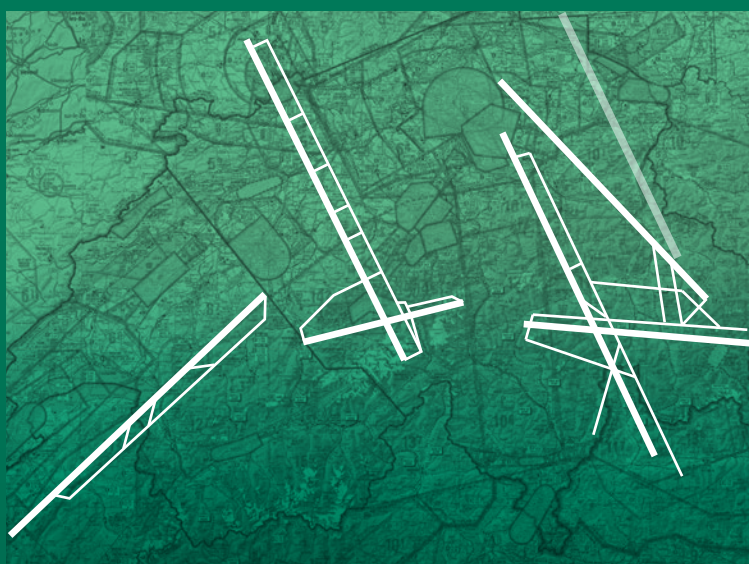


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THE SWISS AVIATION ECOSYSTEM

FLYING BLIND AFTER 2030

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The Swiss-American Chamber of Commerce is the largest association of internationally active companies in Switzerland—Swiss and foreign, large and small. Swiss AmCham represents its nearly 2,000 members on all issues that either handicap optimal operations in Switzerland or obstruct the free exchange of goods and services between Switzerland and the eminently important US market. Swiss AmCham focuses on economic policy issues such as fiscal conditions, mobility of qualified people, the economic relationships with the EU and the US (representing 70% of Swiss exports) and the attractiveness of Switzerland for foreign direct investments. Major topics are also the trading system and ensuring that Swiss-based international companies have at least equal access to the key markets—first and foremost among which is the largest market in the world, the US market, with nearly 25% of global GDP. Swiss AmCham reaches its goals by working closely with companies, embassies, governments, parliaments, other associations, and the media. Swiss AmCham is entirely financed by its member companies and receives no support—direct or indirect—from governments.

THE SWISS AVIATION ECOSYSTEM

FLYING BLIND AFTER 2030



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PREFACE

THIS REPORT PRESENTS THE findings of the fifth joint study by the Swiss-American Chamber of Commerce and The Boston Consulting Group. Our previous joint studies explored multiple facets of the mutually beneficial relationship between multinational companies (MNCs) and Switzerland—from the time when MNCs were a small but fast-growing sector in the Swiss economy to the time when they became a driving force in Switzerland’s GDP growth, employment, and innovation. (For more information about the previous joint reports by the Swiss-American Chamber of Commerce and The Boston Consulting Group, see the [Swiss-American Chamber of Commerce website](#)).

In light of the high-stakes relationships between MNCs and Switzerland, and the growing importance of continuing to attract these companies to Switzerland, we chose to focus, in this study, on one vital aspect of what makes Switzerland particularly appealing to MNCs—the airports.

This is far from the first study to have been conducted on the subject. In fact, much has been written about Swiss airports (particularly the Zurich Airport). But we take a different perspective from the emotionally charged, political point of view, so often proffered. In this report, we present a level-headed, comprehensive appraisal of the role played by Switzerland’s national air traffic infrastructure and ecosystem, and we offer a vision for shaping the critical role that they will play in the country’s future.

Ultimately, the goal is to determine how Switzerland can sustain its position as a leading economic, scientific, cultural, educational, diplomatic, and political player in the world—and thereby secure long-term prosperity. Aviation—one of the most fundamental factors in the equation that determines the attractiveness of one location over another—must figure prominently in that assessment.

EXECUTIVE SUMMARY

AMPLE AND CONVENIENT ACCESS to air travel is taken for granted in Switzerland. And the Swiss are avid air travelers—taking among the highest number of flights per capita per year in Europe.

Strong global connectivity, afforded in large part by the Swiss air transportation system, has made Switzerland a country that is truly international. Major multinational companies from around the world and prominent international organizations are prevalent—many of which have located their global and regional headquarters as well as their R&D in Switzerland.

While Swiss aviation has facilitated, and continues to facilitate, all of these developments—from which the Swiss economy and society have profited greatly—there has not yet been adequate consideration of the full extent and significance of the aviation sector’s contribution to Switzerland’s prosperity.

This report explores the significance of the Swiss aviation sector from a holistic point of view—measuring not only its economic impact but also the more elusive benefits that stem from Switzerland’s connectivity to the rest of the world and its attractiveness as a destination location.

With a focus on Switzerland’s three major (national) airports—Zurich Airport, Geneva Airport, and EuroAirport (Basel)—we share our insights into recent developments, the current situation, and the trends that will shape the future for the Swiss aviation sector and Switzerland as a whole.

We find the historically strong Swiss aviation ecosystem facing severe challenges. The mounting demand for air transport combined with a looming capacity shortage in Switzerland’s national airports have created an urgent need for action. Operating improvements are required immediately in order to sustain functionality. These include invest-

ments in the infrastructure at all airports as well as potential relocation of some general aviation from national airports to regional (and other) airports.

In addition, it is imperative that work begin on a long-term strategy for Swiss aviation—built on reconfirmation of the importance of the aviation ecosystem to Switzerland's economy and location attractiveness. The formulation of a national aviation strategy has long been obstructed by political deadlock and lack of clarity on the federal government's responsibility for defining a sustainable long-term view. We have identified several best practices in other national aviation strategies that appear applicable, transferable, and beneficial to Switzerland.

This is a much needed wake-up call for the Swiss federal government to reassess its role in steering a national strategy for the aviation sector. Following the Swiss political tradition of consensus democracy, the process itself would be driven by a combination of different stakeholders working together—potentially the airports, the cantons, the Federal Office for Civil Aviation and representatives of different sectors of the economy. But by reevaluating its involvement, the federal government has the opportunity not only to increase its participation in fostering the successful future of Swiss aviation but also to enhance the benefits it provides to the people and the country it serves.

A SNAPSHOT: SWISS AVIATION'S VITAL ROLE

THE IMPORTANCE OF THE Swiss air transportation system to the well-being of Switzerland's economy and society cannot be overstated. It has served as the foundation of the vital connections that link the Swiss to the world—and that bring the world to Switzerland. But with increasingly intense global competition and burgeoning demands on Swiss airports for expanded aviation service—each of which calls for consideration of new strategies—it is time to take a snapshot of where the Swiss air transportation system is today, the sources of its strengths, and how to meet the challenges just ahead.

A Well-Connected Country

Among the many advantages Switzerland offers is that it is exceptionally well connected to the rest of the world—especially for a country its size. The ease of travel to and from Switzerland has made the country a prime destination for business, tourism, international organizations, science, and the arts, and it has enabled the Swiss to explore the globe. It is not surprising, then, that in 2017, Switzerland ranked among the top ten in the *ACI Airport Industry Connectivity Report*. These connections are deep and significant, and they profoundly benefit Switzerland's economy and society.

Looking at the Swiss economy, for example, roughly 10,000 multinational companies had

a presence in Switzerland in 2016 (the most recent year for which this information is available). In addition, 49 international organizations were headquartered in Switzerland—more than in the next five countries combined in a benchmark study of 108 international organizations. (See Exhibit 1.) And Swiss exports that same year accounted for 45% of the country's gross domestic product (GDP).

In addition, the Swiss population benefits to a great degree from the country's connectivity to places near and far. Not surprisingly, the Swiss are among the most avid air travelers—for pleasure and for business. To quantify and compare the extent to which air travel by the Swiss exceeds that of their European neighbors, we looked at the number of flights taken per inhabitant of Switzerland, Germany, and France in 2016 (again the most recent year for which this information is available). We found that the Swiss took more than twice as many flights as the Germans (3.1 flights compared with 1.5 flights) and more than three times the number of flights as the French (1.0 flights).

Further, Switzerland claimed second place (to Ireland) in a 2016 comparison of international tourism, as measured by the number of departures per inhabitant of each country. Moreover, looking at airport connectivity per inhabitant—as measured by number of desti-

EXHIBIT 1 | Switzerland Is Well Connected in Many Ways



Sources: Oxford Economics; The Economist Intelligence Unit; BCG analysis.

¹Number of departures that people make from their country of principal residence to any other country for any purpose other than a paid activity within the country visited, based on a study of 14 EU countries and the US.

²Rankings are based on a benchmark study of 108 international organizations.

³This assessment is based on airport connectivity divided by population (for each country). For improved readability each number shown represents the true value multiplied by 1,000.

nations and frequency of flights compared to population size—Switzerland ranked second only to Norway in a 2017 assessment of 14 EU countries and the US.

A Strong Air Transportation System

The Swiss air transportation system is the force that drives Switzerland’s economic and social connectivity. It enables international companies and organizations, tourists, the scientific community, and the arts to come to Switzerland, and it connects the Swiss worldwide.

The three main components of that system are the Swiss airports, the multitude of airlines that operate at those airports, and the Swiss federal government. That system, in turn, operates within a broader, international aviation environment.

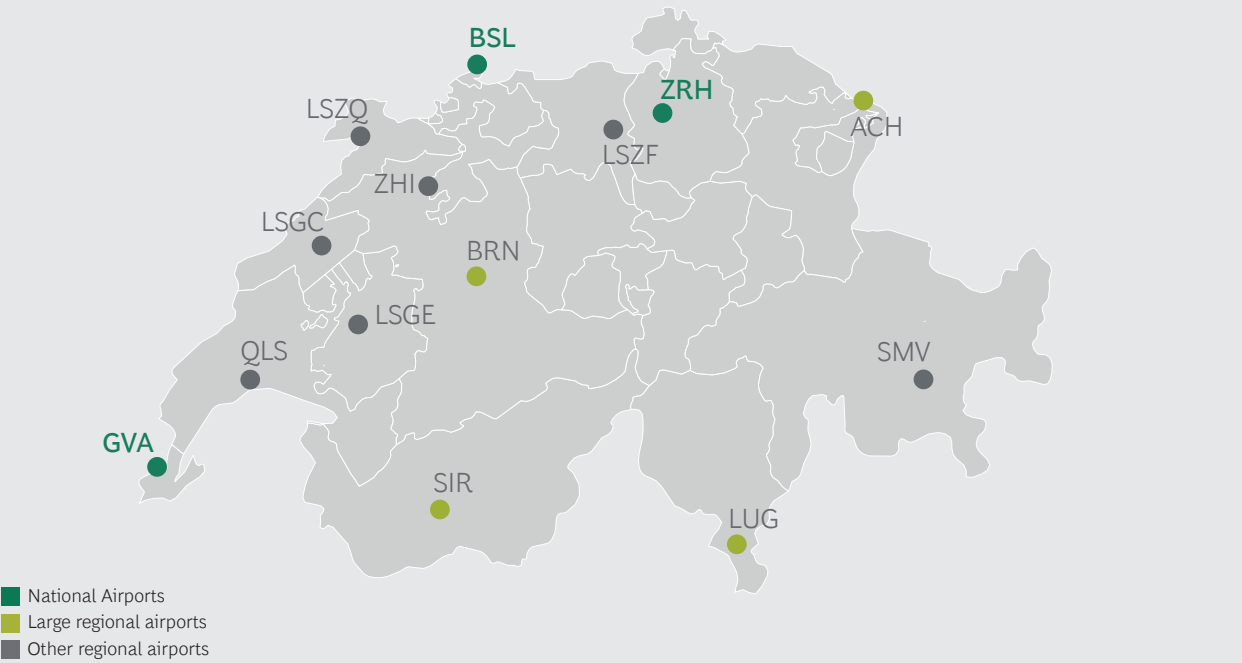
The Swiss Airports. Switzerland has three national airports—EuroAirport (which is binational with France and situated just northwest of Basel), Geneva Airport, and Zurich Airport—and eleven regional airports. (See Exhibit 2.) The national airports primarily serve to connect Switzerland to major cities

(in Europe and throughout the world), while the regional airports provide national connections and some limited international flights. But the Zurich Airport plays a vital and unique role in that it serves as the hub for both national and intercontinental connections.

The Swiss national airports operate under two distinct models: The airports in Basel and Geneva are point-to-point (P2P) airports, which offer direct connections between two locations (for example, Geneva to London). The advantages of P2P airports are minimized need to make connections between flights and reduced travel time; in addition, because P2P flights are not interdependent, a delay in one flight will not affect another flight.

By contrast, the airport in Zurich is—by virtue of the presence of Swiss International Air Lines (“SWISS”)—a hub-and-spoke (hub) airport, which enables more connections between cities (such as New York City to Zurich to Lugano) as well as cost savings through economies of scale; delays may, however, cascade through the system, because connecting flights are interdependent. (For a side-by-side comparison of the three national airports,

EXHIBIT 2 | The Swiss Air Transportation System Contains Three National Airports and Eleven Regional Airports



National airports	Passengers (millions)	Total (%)	Freight (kilotons)	Total (%)	Number of Destinations	Movements ¹ (thousands)
BSL: Basel (BS)	7.9	14.3	112	16.2	85	96
GVA: Geneva (GE)	17.4	31.5	89	12.9	158	191
ZRH: Zurich (ZH)	29.4	53.2	491	70.9	189	270
Large regional airports						
	Passengers (thousands)					
ACH: St. Gallen–Altenrhein (SG)	125	0.2	NA	NA	3	29
BRN: Bern Belp (BE)	183	0.3	NA	NA	22	48
LUG: Lugano (TI)	144	0.3	NA	NA	8	19
SIR: Sion (VS)	32	0.1	NA	NA	11	42
Other regional airports						
	Passengers (thousands)					
LSGC: Les Eplatures (NE)	6	0.0	NA	NA	NA	11
LSGE: Ecuwillens (FR)	11	0.0	NA	NA	NA	15
LSZF: Birrfeld (AG)	14	0.0	NA	NA	NA	66
LSZQ: Bressaucourt (JU)	6	0.0	NA	NA	NA	8
QLS: Lausanne Blécherette (VD)	3	0.0	NA	NA	NA	39
SMV: Samedan (GR)	11	0.0	NA	NA	NA	16
ZHI: Grenchen (SO)	59	0.1	NA	NA	NA	69

Sources: Aerosuisse, Vademecum, 2018; OAG Analyzer; EuroAirport press release, January 18, 2018; annual reports from the Sion Airport, Lugano Airport, Bern Airport, and St. Gallen–Altenrhein Airport.

Note: Information on national airports is current as of 2017; information on regional airports is current as of 2014. Any apparent discrepancies in calculations are due to rounding.

¹Movements are the number of takeoffs and landings.

NA = not available.

(see the sidebar “Switzerland’s National Airports at a Glance.”)

The Airlines That Operate at Swiss Airports. SWISS the national airline of Switzerland, dominates the Swiss air transportation system. Such full-service carriers commonly handle most of the traffic at hub airports, and SWISS is no exception. This carrier, which is highly dependent on profitable “transfer traffic” (which subsidizes its long-haul flights), serves more than 50% of the passengers that fly into and out of the Zurich Airport. To take a more detailed look, SWISS not only serves roughly 24% (7 million) of the intercontinental passengers traveling to or from the Zurich Airport but also serves about 28% (more than 8.3 million) of the international “transfer” passengers passing through the airport. It is only through this hub and spoke system that SWISS and the Zurich Airport can offer so many intercontinental long-haul connections.

Successful low-cost carriers (LCCs) are gaining importance at Swiss P2P airports. These carriers now serve about 46% of airline passengers heading to or from Geneva and close to 70% of airline passengers traveling to or from Basel. In addition, there is strong and growing business aviation (that is, the use of general aviation aircraft for business purposes), which is particularly important to Geneva Airport.

The Swiss Federal Government. A clearly distinguishing factor of the Swiss air transportation system is the lack of national ownership—contrary to the national railway system, the national highway system, the postal system, and even the incumbent telecom company. In Switzerland, it is the airports themselves that invest in and build the infrastructure required by airlines for their daily operations (such as runways, airport security, and baggage handling). Historically, this system has functioned smoothly, fueled by what might be considered overproportionate inbound and outbound demand. That out-sized demand, in turn, has been generated by a globalized Swiss economy and a catchment area (the area from which an airport attracts passengers) with above-average purchasing power.

Although aviation is within the scope of federal responsibility, the Swiss federal government has played a limited role—mainly focused on airline security and safety regulations. Essentially, it has delegated aviation to the cantons. At the same time, the Swiss federal government takes responsibility for such equally important national resources as the postal system, highways and railroads (including the new Gotthard Base Tunnel that runs beneath the Swiss Alps), and nuclear power.

By comparison, in other countries of global significance, the federal government plays a more direct role in ensuring the health of the airports. For example, in the Netherlands, the government is steering the airports through a national strategy for the Dutch aviation system. In the US, the Airport Improvement Program has long provided grants to American airports to fund infrastructure improvements. And various Gulf States have made double-digit billion-dollar investments into their airport infrastructure.

The International Aviation Environment.

The Swiss aviation ecosystem exists within the regulatory confines of the international aviation environment. Safety regulations are formulated and defined on an international level. Flight control is closely coordinated across Europe. Imagine, for example, the implications for Skyguide, the Swiss air traffic controller, of a consolidation of European airspace. Or how changes in international aviation strategy might impact the Star Alliance or the Lufthansa Group—and the major implications for Switzerland.

The Challenges Just Ahead

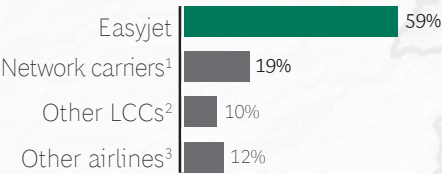
Historically, Switzerland’s aviation ecosystem has been strong. And the interplay among the actors within that system has been advantageous—for the players themselves and for the country. For example, airlines operate at the airports that fit their overall business strategies. At the same time, these airlines elect business models that not only align with their own business strategies but also with the business strategies of the airports at which they operate. This approach has produced multiple rewards. For instance, the relatively close alignment between SWISS and

SWITZERLAND'S NATIONAL AIRPORTS AT A GLANCE

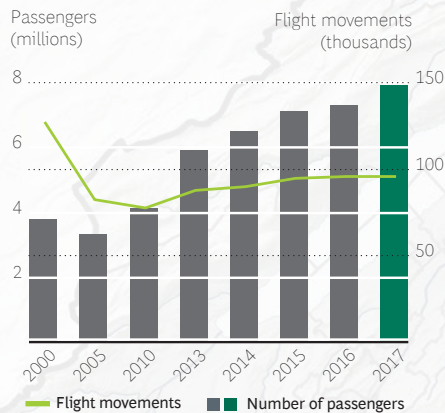


EuroAirport Basel (BSL)

Percentage of passengers by airline, 2017 (scheduled traffic)



Number of passengers and flight movements, 2000, 2005, 2010, and 2013–2017



Key insights:

- A P2P strategy focused on meeting travelers' needs by providing attractive low-cost service within Europe
- The only Swiss airport with dedicated business freight machines
- A global leader in completion of VVIP/VIP aircraft
- A designated hub for pharmaceutical freight within the EU

- Passengers, 2017: 7.9 million
% of total passenger traffic in Switzerland: 14%
- Freight volume, 2017: >112.3 kilotons
% of total freight traffic in Switzerland: 16%
- Network strategy: P2P; strong focus on LCCs and business freight
- International rating: medium perceived quality; average Skytrax ranking of 5/10
- Ownership structure: 50% France; 50% Switzerland

Sources: Interview with EuroAirport executive, June 2018; EuroAirport annual reports, 2013–2017; BCG analysis.

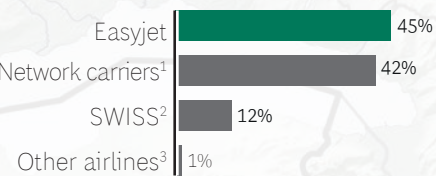
¹Air France; Austrian Airlines; British Airways; Brussels Airlines; Iberia; KLM; Lufthansa Group; Turkish Airlines; Vueling.

²Air Arabia Maroc; Pegasus Airlines; Ryanair; Wizz Air.

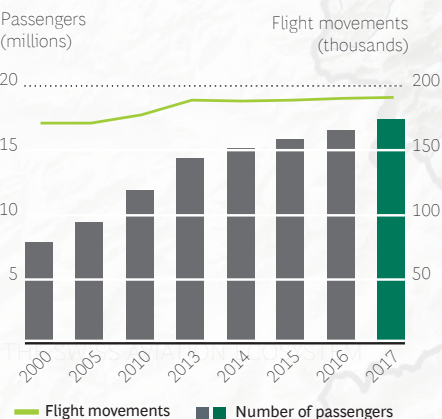
³Aigle Azur; Air Algérie; Air Berlin; Air Transat; Belair Airlines; Fly Niki; Jetairfly; SkyWork Airlines; SunExpress; TUI fly.

Geneva Airport (GVA)

Percentage of passengers by airline, 2017 (scheduled traffic)



Number of passengers and flight movements, 2000, 2005, 2010, and 2013–2017



Key insights:

- A P2P strategy focused on building increased connectivity and volume (through LCCs and others) to European and intercontinental destinations.
- Strong demand for business aviation (third-largest EU business aviation airport)
- Limited size due to proximity to Geneva, but a new terminal for long-haul carriers is planned for 2020
- Operating at maximum capacity at peak hours (both line traffic—that is, regular scheduled service—and freight)

- Passengers, 2017: 17.4 million
% of total passenger traffic in Switzerland: 31%
- Freight volume, 2017: >88.9 kilotons
% of total freight traffic in Switzerland: 13%
- Network strategy: P2P; strong focus on business and general aviation (ultra-high-net-worth individuals and VIPs)
- International rating: low perceived quality; Skytrax ranking of 3/10
- Ownership structure: 100% canton of Geneva

Sources: Geneva Airport annual reports, 2013–2017; OAG Analyzer; Federal Office of Civil Aviation, annual statistics, 2016; BCG analysis.

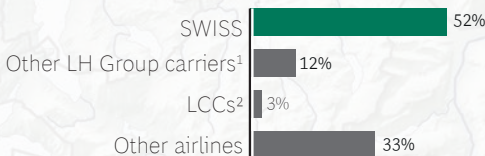
¹Air France; British Airways; Brussels Airlines; Emirates; Iberia; KLM; Lufthansa Group; Tap Portugal.

²Eurowings; Hop; Pegasus; Vueling; Wizz Air; and others

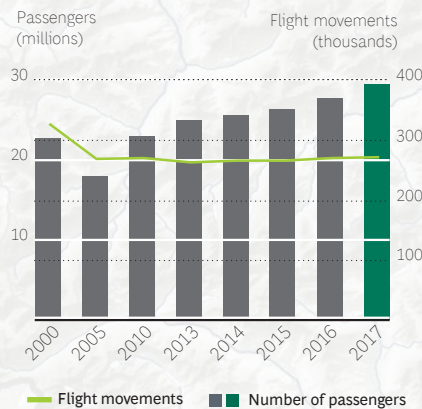


Zurich Airport (ZRH)

Percentage of passengers by airline, 2017 (scheduled traffic)



Number of passengers and flight movements, 2000, 2005, 2010, and 2013–2017



Key insights:

- A joint hub strategy followed by Zurich Airport and SWISS
- Its position as the hub is vital to SWISS; many of its intercontinental connections are only profitable due to transit passengers
- Operating at maximum capacity at peak hours (both line traffic and freight)
- Challenging political situation is preventing long-term resolution of capacity issues

- Passengers, 2017: 29.4 million
% of total passenger traffic in Switzerland: 53%
- Freight volume, 2017: >490.4 kilotons
% of total freight traffic in Switzerland: 71%
- Network strategy: hub; strong focus on line traffic (regular scheduled service)
- International rating: ranked the second-best airport in Europe by Skytrax in 2016
- Ownership structure: 62% free float; 33% canton of Zurich; 5% city of Zurich

Sources: Zurich Airport annual reports, 2013-2017; BCG analysis.

¹Lufthansa, Austrian Airlines, Eurowings.

²Easyjet; Pegasus Airlines; SunExpress; Tui fly; Wizz Air.

EXHIBIT 3 | The Continued Success of Switzerland’s Strong Aviation Ecosystem Depends on Key Interactions Among Its Three Main Players



Source: BCG analysis.
¹Switzerland’s aviation ecosystem functions with private sector funding.

Zurich Airport has led to synergies that unleashed significant efficiencies and cost advantages for both parties. Such effective co-operation among airports and airlines is vital to continued mutual success—especially in light of increasing international competition. (See Exhibit 3.)

Competition, of course, is not the only serious challenge. The pressures on the Swiss aviation ecosystem are intensifying. Between 2013 and 2017, for example, the volume of passengers at Switzerland’s three national airports grew by 21% (an increase of roughly 10 million people). In 2017 alone, about 55 million passengers and roughly 489 kilotons of freight traveled through these Swiss airports. It is essential to assess now how to deal with such escalating demands on the system so as to enable Switzerland to remain ahead of the game.

Other countries—such as Australia, Denmark, Finland, and Germany—have already formu-

lated national air transportation strategies. Among the critical issues they have assessed and addressed are how to maintain and upgrade their air transportation systems and how to strengthen and expand their national aviation capabilities and competitiveness. In the Netherlands, the government’s national strategy for the Dutch aviation system sets forth guiding principles for, among other things, how to optimize international accessibility by air, promote competition within the aviation sector, and manage the use of Dutch air space. Switzerland needs to do the same—not only to preserve the critical contribution that the Swiss aviation ecosystem makes to the country’s economy but also to support the vital role it plays in Switzerland’s attractiveness as a place of business, scientific development, the arts, education, diplomacy, and tourism.



Copyright: Flughafen Zürich AG

THE AIRPORTS' CONTRIBUTION TO SWISS VITALITY

THE NATIONAL IMPORTANCE OF an aviation ecosystem is most often measured by criteria that can be concretely monetized (such as direct employment). But it can also be assessed through factors that, while not readily quantifiable, have a multifaceted positive impact on a country's attractiveness—albeit more elusive to capture.

Most previous studies of the national significance of Swiss airports have approached the subject from a purely economic perspective—analyzing the monetary impact of airport operations on the economy. The many intangible economic contributions of air transport—for example, airports are a vital consideration when MNCs select their headquarters locations—have been largely ignored or only touched upon lightly. As a result, the true monetary multiplier effects of the airports have been vastly underestimated.

What follows in this chapter is the first comprehensive assessment of the economic benefits delivered to Switzerland by the Swiss aviation ecosystem. Our assessment goes beyond examination of quantifiable monetary benefits to capture the less quantifiable economic health that Switzerland enjoys because of its airports.

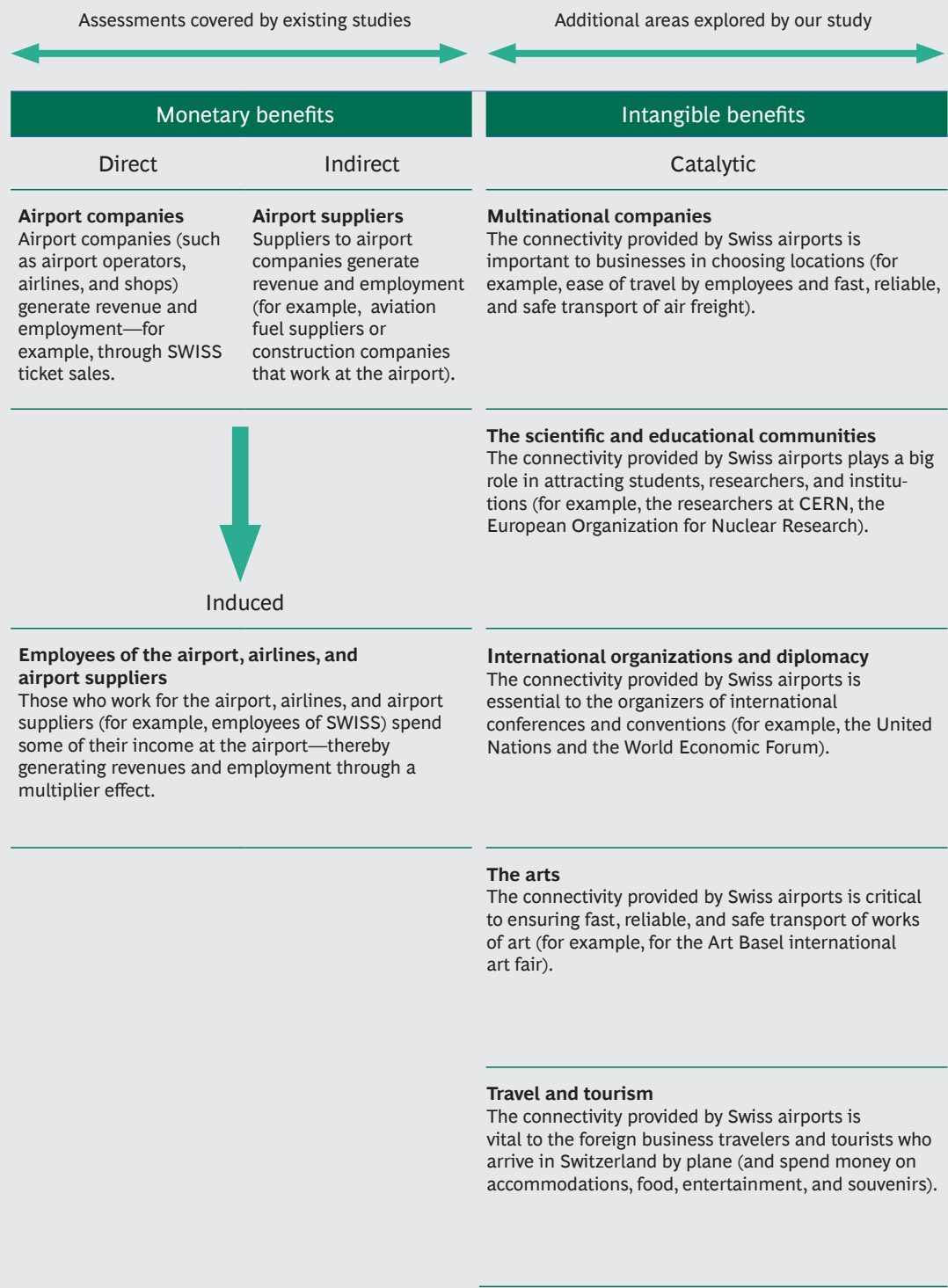
Yes, we discuss pure monetary benefits. We look at the revenue and employment generated by airport operators, airlines, and shops

(the direct monetary benefits); by companies that work at the airport, such as those supplying aviation fuel or doing construction (the indirect monetary benefits); and by employees who work and spend money at the airports (the induced monetary benefits). But we also look at benefits that are less tangible—those that derive from Switzerland's connectivity, which virtually bubble and multiply (the catalytic benefits). These benefits too contribute in significant ways to Switzerland's overall economic and societal well-being. (See Exhibit 4.) There is no doubt that, combined, all these benefits have served—and will continue to serve—Switzerland well.

«The Swiss airports serve as the foundation for an international country. It is not just multinational companies that profit from our airports but also our scientific, artistic, and political communities, which rely on high-quality connections to the world.»

André Schneider, CEO, Geneva Airport

EXHIBIT 4 | The Swiss Airports’ Contribution to the Swiss Economy Encompasses Multiple Benefits



Sources: Federal Office of Civil Aviation, *The Economic Importance of Civil Aviation in Switzerland*, 2011; BCG analysis.

The Pure Monetary Benefits

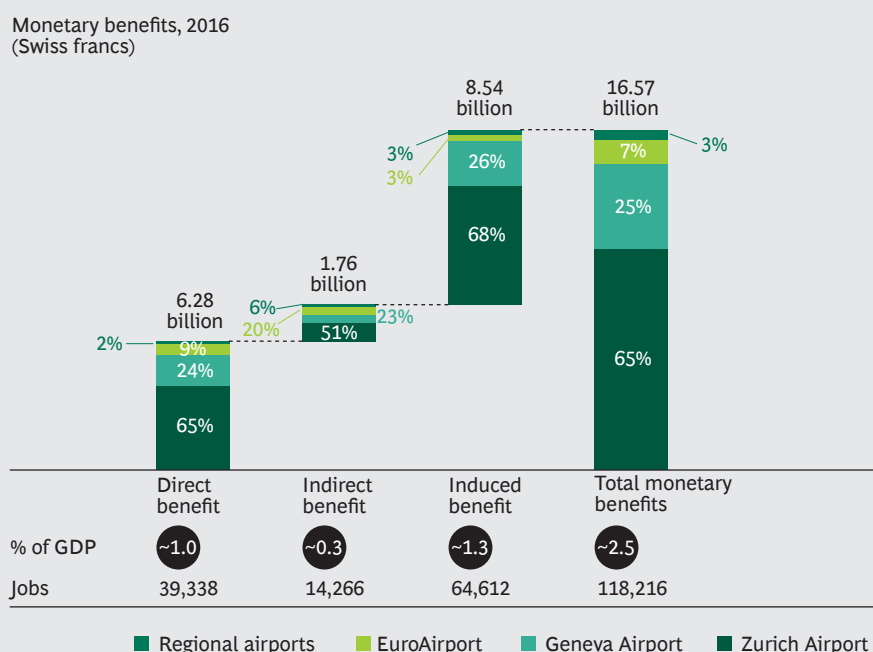
The numbers are impressive. Swiss airports have made a tremendous contribution to Switzerland's GDP, reaching approximately 2.5% in 2016 (the most recent year for which this information is available)—and surpassing the GDP contribution of the Swiss entertainment, arts, and recreation sector, which contributes around 2.1% of GDP.

A closer look at the 2016 data shows that Swiss airport operators, airlines, and shops delivered about CHF 6.3 billion in direct monetary benefits (roughly 1% of Swiss GDP); airport suppliers contributed about CHF 1.8 billion in indirect monetary benefits (roughly 0.3% of Swiss GDP); and employees of the airports, airlines, and airport suppliers provided about CHF 8.5 billion in induced monetary benefits (roughly 1.3% of Swiss GDP). (See Exhibit 5.) The direct monetary benefits alone are higher than the entire economic contribution of the Swiss agricultural sector—about CHF 4.32 billion or 0.7% of GDP.

Of course, the Swiss airports also are a place of employment. In 2016 (again, the most recent year for which this information is available) more than 118,200 people worked at the airports. Parsing this number further shows that more than 39,300 jobs were directly attributable to airport operators, airlines, and shops; that more than 14,200 jobs were held by airport suppliers working in Swiss airports; and that more than 64,600 jobs were the result of the multiplier effect of spending by employees of airport operators, airlines, and shops at Swiss airports.

The lion's share of the airports' 2016 contribution to Swiss GDP is attributable to Zurich Airport—specifically, 65% of the direct monetary benefits delivered by airport operators, airlines, and shops; 51% of the indirect monetary benefits contributed by airport suppliers; and 68% of the induced monetary benefits delivered through the multiplier effect of income spent by the employees of airport operators, airlines, and shops.

EXHIBIT 5 | Spending at Swiss Airports Makes a Significant Monetary Contribution to Switzerland's Economy



Sources: INFRAS/BAK Basel, *The Economic Significance of Zurich Airport, Results for 2016, 2017*; Federal Office of Civil Aviation, *The Economic Importance of Civil Aviation in Switzerland, 2011*.

Note: Any apparent discrepancies in calculations are due to rounding. By comparison, the banking industry accounts (directly or indirectly) for approximately 12.9% of Swiss GDP.

To add some perspective to all of the above, consider the beneficial monetary impact that one recent decision by one airline has had: When SWISS brought two new Boeing 777-300ER jet airliners into service at Zurich Airport, it hired 300 new employees—at an additional cost of CHF 28 million—to manage the cabin, cockpit, and technical department duties. In terms of staff size and expenditure, that one decision created the equivalent of a medium-sized business.

The Intangible Benefits of Connectivity

But the tangible economic contributions of Swiss airports to the country’s GDP are only part of the story. Switzerland’s extensive worldwide connectivity—empowered by its aviation ecosystem (and fostered by its major airport hub in Zurich)—has enabled the Swiss to take a leading global position as a preferred location for multinational companies, the scientific community, renowned universities, international organizations, the arts, and travel and tourism. The benefits may not be as easy to measure, but they are, without doubt, extremely valuable. For exam-

ple, previous studies have estimated the value that passengers flying in and out of Switzerland provide the travel and tourism sector as comparable to the direct and indirect monetary benefits of spending at Swiss airports. The entire catalytic effect across all dimensions would easily be a higher multiple.

While far from the only consideration when it comes to location, connectivity is a major—and often decisive—factor in the decision-making processes of business, scientific, and arts organizations (as well as tourists). In today’s globalized economy, connectivity is more often considered a “hygiene factor” than not. (While it may be taken for granted, unsatisfactory performance would cause major dissatisfaction.) So its importance cannot be underestimated in Switzerland’s long-term national economic and social value creation.

Multinational Companies. The airports provide the infrastructure for business connectivity—for travel by employees and for transport of air freight. MNCs are highly dependent on effective air transportation systems. (For a look at the value Roche assigns to air freight, see the sidebar “Big Pharma’s Global

BIG PHARMA’S GLOBAL SUPPLY CHAINS DEPEND ON EFFICIENT AIR CARGO

- The safe and efficient transport of pharmaceutical products is of particular importance to multinational health care companies such as Roche.
- A reliable air freight ecosystem is essential to multinational pharmaceutical companies in Switzerland, which today account for 45% of exports (by value) and 2% (by volume).

«A smoothly functioning aviation system is central for the supply chain of multinationals. Example: having ready access to air freight capacity in Basel is essential for Roche, which transports high-value, high-quality, and temperature-sensitive goods worldwide.»

(Dr. Christoph Franz, Chairman of the Board of Directors of Roche Holding Ltd, 2018)



Source: EyeEm

Supply Chains Depend on Efficient Air Cargo.”) Switzerland, for its part, enjoys an economy powered, to a not insignificant extent, by MNCs. In many ways, Switzerland and MNCs share a symbiotic relationship. For example, in 2012, 35% of Swiss GDP was contributed by MNCs (Swiss and foreign, large and small), and 28% of Swiss workers were employed by MNCs. Conversely, a 2012 World Economic Forum/*Fortune* magazine study of MNCs’ preferences for headquarters locations revealed Switzerland to be the first choice. Without doubt, maintaining its position as a prime location for MNCs—in large part through stellar aviation connectivity—is of vital economic importance to Switzerland.

The Scientific Community. Top scientific talent requires connectivity as much as business leaders do in order to explore fresh ideas and cutting-edge solutions. And Switzerland has the necessary infrastructure to enable vital connections among researchers, professors, students, and institutions in the global scientific community. For example, CERN (the European Organization for Nuclear Research) in Geneva, the world’s leading research institution for particle science, has

an international staff of around 2,500 people. And ETH Zurich, a multidisciplinary scientific institution of higher learning, which currently has more than 20,000 students from more than 120 countries, attracts researchers and professors from around the world. (For an overview of the significance of air travel to this institution, see the sidebar “ETH’s Leadership in International Research Relies on Global Connectedness.”)

«FIFA has more than 200 international member associations and alone in Zurich employees from 53 different countries – having a strong airport is a fundamental asset for an international city like Zurich»

Dr. Martin Vaso, Chief HR & Services Officer, FIFA

ETH’S LEADERSHIP IN INTERNATIONAL RESEARCH RELIES ON GLOBAL CONNECTEDNESS

- In 2015, 8,016 international research partners and about 70% of ETH Zurich’s professors came from outside Switzerland.
- ETH Zurich was ranked the most international university in the world by Times Higher Education’s World University Rankings in 2017.
- In 2015, air travel by researchers from ETH Zurich generated CHF 40 million in revenue for the airlines.

«For a successful research and innovation center in Zurich, a well-functioning airport is of central importance.»

(Dr. Lino Guzzella, President of ETH Zurich, 2018)



Copyright: ETH Zurich

International Organizations. Connectivity is also essential to international organizations—such as the United Nations and the World Economic Forum. And with 37 international organizations based in Geneva, Switzerland is well connected to the international community. Another major international organization, FIFA (the Fédération Internationale de Football Association), which has more affiliated associations than the United Nations has member states, is based in Zurich. In addition, because of its centralized loca-


tion and its reliable, direct air transport connections, Switzerland has traditionally been a favored location for conferences and conventions of international organizations, which hold approximately 2,800 meetings annually in Geneva. (For a bird’s-eye view into Geneva’s importance as a meeting place, see the sidebar “Geneva Is a Political Gateway to the World.”) Needless to say, the Swiss aviation ecosystem is critical to retaining Geneva’s (and Switzerland’s) value to these important organizations.

GENEVA IS A POLITICAL GATEWAY TO THE WORLD

- Together with New York City, Geneva is one of the world’s main centers of multilateral diplomacy.
- Each year, roughly 219,000 delegates from international organizations around the world meet in Geneva to attend conventions and conferences.
- In 2016, there were 4,443 official state visits to Geneva, which included 98 heads of state, 43 prime ministers, 218 foreign ministers, and 1,721 ministers.

«Geneva Airport is an important consideration in planning the numerous international conferences and events in Geneva.»

(Olivier Coutau, Delegate to Genève Internationale, 2018)



Copyright: Genève Aéroport

The Arts. Appreciation of the arts transcends borders. And Switzerland has its fair share of visitors to its more than 1,000 museums (one of the highest number of museums per capita). The country’s aviation ecosystem plays a critical behind-the-scenes role in the transport of artwork for the myriad exhibitions that draw so many people from around the world to Swiss museums, art galleries, and art fairs. Among these art fairs is Art Basel, a privately cu-

rated annual event (held in Basel, Miami Beach, and Hong Kong) at which the works of established and emerging international artists are exhibited. In 2015, roughly 98,000 people visited the six-day art fair in Basel. And the role of Switzerland’s aviation service cannot be underestimated in enabling this event to take place. (For more details, see the sidebar “Switzerland’s Major Art Fair (Art Basel) Connects Visitors and the Arts Worldwide.”)

SWITZERLAND'S MAJOR ART FAIR (ART BASEL) CONNECTS VISITORS AND THE ARTS WORLDWIDE

- Switzerland hosts many world-class cultural events, one of which is Art Basel.
- In 2018, Art Basel welcomed nearly 100,000 visitors to its six-day art fair.
- Fast, reliable, and safe transport of artwork is essential to Art Basel.
- Convenient, direct flights are a prerequisite for the success of global arts events, such as Art Basel.
- Art Basel generates more than 600 takeoffs and landings per year at EuroAirport.

«EuroAirport facilitates travel to major exhibitions, conventions, and fairs taking place in and around Basel. Art Basel creates significant additional air traffic (both line traffic and business aviation).»

(Mario Eland, Marketing Director, EuroAirport, 2018)



Copyright: Courtesy Art Basel

Travel and Tourism. In 2017, the World Economic Forum ranked Switzerland one of the top ten most competitive countries in tourism and travel. And it is not surprising—in light of the ease and convenience of multiple direct and connecting flights to Switzerland—that more than 60% of international travelers enter Switzerland by plane. As noted earlier, the Swiss are also avid air travelers—for example, beating their European neighbors in terms of flights per capita in 2016. Tourist traffic is particularly high at the Zurich and Geneva Airports. (For more details, see the sidebar “The National Airports in Zurich and Geneva Contribute Greatly to the Growth of Swiss Tourism.”) Foreign business travelers

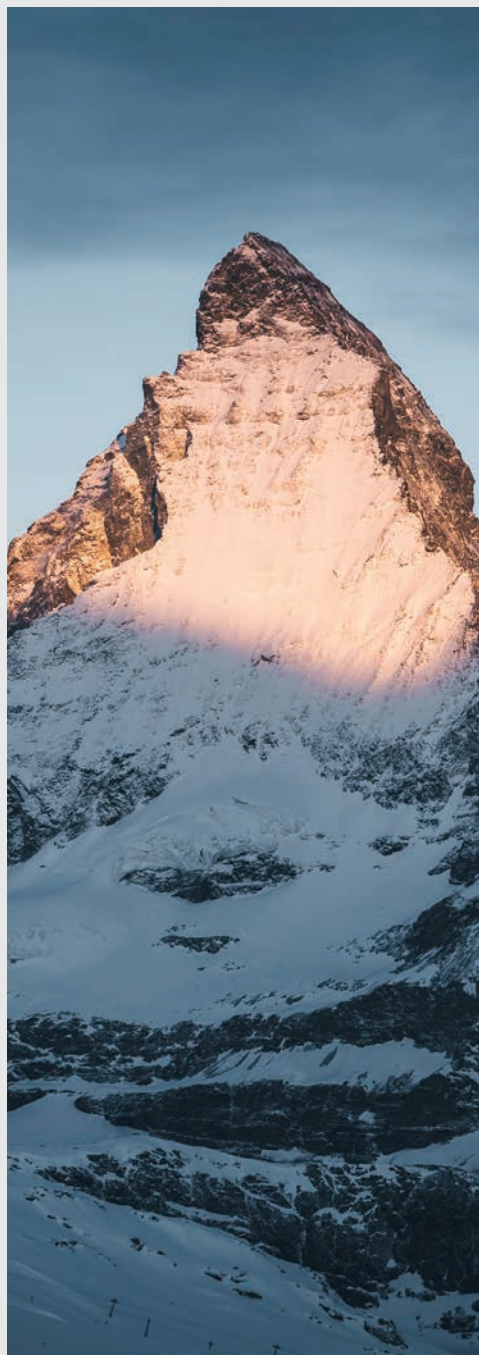
and tourists, of course, spend money on accommodations, entertainment, food, and souvenirs. While the full monetary impact of such connectivity is not easily measured, the overall benefit to the Swiss economy is clear.

THE NATIONAL AIRPORTS IN ZURICH AND GENEVA CONTRIBUTE GREATLY TO THE GROWTH OF SWISS TOURISM

- Approximately 30% of the 14 million passengers who arrived at the Zurich Airport in 2017 were tourists (roughly 4.2 million people)—more than a 20% increase in the number of tourists who arrived at the Zurich Airport in 2010.
- More than 20% of Swiss hotel guests in 2016 arrived in Switzerland at the Zurich Airport. These visitors accounted for a total of 4.3 million overnight stays at hotels, or 12,000 overnight stays per day.
- The number of tourists arriving in Switzerland at the Zurich and Geneva airports is increasing significantly.
- In 2016, foreign tourists who arrived in Switzerland at the Geneva Airport generated more than CHF 1.6 billion in revenue during 5.8 million overnight stays.
- Asians make up the fastest growing group of tourists visiting Switzerland—with an especially strong increase in the number of tourists from South Korea, India, and China.

«The airports serve as a gateway to Switzerland, especially for tourism. Reliable airports are becoming increasingly important, as the number of overseas travelers is growing rapidly.»

(Christoph Brutschin, Government Councilor, Canton Basel-Stadt, 2018)



Source: EyeEm

THE CHALLENGES TO THE SWISS AVIATION ECOSYSTEM

The Swiss aviation sector is flying into rough weather. There are four looming trends that have combined to turn clear skies into a challenging situation:

1. Growing demand for air transport is pushing the limits at all three Swiss national airports.
2. Even today, the Geneva and Zurich airports are facing capacity shortages during peak times.
3. The Zurich Airport is experiencing more aggressive competition from expanding international hubs.
4. Innovations in technology are opening the door to new forms of transportation.

Unmet, these trends will direct the future of Swiss aviation, and that future will not be promising. It is imperative that Switzerland take the wheel now—by conducting a comprehensive review of its aviation sector and by taking action to maintain its global significance in the aviation space.

The Growing Demand for Air Transport

The necessity of air travel for business, the enthusiasm for air travel for pleasure, and the need to transport goods by air are strong and

intensifying. The numbers tell the story. The International Air Transport Association anticipates that by 2036, 7.8 billion people will use the global air transportation system—almost a 100% increase over the comparable number in 2017 (around 4 billion).

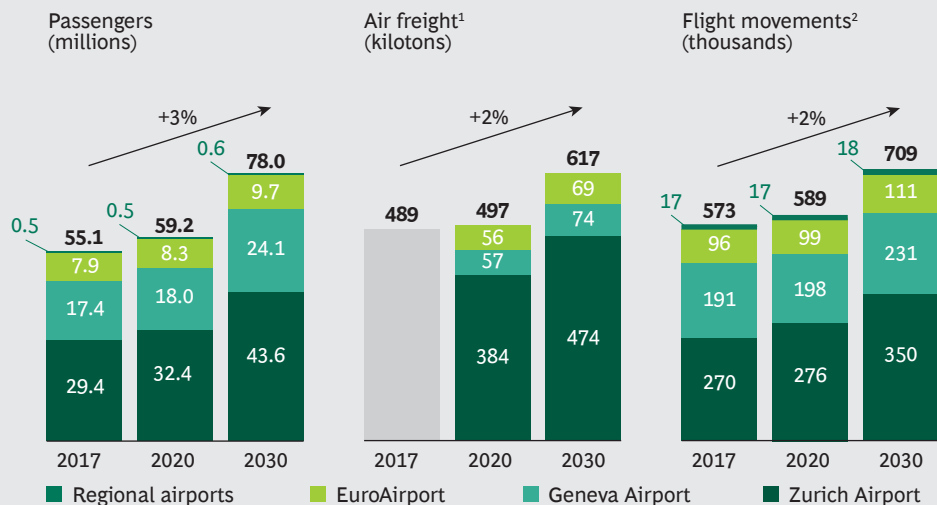
The Swiss government and Swiss airports expect that a 3% annual increase in the number of airline passengers and a 2% annual increase in kilotons of air freight will continue through 2030. (See Exhibit 6.)

By 2030, these airports foresee a 42% increase in passengers (from about 55 million in 2017 to about 78 million) and a 26% increase in the volume of air freight (from roughly 489 kilotons in 2017 to roughly 617 kilotons). Those numbers are based on a 2015 study. In the past three years, the growth in the number of passengers and air freight has been larger than expected. Hence, the chances for even steeper growth than anticipated in the 2015 study are high.

This appetite for air travel and air transport is quickly pushing Switzerland's three national airports to their limits.

If the intense pressure on the Swiss aviation ecosystem is ignored or put aside, it will not only negatively affect the air transportation sector itself, but also the economic health and vitality of Switzerland as a country.

EXHIBIT 6 | The Demand for Air Transportation in Switzerland Is Steadily Growing



Sources: Federal Office of Civil Aviation, *The Development of Swiss Air Traffic to 2030*, 2015; Aerosuisse, Vademecum, 2018; airports' annual reports; BCG analysis.

Note: Growth estimates are based on the Federal Office of Civil Aviation's *The Development of Swiss Air Traffic to 2030*, 2015. Any apparent discrepancies in calculations are due to rounding. Specific numbers on the air freight passing through Swiss airports in 2017 are not yet available.

¹ Air freight data includes airlifted airfreight and postal freight.

² Flight movements data excludes general aviation, military, and training traffic (for example, flight schools). Movements numbers using most recent figures and FOCA growth rates assumptions

Capacity Shortages at the Geneva and Zurich Airports

The overall number of takeoffs and landings at Switzerland's national airports is anticipated to increase at the rate of 2% each year through 2030 (as shown in Exhibit 6). That increase is expected to be particularly steep at the Geneva and Zurich airports. In Geneva, the number of flight movements between 2017 and 2030 is predicted to grow by 21% (from 190,778 to 231,100); while in Zurich, during that same time frame, the number of flight movements is projected to grow by as much as 29% (from 270,400 to 349,600).

Within the next ten years, it is anticipated that total current capacity will be fully utilized at both the Geneva and Zurich airports. Even now, the Geneva and Zurich airports are stretched to maximum operating capacity—and demand exceeds capacity during peak hours.

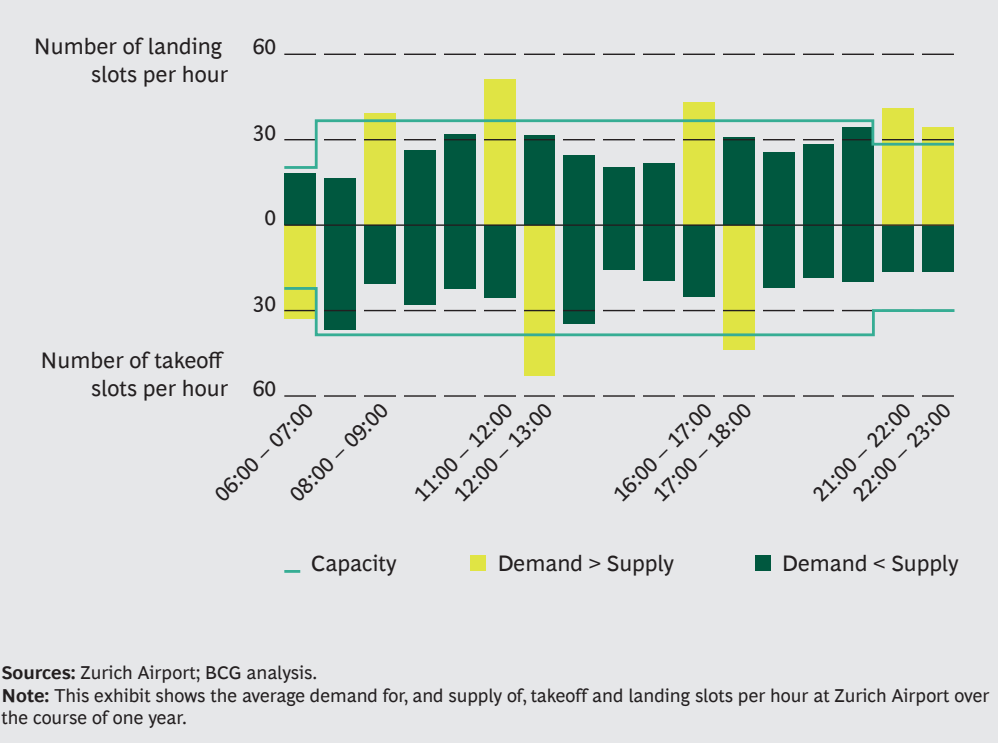
For example, at the Zurich airport, between 06:00 and 07:00, on any given day, virtually every takeoff slot at Zurich airport is filled. Similarly, between 21:00 and 23:00, virtually every landing slot at Zurich airport is taken.

(See Exhibit 7.) Those landing slots in the evening are essential to enabling passengers to make their connections between arriving short-distance flights and departing long-distance flights. The latest decision of the Federal Office of Civil Aviation to cap capacity between 21:00 and 23:00 will not allow Switzerland's only hub airport to meet this important (and growing) demand.

It is possible that some of the excess demand during peak hours could be redirected to, and absorbed by, less active time slots. This might work, for example, with non-time-critical, point-to-point flights that provide direct service between two locations. But the economically important feeder connections to long-range flights cannot be channeled to other time slots because these connecting flights are interdependent.

In addition, the historical remedy for increasing capacity—that is, shifting to larger-sized aircraft—has already been exhausted. The airplane fleets at the Geneva and Zurich airports have reached maximum feasible size. The increased passenger load per flight is especially notable at Zurich Airport: During

EXHIBIT 7 | During Peak Hours at Zurich Airport, the Demand for Takeoff and Landing Slots Exceeds Supply



the heyday of Swissair in 2000, the number of flight movements totaled 326,000, and the total number of passengers was 22.7 million. The corresponding numbers in 2017 were 270,000 flight movements and 29.4 million passengers. So while an “average” flight movement in the year 2000 served 70 passengers, the “average” flight movement last year served 109 passengers—a sizable increase of 56%.

As an aside, while Switzerland’s third national airport—EuroAirport—still has idle capacity and can handle additional passenger and freight traffic and demand, it is too small an airport to achieve the growth necessary to operate under a hub strategy.

Aggressive Competition from Expanding International Hubs

Competition has become increasingly intense among international hubs in Europe. And Zurich Airport, Switzerland’s only international hub, is losing ground. It has already slipped five rungs in the International Air Transport Association’s rankings of the busiest hubs in

Europe—from #12 in 2009 to #17 in 2016 (the latest year for which these rankings are available).

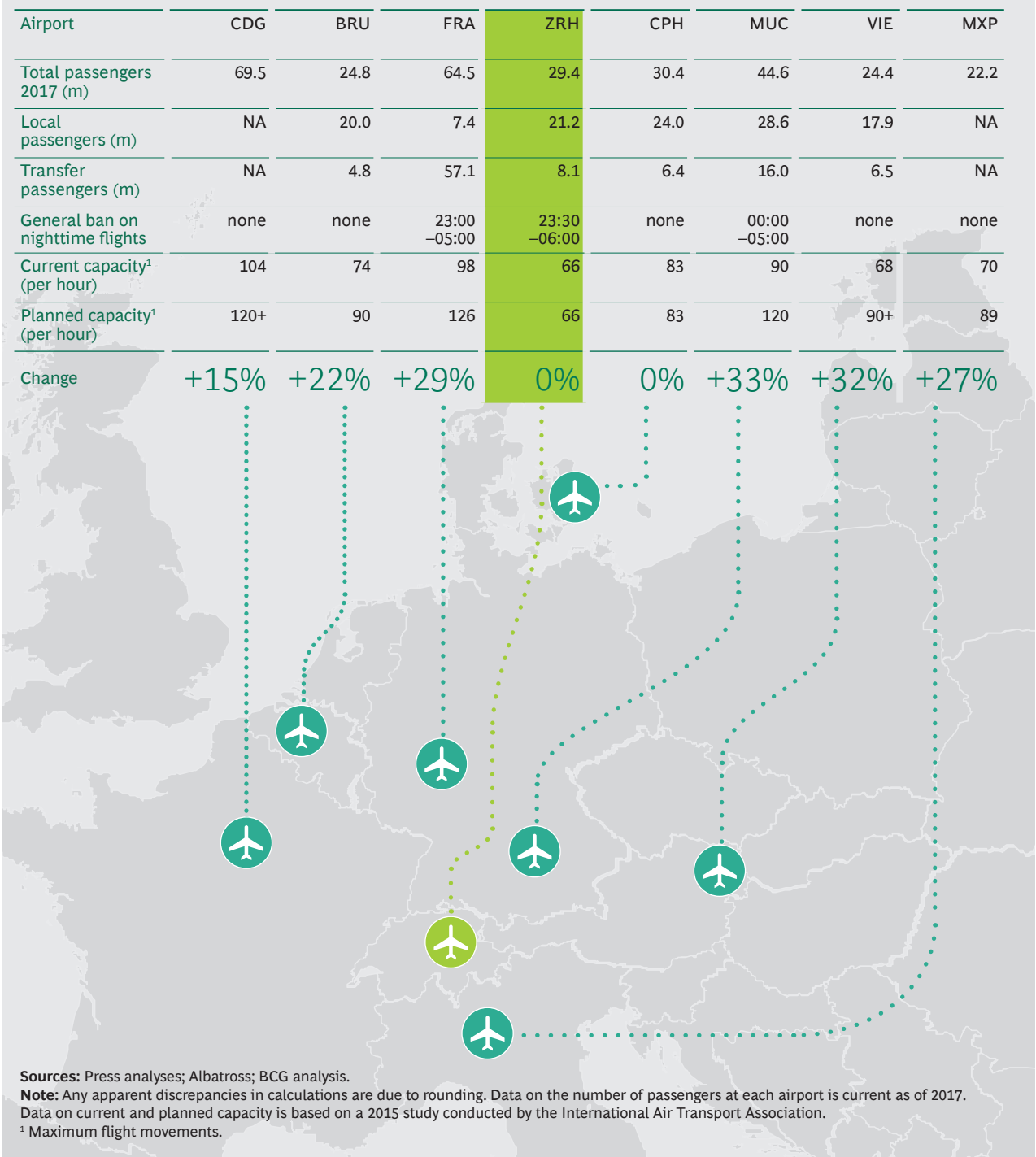
«Swiss aviation is the foundation of a globally competitive Switzerland. The Swiss air transportation system provides the framework and the on-the-ground infrastructure for Switzerland’s international connectedness. More than ever before, we need to ensure that we do not constrain this successful model underlying Swiss prosperity.»

Peter Grünenfelder, Director, Avenir Suisse

In addition, other European hubs, which have higher growth potential (especially the Lufthansa Group hubs), are steadfastly increasing their capacity—further threatening to reduce Zurich Airport’s popularity and importance. Munich Airport is leading the pack, with plans to increase its capacity by 33%, fol-

lowed closely by Vienna International Airport (32%) and Frankfurt Airport (29%). By comparison, Zurich Airport, with roughly 73% of the capacity of Munich Airport (66 movements per hour as compared to 90 movements per hour), has no plans to increase its capacity at all. (See Exhibit 8.)

EXHIBIT 8 | As European Hubs Increase Their Capacity, the Pressure on Zurich Airport Builds



The significance of this trend for Zurich Airport could be devastating. For all the obvious reasons, airlines are expected to shift their transit traffic to airports with greater capacity—and thereby secure increased convenience and improved service for their passengers. This puts Zurich Airport—which is already in direct competition with the Frankfurt Airport, the Munich Airport, and the Vienna International Airport—under additional pressure to defend, as well as at risk of losing, its position as a hub for the Lufthansa Group. And Zurich Airport’s hub status is critical to serving transit passengers flown by—as well as securing future funding from—SWISS.

To counteract this downward spiral, Zurich Airport needs to take steps now to increase its capacity—and Geneva Airport and Euro-Airport need to follow suit. (The expansion of Lyon Saint-Exupéry Airport, for example, is likely to negatively impact demand at Geneva Airport.) There is no doubt that Zurich Airport is facing multiple challenges on many

levels—some more difficult to resolve than others. (See the sidebar “For Zurich Airport, the Controversy Over Noise Has Increased in Volume.”) But if it does not take action soon in confronting the issue of capacity, Zurich Airport will put its hub status at risk, and it is likely that the situation will go downhill from there.

New Forms of Transportation

Innovation in the transportation sector will undoubtedly change how people (and freight) move from one place to another. While the timing for such innovation is uncertain, there is no doubt that major changes are on their way. It is important for Switzerland to proactively assess how to integrate these changes into its plans for a national aviation strategy.

The introduction of narrow-body aircraft capable of flying intercontinental distances, for example, is expected to drive traffic from hub airports to smaller, regional airports—thereby freeing capacity at fully utilized hubs. For

FOR ZURICH AIRPORT, THE CONTROVERSY OVER NOISE HAS INCREASED IN VOLUME

Noise is at the root of one of the principal challenges confronting Zurich Airport. Roughly 64,000 people who live in the geographic area around the airport are affected by aviation noise, and complaints abound. While new technology has enabled the reduction of noise levels, it has not significantly lowered the volume of distress. Noise remains a major issue of contention.

As a result, Zurich Airport is virtually under attack from environmentalists and real estate developers concerned with noise pollution, while Swiss municipalities actively engage in “not-in-my-backyard” arguments. Such social pressure against noise, of course, is not unique to Zurich Airport. Geneva Airport, which is close to the city of Geneva, also faces similar pressures. But the situation is particularly challenging for Zurich. The controversy has even extended beyond Swiss borders, with

Germany limiting the number of flyover flights from Zurich Airport.

In the political sphere, conflict over noise circles endlessly in an infinite loop. Discussion has become woven into a highly complex web composed of the singular interests of a multitude of parties—the federal government, cantons, municipalities, the airport, and civil interest groups—combined with immensely complex federal governance concerning environmental protection, spatial planning, transportation, and foreign policy.

Further complicating the picture is that there is no one authority in place that can resolve the conflicts. And the fundamental divergence of interests has put problem solving on this issue out of reach.

Zurich Airport, this could help reduce the pressure produced by its capacity constraints.

Innovations in ground transportation—such as improved railroad systems or the introduction of the ultra-high-speed passenger or freight Hyperloop—could reduce demand for short-distance air travel (for example, from Switzerland to neighboring countries).

The potential launch of individual air travel by drone poses another trend. Packages are already being delivered by drone and it is expected that, in the not-too-distant future, self-flying drones will also be capable of transporting passengers over short distances.

But hoping that these three developments will resolve capacity issues is a very big and risky bet.

A Dim Outlook Unless Switzerland Takes Action Now

If Switzerland does not start to address the growing capacity shortage at its national airports, the projected future of Swiss aviation and the attractiveness of Switzerland as a destination location will be headed into a tailspin. The capacity shortage at Swiss national airports will lead to delays and reduced efficiency—and ultimately halt development of service to additional intercontinental destinations. Without plans for the development of additional capacity, the demand fueled by GDP and population growth cannot be met. And the resulting absence of new investments—in light of limited growth potential and diminished capacity—will lead to deterioration of infrastructure. The prognosis would not be good.

Without proactive investment in the Swiss national airports, we envision two scenarios—neither of which is desirable: a continuance of the status quo or the loss of Zurich Airport's hub status.

Continuance of the Status Quo. If capacity at the national airports is only increased through incremental improvements, we foresee limited development of new service to intercontinental destinations, which would decrease the country's connectivity to growth

markets. In addition, we anticipate that business aviation will be crowded out by more profitable line traffic (that is, regular scheduled service). Further, by 2030, the national airports will have maxed out their capacity to fulfill demand. Adding some numbers to our projection, we expect that by 2030, Switzerland's national airports would be unable to serve 25 million passengers (or 24% of expected demand), who would go elsewhere. Likewise, by 2030, the Swiss national airports would be unable to deliver 149 kilotons of freight (or 19% of expected demand), which would be sent by some other means. Combined, all of the above would have a significant negative impact on Switzerland as a premier destination and on the Swiss economy overall.

The Loss of Zurich Airport's Hub Status.

We see three potential triggers that could cause Zurich Airport to lose its hub status: congestion-caused saturation, with a significant drop in transfer passengers; reduced operating hours; or a strategic decision by the Lufthansa Group to strip the airport of its current standing. While flights between key P2P connections would likely remain stable—with local demand sufficient to maintain profitability on the domestic front—virtually everything else would turn in a negative direction. The loss in profitability from the reduction in the number of transfer passengers alone would likely result in the need to eliminate roughly 50% of intercontinental destinations. Swiss connectivity to the rest of the world would be substantially reduced—weakening its economic ties to intercontinental markets and diminishing Switzerland's attractiveness as a destination location. Over a ten-year timespan, Zurich Airport's value to the Swiss economy could be reduced by as much as 20%. All told, by 2030, Switzerland could anticipate a loss of more than CHF 4.3 billion (at current market value) should Zurich Airport lose its hub status.

These converging trends—and the above scenarios—do not portend well for Switzerland's future. But there is still time—if action is taken now—to ensure that these are not the directions in which the Swiss aviation ecosystem (and Switzerland itself) is headed.

THE FUTURE OF SWISS AVIATION BEGINS TODAY

It will not be long before the Zurich and Geneva airports cannot meet the growing demand for air transport. We believe that this will happen within the next ten years. We have already detailed the grim results. In a nutshell, the consequences for Switzerland's economy will be significant, as will the more-difficult-to-measure, but nonetheless severe, ramifications that stem from diminished connectivity and loss of reputation as a prime destination.

To date, the Swiss government has not been sufficiently attentive to this critical problem—in large part because governance of the national airports is dispersed across various entities at different levels of government. The formulation of a long-term solution remains elusive, as political bickering and cries of “not in my backyard” bring efforts to deal with the airports’ capacity shortage to a standstill.

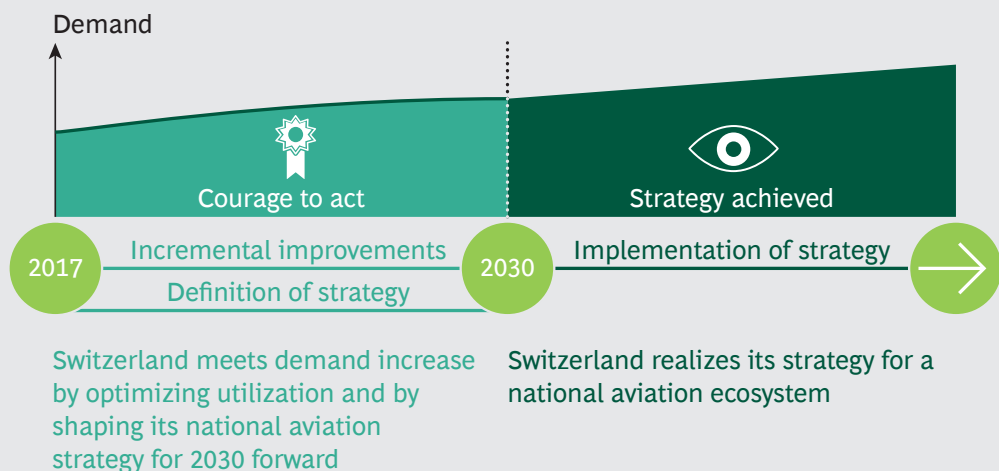
This deadlock over the development of the national airports can only be overcome through resolute commitment, by all entities involved, to the future of the Swiss aviation sector—specifically by making the formulation of a long-term strategy for Switzerland's aviation ecosystem a national priority. Other countries have recognized the importance of expanding airport capacity—at both the national and international levels—much earlier. It is time for Switzerland to do so now.

We envision a two-step approach. In the short term, priority should be given to efforts that optimize utilization of the national airports’ current capacity and that streamline their daily operations. At the same time, a concrete plan needs to be defined for 2030 and beyond. In the long term, the challenge remains resolving political deadlock and framing a concrete long-term strategy for the Swiss aviation ecosystem. That strategy must be inspired by a strong commitment to a globally connected and open Switzerland, and its foundation must rest on the success of competitive Swiss national airports. (See Exhibit 9.)

«Switzerland needs to answer a key question: What type of country do we want to support with our hub? For example, the Netherlands, which aspires to remain a leading global economy and society, put a clear strategy in place to boost its hub.»

Thomas Klühr, CEO, SWISS

EXHIBIT 9 | To Meet the Burgeoning Demand on Its National Airports, Switzerland Needs to Act Now to Formulate a National Aviation Strategy



Source: BCG analysis.

Short-Term Improvements to Sustain Functionality

In the short term, operating improvements can sustain the national airports’ functionality. Incremental capacity increases can be achieved by optimizing utilization and streamlining activities. Revisiting standard operating procedures in the following ways could make a significant short-term difference in relieving the capacity shortage. Most of the ideas below are being discussed, but realization of change is very slow and most often accompanied by doubts regarding implementation

- **Infrastructure Upgrades.** Investments should be made in upgrading airport infrastructure at all three national airports. Plans are already underway for a new East Wing boarding area for long-haul flights at the Geneva Airport (to be completed by 2020), and additional infrastructure improvements should be assessed and pursued. It is important that investments be dedicated to improving the runways: selected runways can be extended (for example, runways number 28 and 32 at Zurich Airport) and new exit taxiways can be created.
- **Larger-Capacity Aircraft.** Continued investments into larger-capacity aircraft—

such as the two new Boeing 777-300ER jet airliners that SWISS brought into service at Zurich Airport—would enable transporting more passengers per flight movement and thereby help to meet increases in demand.

- **Increased Use of Regional (and Other) Airports with Capacity to Spare.** Consideration should be given to relocating most general aviation from national airports to those regional (and other) airports with underutilized capacity—especially when it comes to relocating business aviation from Zurich Airport to Dübendorf.
- **Select Rerouting of Long-Haul Flights.** With the adoption of long-range narrow-body aircraft—for example, the Airbus 321neoLR and the Boeing 737 MAX—the feasibility of select rerouting of some long-haul flights traditionally served by Zurich Airport (for example, to Euro-Airport) should be weighed, such as flights to and from North America. It would be essential to be very selective in such rerouting so that it in no way diminishes Zurich Airport’s hub status.
- **Increased Operating Hours.** The practicality of increasing operating hours (for

example, takeoffs and landings during the night) should be evaluated again. Further cuts to the operating hours at Zurich Airport would seriously impair Zurich's hub function and thus have to be avoided. Ideally, selective increases in operating hours in the early mornings or late evenings—in order to allow for more intercontinental connections—would help strengthen the airports' ability to maintain and build its hub status.

- **Improved Air Traffic Control.** A significant step toward reducing flight delays—and thereby relieving the capacity shortage to some extent—would be to reform and consolidate the highly fragmented air traffic control of European airspace. While such reform is not entirely in the hands of the Swiss government, it can nonetheless push for more efficient and effective solutions at the European level.
- **Improved Utilization of Air Space.** Optimize air space utilization through changes in operations, such as takeoffs heading straight south or larger left-hand turns from runway 16 at Zurich Airport.

Of course, it is essential that there be clear delineation of responsibility for exploring each of the options just outlined. The federal government, with its legal authority over aviation policy, should steer capacity-building efforts at the Swiss national airports. It should also set a target for the timely drafting and completion of the upcoming Civil Aviation Infrastructure Plan (SIL III), which will go beyond SIL II. In addition, it should include its recommendations for action in the Swiss Federal Council's Report on Swiss Aviation Policy ("LUPO"). The cantons and the three national airports should share responsibility for planning the realization of—and for implementing—the agreed-upon short-term actions aimed at increasing airport capacity.

In Pursuit of a Long-Term Strategy to Steer Swiss Aviation

In addition to the short-term remedies outlined above, what is needed is a long-term strategy that reconfirms the importance of aviation to Switzerland's economy and loca-

tion attractiveness and that sets a clear target for the Swiss aviation ecosystem.

Current efforts to guide the future of Swiss aviation have been, and will continue to be, mired in circular political dialogue and obstructed by inaction at the federal level. Under these circumstances, it is highly unlikely that a feasible long-term solution to insufficient capacity at the national airports will be forthcoming anytime soon.






Other countries, however, have recognized the importance of aviation to their future growth and have successfully incorporated aviation strategy into their long-term planning. In an effort to explore how these national aviation strategies might serve as best practice examples and learning opportunities for Switzerland, we studied the publicized aviation strategies of other countries—including Australia, Denmark, the Netherlands, and the UK. (See Exhibit 10.)

«We should not further restrict the Swiss airports but rather seek to achieve, over the next 10 to 15 years, short-term improvements, such as a more flexible takeoff and landing system. And in parallel, we need to define strategies for securing the necessary long-term capacities.»

Thomas Hurter, National Councilor, Swiss People's Party

We found that the Dutch aviation strategy, in particular, contains many best practices that are applicable and transferable to Switzerland. The Netherlands, of course, is similar to Switzerland in terms of geographic location, size, and GDP. It also has a comparably struc-

EXHIBIT 10 | A Comparative Analysis of National Aviation Strategies

	 Switzerland	 Australia	 Denmark	 The Netherlands	 United Kingdom
Year of publication	2016	2009	2017	2009	2017
Publishing authority	Federal Council of Switzerland	Department of Infrastructure & Transport	Ministry of Transport	Ministries of Transport/Spatial Planning	Department for Transport
Time horizon	NA	2030	NA	2020 (medium term) 2040 (long term)	2050+
Main goals	<ul style="list-style-type: none">• Establish a framework for sustaining high connectivity and safety• Formulate a sustainable long-term strategy to secure the competitiveness of the aviation sector• Facilitate problem solving regarding capacity constraints at national airports• Promote economic value creation, while satisfying the mobility needs of society and the economy	<ul style="list-style-type: none">• Establish plans and incentives for long-term investment in the aviation industry• Facilitate a coordinated approach to airport planning and investment• Focus on the needs of travelers and others visiting the airport• Better manage the impact of aviation activity on communities and the environment• Commit to aviation as a key driver of economic prosperity	<ul style="list-style-type: none">• Focus on increasing national and international connectivity so as to foster economic growth and employment• Plan for an increase in passengers and capacity at the main hub in Copenhagen• Strengthen the national route network in order to increase cohesion between regions• Facilitate airport expansions through efficient administrative processes at the relevant authorities	<ul style="list-style-type: none">• Create an innovative and competitive economy and sustainable environment, supported by optimized international accessibility by air• Optimize aviation network quality by leveraging traffic through the main hub in Amsterdam• Secure alignment with the supranational aviation policy of the EU• Facilitate capacity increases in airspace and airports	<ul style="list-style-type: none">• Promote a safe, secure, and sustainable aviation sector• Focus on the needs of consumers and on both national and global connectivity• Encourage competitive markets• Develop innovation, technology, and skills• View government as an enabler for market forces• Establish an ambitious new relationship with the EU after Brexit so as to drive connectivity and reduce barriers to trade and exports

Sources: Federal Office of Civil Aviation, *Aviation Policy Report*, 2016; Australian government, *National Aviation Policy White Paper*, 2009; Ministry of Transport, Building, and Housing, *Aviation Strategy for Denmark*, 2017; Dutch government, *White Paper on Dutch Aviation*, 2009; HM Government, *Beyond the Horizon: The Future of UK Aviation*, 2017.
NA = not available.

tured aviation sector—that is, a single hub (Amsterdam), with international importance, and several other national airports, supported by a number of regional airports. (For more about the Dutch aviation strategy see the sidebar “The *White Paper on Dutch Aviation*—A Model for a National Aviation Strategy.”)

We aligned insights gleaned from international best practices with those areas in the Swiss aviation sector that require attention and remedy, and we arrived at the following recommendations for how Switzerland can

«Ultimately, a long-term strategy needs to be sustainable: it has to balance economic, ecological, and social demands.»

Raymond Cron, Vice-President of the Board of Directors, EuroAirport

THE WHITE PAPER ON DUTCH AVIATION—A MODEL FOR A NATIONAL AVIATION STRATEGY

The *White Paper on Dutch Aviation*, which was published in 2009, contains a national strategy for the Dutch aviation system through 2040. It envisioned an “innovative, competitive, and enterprising economy and a sustainable living environment” supported by an optimized aviation network that maximizes international accessibility.

Among the many topics discussed in the white paper are the quality of the aviation network, safety and security regulations, capacity development, sustainability, airspace usage, management of competitive dynamics and externalities (such as pollution and noise), and alignment of national and supranational policies.

The white paper also clearly outlines the government’s role in ensuring that the national aviation strategy is executed successfully.

- The government makes a public commitment to fostering and supporting Dutch aviation, as well as to recognizing its economic importance and its contribution to the Netherlands.
- The government commits to play an active role in the airports’ realization of strategic objectives, while safeguarding the public interest (by setting preconditions and boundaries).
- The government defines the distinct roles played by the national and regional airports—ensuring alignment

with their location’s preferred economic and spatial development.

- The government prioritizes national air traffic—giving precedence, for example, to takeoffs and landings at Schiphol Airport (the Netherlands’ main international airport) over takeoffs and landings at regional airports.
- The government initiates an assessment of the feasibility of goal-oriented governance of the national aviation system and incorporates more effective performance incentives into existing legislation.

In addition, the government has put in place proven support mechanisms and instruments for resolving conflicts related to the development of—and policy making for—the aviation sector. One example is the “Alders Tables.” This formal discussion forum, closely linked to the national government, brings together all important stakeholders (including representatives of local residents) for a compromise-focused negotiation. The goal of the Alders Tables is reaching agreements that will be accepted as national policy. Key achievements of such negotiations include a shared vision for the development of Schiphol Airport through 2020 and the design and implementation of a cap on takeoffs and landings at Schiphol Airport until 2020, combined with the transfer of flights to other national and regional airports.

envision and start to realize a new aviation strategy. The Swiss aviation strategy needs to be long term and national in scope. It should not focus solely on aviation but be a key enabler for a perpetually successful and competitive Switzerland. As such, it should be aligned with broader efforts and other strategies designed to improve Switzerland’s competitive advantage. The strategy should advocate sustainable development in line with economic,

ecological, and social considerations—acknowledging that any aviation development will take place in a more and more densely populated country with an increasing standard of living and a long tradition of ecological leadership.

A good strategy, of course, can only result from an open and taboo-free assessment that details viable options for airside infrastruc-

ture—such as, among other things, consideration of building parallel runways at the Zurich Airport or even constructing a new international airport. (For a more detailed checklist of items that should be contained in Switzerland’s strategy, see the sidebar “Essential Aspects of a Swiss National Aviation Strategy.”)

A Fresh Political Approach to a New Aviation Strategy

Establishing a governance mechanism capable of crafting a vision and strategy for Switzerland’s future aviation ecosystem requires a fresh political approach. International best practices exemplify the benefits of a centralized government’s taking responsibility

ESSENTIAL ASPECTS OF A SWISS NATIONAL AVIATION STRATEGY

We consider the following aspects of a Swiss national aviation strategy to be essential to successfully setting clear targets for Switzerland’s aviation ecosystem. Just below is our checklist of what should be contained in that strategy.

- **Context.** The national aviation strategy should be part of a broader aspiration to strengthen the long-term competitiveness of Switzerland. Hence, aviation should be understood to be a key enabler for safeguarding and strengthening the interconnectedness of Switzerland to the world.
- **Time Horizon.** This should be a long-term strategy—reaching well beyond 2030 and potentially until 2050 or beyond.
- **Scope.** This strategy should be national in scope, covering all three of Switzerland’s national airports and its eleven regional airports.
- **Objective.** The objective should be to create a multi-airport strategy that defines the interplay of Swiss national and regional airports so as to optimize international connectivity, fuel competition, and seamlessly minimize negative side effects (such as pollution and noise).
- **Dimensions.** The strategy should be holistic, so as to ensure that it encompasses the quality of the aviation network, the alignment of national with supranational policies, safety and

security regulations, capacity increases, and sustainability.

- **Goals.** It is important that the strategy include concretely defined goals for all stakeholders—such as the airlines, airports, passengers, and local communities—both during and after implementation. For example, a goal might be for stakeholders to be able to say that the Swiss aviation ecosystem is one of the five safest in the world. The strategy should also set specific capacity goals (such as the number of flight movements) and network quality goals.
- **Governance.** The strategy should establish goal-oriented governance of the aviation ecosystem—accompanied by performance appraisals and fostered through incentives ratified in national legislation. The government should identify effective support mechanisms (for example, forums to resolve disputes) in order to prevent deadlocks and to guide conflict resolution in aviation policymaking.
- **Infrastructure.** It is especially important that the strategy address how airside infrastructure should be developed in order to meet future increases in demand. Therefore, the strategy should be based on open and taboo-free discussions of different options—including installing a parallel runway at the Zurich Airport, building a completely new airport, and connecting the Basel and Zurich airports through high-speed train service.

for any significant national infrastructure, such as aviation. For Switzerland, this could mean leveraging what has effectively become cantonal responsibility for aviation policy—that is, initiating a bottom-up political process with the goal of creating a centralized strategy with a national focus.

«A national Swiss aviation strategy needs to ensure that the long-term capacity required for international connections will be met. A forward-looking political process should assess and determine the best option for pursuing this goal, while taking other important interests, such as ecological and social factors, into account.»

Christian Hegner, Director General, Federal Office of Civil Aviation

The process could be launched by various stakeholders committed to working together. Given the importance of the topic and the high political sensitivity, the most credible approach would require a multi-stakeholder perspective. One option could be to convene a broad task force of aviation experts, airport and airline representatives, representatives of different sectors of the economy, and members of the cantonal and Swiss federal government. The challenge would be to allow for taboo-free development of a strategy that clearly makes the case for change and then details different development options (especially when it comes to airside infrastructure extensions that would build future capacity). Once developed, it is up to the federal government to employ its legal authority over aviation policy in order to ensure that the strategy becomes binding and is implemented.

«To develop a long-term strategy for the Swiss aviation sector, we will need a fresh political approach—one that involves different levels of government as well as the airports and aviation experts—so as to develop objective, viable solutions and overcome the existing political deadlock.»

Andreas Schmid, Chairman of the Board of Directors, Zurich Airport

IN SUMMARY, Switzerland has turned a blind eye to the future of its air transportation system. And with no plans to satisfy capacity requirements after 2030, and a 20-year planning cycle, the country is badly behind schedule in dealing with problems that loom just beyond the horizon.

Switzerland must take steps now to meet the challenges facing its aviation ecosystem. The risks of not doing so are clear—as are the benefits of curative action. Immediate remedies are needed to deal with the capacity shortfall facing the national airports. It is equally essential to begin to formulate and implement a national aviation strategy that strengthens the country's global connectivity, preserves its international flavor, and sustains Switzerland as a destination location. The future of Swiss aviation begins today.

NOTE TO THE READER

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