERA is highlighting the aviation sector's vital contribution to Europe's future economic prosperity, particularly in the regions of Europe. Mr McNamara travels extensively within Europe meeting with policy-making bodies such as EASA and the European Parliament and Council. He is a sought-after speaker at industry events and provides comment and analysis on market issues across a range of international media. A graduate of City University, London, Mr McNamara also holds an MSc from Cranfield University in the UK. His career in aviation spans nearly 20 years – before joining ERA in 1999 McNamara held positions at the Flight Data Company and the International Federation of Airline Pilots' Associations.

ASSOCIATED BODY OF ECAC

News from the JAA Training Organisation (JAA TO)

Hot topic of the moment: Legal and policy matters affecting civil aviation worldwide

There are a lot of issues which are specific to international and European air transport; issues with which you may be faced in the context of your aviation-related regulatory tasks. The *"International Aviation Law and Policy – Comprehensive"* training course addresses the following issues:

- What are the essentials of a bilateral agreement?
- Which laws and policies apply to airline alliances and mergers?
- What is a 'horizontal agreement'?
- How do (Member) States allocate limited traffic rights?
- The EU – US air transport agreement: what did it accomplish for the European and US airlines?
- Can passengers obtain compensation for a delay in their flight?
- Under which conditions can airlines be banned from European air space?
- Are State aids to airlines allowed?

These are just some of the questions addressed in the *International Aviation Law & Policy – Comprehensive* course. This comprehensive, four-day course brings you up-to-date on the newest developments in the respective laws, policies and practices.

The *International Aviation Law & Policy - Comprehensive* course will be held from **03 to 06 October 2016** at JAA TO's training centre in Hoofddorp, the Netherlands, only four minutes by train from Amsterdam Airport.
Our certified and experienced trainers can also tailor the course for specific needs and provide the training in-house at your own location on any agreed dates throughout the year.

For a more detailed table of contents, see our website https://jaato.com/courses/68/. For any other inquiries, please do not hesitate to contact us at: training@jaato.com

Training courses delivered by JAA TO at clients' location in January

Some clients prefer in-house training for a group of employees to be trained all at once in order to stimulate and harmonise their overall knowledge. They highly value the possibility of tailored courses addressing specific needs and requirements.
JAA TO delivered many courses at clients' request. Below is an overview of the courses delivered in January:

- Practical auditing in aviation training course, held at a German airport
- A five-day customised Part-M, Part-145 and Part-66/147 course for a European military organisation
- European Flight Time Limitations: (EC REG 83/2014 – 'Subpart FTL') at a German cargo airline
- Human Factors/TRM (Team Resource Management) in aviation maintenance held at a south European civil aviation authority
- DOA/POA Combined (Annex Part 21) training course for an Italian safety company
- EASA air operations management team workshop - Flight operations & crew training for a Turkish airline
- Quality management - Principles & practice in an aviation environment, held at an east European civil aviation authority
- CS-25 Large aeroplane certification - Introduction held at an aircraft engineering organisation in Hong Kong
- EWIS Part-21 training course held at an aircraft engineering organisation in Hong Kong
- ICAO SMS and EASA management system requirements - Workshop for a Middle East civil aviation authority
- Recurrent training for auditors for an Austrian company
- Ageing aircraft training course for a south European civil aviation authority.

New training courses introduced and scheduled

> Safety regulation of aerodromes, basic course
This course covers an overview of the total aviation system in order to place the aerodrome in a context. A review is conducted of the European safety regulatory hierarchy with respect to aerodromes.

> EASA Part M for general aviation (IR Part-M, Subpart F)
This course presents the new EASA Part M Subpart F Regulation relating to the maintenance of non-commercial and non-large aircraft, which is to be fully implemented shortly with significant implications for those involved in this industry sector.

> EASA Air Operations - Commercial air transport for aeroplanes
This course introduces in detail the regulation for commercial air transport with aeroplanes to familiarise participants with the requirements of the EASA regulation on Air Operations implementing rules for CAT operations with aeroplanes.

> Incident investigation - Advanced training course
In this advanced course, participants will work together in groups using a case study from which they will collect data, analyse these data, draw their conclusions and make recommendations. The end result will be an actual incident investigation report.

Courses held by JAA TO in January

> Maintenance programme (large aircraft)
Held on 11-15 January 2016 in Hoofddorp

> EASA Part OPS HELICOPTER
Held on 11-13 January 2016 in Hoofddorp

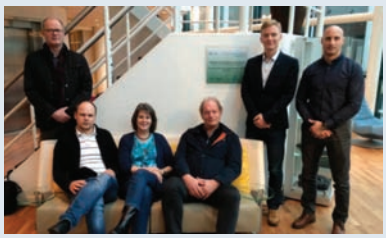
> Incident investigation course
Held on 18-20 January 2016 at JAA TO St. Julians - Malta

> IR Part-M general training course
Held on 25-26 January 2016 in Hoofddorp

Revised training courses

> Two-day European Flight Time Limitations course
The European Flight Time Limitations: (EC REG 83/2014 – 'Subpart FTL') one-day course has been enriched with more content, case studies and interactive group exercises. The course was therefore expanded into a two-day workshop.

> RPAS (Drones) course is renamed
Our familiarisation/awareness on RPAS requirements course has been renamed into "RPAS (Drones) Requirements - Initial" for a better representation of the course content.



> Human factors/CRM in aviation course
Held on 25-27 January 2016 in Hoofddorp

> IR Part-145 training course
Held on 27-28 January 2016 in Hoofddorp

Member States News

New Directors General were appointed in:
> *Croatia* – Jure Šarić
> *Switzerland* – Christian Hegner

Visit of ICAO Secretary General

ICAO Secretary General Fang Liu paid a visit to the ECAC and ICAO European and North Atlantic (EUR/NAT) offices in Paris on 11 December. During her visit, Dr Liu had the opportunity to meet all the members of staff and share with them her priorities for ICAO during her tenure. Thanking staff warmly for their commitment, dedication and contribution towards achieving ICAO's goals, and offering encouragement for the year ahead, Dr Liu presented her best wishes for the festive period and for a happy New Year.

Visit of ICAO Secretary General Fang Liu to the ECAC and ICAO EUR/Nat offices in Paris

Directors General of Civil Aviation Meeting

On 3 December, ECAC Directors General of Civil Aviation gathered in Paris for their one hundred and forty-fifth meeting (DGCA/145), back-to-back with the ECAC Forum held the previous day. President of the Council of ICAO Olumuyiwa Benard Aliu opened the meeting with a welcome address, which was followed by an exchange of views with the participants. Amongst the topics discussed in the course of the meeting, Directors General considered the steps towards organising and preparing co-ordinated European positions for the 2016 ICAO Assembly, and reviewed progress on the various ECAC activities as scheduled in the Work Programme. A revised version of ECAC's mission statement "ECAC's Strategy for the Future" was adopted. This eight-page document presents ECAC's role and the strategic priorities for each of its main activities. It is revised periodically to reflect the evolution of the organisation and the needs of its Member States. Raul Medina Caballero, Director General of Civil Aviation for Spain, was elected as a new member of the Co-ordinating Committee. Mr Medina Caballero joined the Committee in his new capacity as from 1 January 2016, replacing Peter Muller, outgoing Director General of Civil Aviation for Switzerland.

President of the Council of ICAO Olumuyiwa Benard Aliu at DGCA/145

Composition of the Co-ordinating Commitee (February 2016)

> **Ingrid Cherfils** – DGCA Sweden – President
Focal Point for External Relations
> **Patrick Gandil** – DGCA France – Vice-President
Focal Point for Environmental Matters
> **Bilal Ekşi** – DGCA Turkey – Vice-President
Focal Point for Pan-European Matters
> **Silvia Gehrer** – DGCA Austria
Focal Point for Economic Matters
> **Pekka Henttu** – DGCA Finland
Focal Point for Safety
> **Gerold Reichle** – DGCA Germany
> **Alessio Quaranta** – DGCA Italy
Focal Point for Training
> **Mario Nemeth** – DGCA Slovakia
> **Raùl Medina Caballero** – DGCA Spain
> **Patricia Hayes** – DGCA United Kingdom
Focal Point for Facilitation and Security

First Meeting of the CASE Project Steering Group

The first meeting of the Case Project Steering Group took place on 3 February at the ECAC offices in Paris. This four-year project financed by the European Union and implemented by ECAC has the overall purpose of improving the level of aviation security in partner States in Africa and the Arabian Peninsula, mainly through the organisation of capacity-building activities. The Steering Group acts as the advisory board of the Project and aims to ensure co-ordination with international partners. Chaired by the European Commission, this first meeting gathered representatives of EU Member States, partner States, international and regional organisations (ICAO, African Civil Aviation Commission, WAEMU) and IATA, all of whom provided input on the priorities to be established for the Project. The meeting was an opportunity to introduce the CASE Project and its main components, and to discuss the activities to be implemented in the course of 2016.

Twentieth Meeting between the Co-ordinating Committee and the US Government

ECAC hosted the twentieth meeting between its Co-ordinating Committee led by ECAC President Ingrid Cherfils, and the United States government led by Department of State Deputy Assistant Secretary for Transportation Affairs Tom Engle, in Paris on 3 February. The US delegation included representatives from the Department of State, the Department of Transportation, the Federal Aviation Administration and the Transportation Security Administration. Representatives of the European Commission (DG MOVE and DG CLIMA) and EUROCONTROL also joined the meeting. Amongst the topics discussed, delegates emphasised the importance of exchanging and co-ordinating positions in preparation for the upcoming 39th ICAO Assembly. A strong focus was placed on the issue of aviation CO2 emissions following the outcome of the COP21 talks, both delegations in particular welcoming progress made during the recent discussions at ICAO on this subject. They also underlined how safety and security remain top priorities on both agendas. In addition, the two partners shared their national experiences in relation to Remotely Piloted Aircraft Systems (RPAS) operations, making particular reference to the regulatory framework, operational issues and safety implications, as well as to the security and legal implications.

The ECAC Co-ordinating Committee and the US Government delegation

Events to come

MARCH

7-8/	Fifty-second meeting of the Facilitation Working Group, Paris
8/	Second meeting of the ad hoc European co-ordination group preparing for the ninth meeting of the ICAO Facilitation Panel, Paris
9-10/	Twenty-first meeting of the Security Forum, Paris
9-10/	Twenty-fourth meeting of the ANCAT Task Group on Aircraft Noise Modelling, Cologne
10/	Seventeenth meeting of the ad hoc co-ordination group on Security, Paris
10-11/	Thirty-first meeting of the Training Task Force, Paris
11/	Forty-ninth meeting of the ECAC Medium-Term Objectives Task Force, Paris
14-18/	Twenty-seventh meeting of the ICAO Aviation Security Panel, Montreal
15/	Second meeting of the European Safety Co-ordination Group for the 39th ICAO Assembly, Brussels
22-24/	Fifth course on Vulnerability Assessment Training and Certification, Paris
30-31/	Workshop on Threats and Challenges to Aviation Security, Paris
31/	Eighth meeting of the Network of Training Organisations, Rome

APRIL

4-7/	Ninth meeting of the ICAO Facilitation Panel, Montreal
26/	Twenty-ninth meeting of the Common Evaluation Process Management Group, Paris
27/	Twenty-third meeting of the Security Programme Management Group, Paris
28/	One hundred and seventy-seventh meeting of the ECAC Co-ordinating Committee, Paris

MAY

10/	ACC Workshop on social communication associated with the air accident investigation process, The Hague
10-11/	Thirty-eighth meeting of the Guidance Material Task Force, Paris
11/	Forty-fourth meeting of the ECAC Group of Experts on Accident and Incident Investigation, The Hague
11/	Third meeting of the European Safety Co-ordination Group for the 39th ICAO Assembly, Brussels
11-13/	ICAO High-level meeting on a Global Market-Based Measure (MBM) Scheme, Montreal
17/	Sixth Familiarisation Course for Directors General, Paris
18/	One hundred and forty-sixth meeting of ECAC Directors General of Civil Aviation, Paris
24-25/	Fifth Europe-Asia Pacific Forum (aviation security), Singapore
26-27/	Fifteenth meeting of the Study Group on Behaviour Detection in Aviation Security, Singapore

ECAC news is published by the European Civil Aviation Conference (ECAC)

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