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Publication status: This preprint has been published elsewhere.
DOI of the published preprint: https://doi.org/10.36517/rm2026.e25018

# Regulation, networks, and competition in the French air transport industry in the face of the effects of the TGV and low-cost airlines companies

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https://doi.org/10.1590/SciELOPreprints.17242

Submitted on: 2026-07-31
Posted on: 2026-08-17 (version 1)
(YYYY-MM-DD)

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ARTICLE

# REGULATION, NETWORKS, AND COMPETITION IN THE FRENCH AIR TRANSPORT INDUSTRY IN THE FACE OF THE EFFECTS OF THE TGV AND LOW COST AIRLINES COMPANIES

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**Article history:**
Received 16 June, 2026
Accepted 22 July, 2026
Published 10 August, 2026

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## Abstract

French air transport occupies a strategic position in European territorial traffic, but has been undergoing transformations marked by centralization around airport hubs, competition from the TGV (High-Speed Train) and the expansion of low-cost airlines companies. Thus, this article analyzes the structure of passenger flows and the competitive dynamics of the sector. This quantitative study uses official data to understand how the sector has reorganized itself, particularly between 2019 and 2025, a period marked by the health crisis, the subsequent post-pandemic recovery, and regulatory changes. The study highlights two fronts of competition: in the domestic market, the airline industry faces competition from the TGV, whose importance has increased following the Climate and Resilience Act, which restricts flights shorter than two and a half hours when a rail alternative exists, intensifying competition since 2023 and expanding rail service in 2024. In the European context, low-cost airlines companies have expanded their presence and reduced the market share of traditional French airlines. This trend, combined with market liberalization and sustainability policies, is contributing to a reshaping of the market and increasing pressure on traditional airlines, while the sector is still striving to fully recover to pre-pandemic levels.

**Keywords:** Air Transport, France; Competition; Centralization; Airports.

## Resumo / Résumé

**REGULAÇÃO, REDES E COMPETIÇÃO NO TRANSPORTE AÉREO FRANCÊS FRENTE AOS EFEITOS DO TGV E DAS COMPANHIAS AÉREAS LOW-COST**

O transporte aéreo francês ocupa posição estratégica na circulação territorial europeia, mas vem passando por transformações marcadas pela centralização nos hubs aeroportuários, pela concorrência do TGV (Trem de Alta Velocidade) e pela expansão das companhias low-cost. Desse modo, o artigo analisa a estrutura dos fluxos de passageiros e as dinâmicas competitivas do setor. A pesquisa, de abordagem quantitativa, utiliza dados oficiais para compreender como o mercado tem se reorganizado, especialmente entre 2019 e 2025, período marcado pela crise sanitária, posteriormente a recuperação pós-pandemia e por mudanças regulatórias. O estudo evidencia duas frentes de concorrência: no mercado doméstico, o setor aéreo enfrenta o TGV, cuja relevância aumentou após Lei Clima e Resiliência que restringe voos inferiores a duas horas e meia quando há alternativa ferroviária, intensificando a competição desde 2023 e ampliando a oferta ferroviária em 2024. No cenário europeu, as low-cost ampliaram sua presença e reduziram a participação das companhias francesas tradicionais. Esse movimento, associado à liberalização e às políticas de sustentabilidade, contribui para um redesenho do mercado e aumenta a pressão sobre as companhias tradicionais, enquanto o setor ainda busca recuperar totalmente os níveis anteriores à pandemia.

**Palavras-chave:** Transporte Aéreo, França; Concorrência; Centralização; Aeroportos.

**REGLEMENTATION, RESEAUX ET CONCURRENCE DANS LE TRANSPORT AERIEN FRANÇAIS FACE AUX EFFETS DU TGV ET DES COMPAGNIES AERIENNES LOW COST**

Le transport aérien français occupe une position stratégique dans les flux de circulation au sein de l'Europe, mais il connaît actuellement des transformations marquées par la centralisation autour des hubs aéroportuaires, la concurrence du TGV (Train à Grande Vitesse) et l'expansion des compagnies low-cost. Ainsi, cet article analyse la structure des flux de passagers et les dynamiques concurrentielles du secteur. Cette étude, qui adopte une approche quantitative, s'appuie sur des données officielles pour comprendre comment le marché s'est réorganisé, en particulier entre 2019 et 2025, période marquée par la crise sanitaire, puis par la reprise post-pandémique et par des changements réglementaires. L'étude met en évidence deux fronts de concurrence : sur le marché intérieur, le secteur aérien est confronté au TGV, dont l'importance s'est accrue après l'adoption de la loi « Climat et résilience » qui restreint les vols de moins de deux heures et demie lorsqu'il existe une alternative ferroviaire, ce qui a intensifié la concurrence depuis 2023 et élargi l'offre ferroviaire en 2024. Au niveau européen, les compagnies low-cost ont renforcé leur présence et réduit la part de marché des compagnies françaises traditionnelles. Cette évolution, associée à la libéralisation et aux politiques de développement durable, contribue à redessiner le marché et accroît la pression sur les compagnies traditionnelles, alors que le secteur cherche encore à retrouver pleinement ses niveaux d'avant la pandémie.

**Mots-clés:** Transport Aerien, France ; Concurrence ; Centralisation ; Aeroports.

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# INTRODUCTION

Passenger air transport is an essential component of modern domestic mobility, playing a strategic role in territorial integration, economic development, and international connectivity. France, a country with one of the most extensive and diversified airport networks in Europe, has an aviation sector that reflects the dynamism of the national economy and the structural changes that have shaped global air transport in recent decades.

Since the early 2000s, the European aviation market has undergone a process of liberalization, which has led to the expansion and strengthening of the market power of low-cost carriers. This process has had widespread effects across France. In light of this, a gradual intensification of competition among airports has been observed, a phenomenon that has reshaped the spatial distribution of air traffic. More recently, the sector has been facing increased competition from High-Speed Rail (TGV), which has intensified since 2023 following the ban on short-haul domestic flights, or those lasting up to two and a half hours, as an environmental sustainability measure.

The process in question has redefined the logic of air transport in France, both in the domestic and international markets. This redefinition can be attributed, albeit relatively, to increased competition and the phenomenon of competitive market strategies, as explained by Porter (1980). Competitive strategies are chosen with the aim of achieving a favorable market position, which fosters a fundamental arena for competition.

Another relevant point in this analysis concerns France's territorial airport network, which exhibits significant centralization in the Paris region, notably at Paris-Charles de Gaulle Airport and Paris-Orly Airport. This concentration contrasts with the growing importance of regional airports, such as those in Nice, Lyon, Marseille, and Toulouse, revealing both the progress and the challenges regarding territorial cohesion and sustainability in French air transport. The excessive concentration of operations at Parisian airports impacts the international reach of other regional hubs[1], resulting in an imbalance in the French air transport network.

On the other hand, it is undeniable that France's air transport sector occupies a central position both in the European and global contexts, accounting for a significant share of passenger traffic on the continent and worldwide, a fact further underscored by the global alliances it has established over time. Strale (2005) points out that global airline alliances represent an integrated and competitive network, resulting from a defensive strategy adopted by major airlines in a context of increasing competition, and serve more as a tool for capturing new markets than as a means of international expansion.

In 2023, more than 200 million passengers passed through French airports, according to data from the Direction Générale de l'Aviation Civile (DGAC). In 2024, air passenger traffic grew by 3.6% compared to the previous year. However, this figure still represents a 4.0% decrease compared to traffic in 2019. This indicates that France's aviation sector has not yet returned to the operational levels seen before the global health crisis caused by the COVID-19 pandemic.

In light of the above, this article aims to examine passenger air transport in France, with an emphasis on the structure of air traffic flows and the centralization of traffic, highlighting competition with the TGV in the domestic market and with low-cost carriers in the European international market. Thus, the goal is to understand how the French airline industry is currently organized.

Methodologically, the study is based on official quantitative data provided by the DGAC, the Ministère des Transports, the "data.gouv.fr" database, and Eurostat, allowing, where possible, for a quantitative analysis of the sector's dynamics over the period under review, given the unavailability of disaggregated information.

In theory, France's air transport system is characterized by a dense, hierarchical network, with a particular focus on the Parisian hubs, which connect metropolitan France, the overseas departments, and international destinations. However, the sector faces significant challenges, such as growing competition from low-cost carriers, the TGV at various levels, the post-COVID-19 pandemic recovery, and changes in European sustainable transportation policies. Thus, this article focuses on discussing certain key aspects that contribute to an understanding of the structural and competitive dynamics of the contemporary French aviation system.

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# CENTRALIZATION AND AIRPORT HYPERTROPHY IN THE FRENCH AIR TRANSPORT NETWORK: SOME OBSERVATIONS

French air transport is known for its dense, hierarchical airport network, characterized by the concentration of passenger traffic at the major Parisian airports. Air traffic flow, evidenced by the presence of major international airports and the high volume of passengers at key airports such as Paris-Charles de Gaulle (CDG) and Orly, is a key factor explaining the situation in question.

In 2025, Paris-Charles de Gaulle Airport handled approximately 72 million passengers. In the same year, Paris-Orly Airport handled 35 million passengers. Together, the two airports handled approximately 107 million passengers. By comparison, all other French airports in the same category, that is, 13 airports with more than 1 million passengers per year, collectively handled 82 million passengers during the same period, equivalent to -23% of the passenger traffic at Charles de Gaulle and Orly airports, as shown in Table 01.

| Aéroports | 2025 | (%) 2025/2019 |
|---|---|---|
| Aéroports de Paris | 106.958.316 | 1,00% |
| Major Regional Airports | 67.575.805 | -3,50% |
| Regional Airports | 16.352.574 | 9,80% |
| Local Airports | 6.515.032 | -17,60% |

Table 01 - Passenger traffic by airport category in France in 2025 and a comparison with 2019, according to the Union of French Airports (UAF)*. Source: (UAF, 2024).

*Note: The UAF's classification for its studies is based on the number of passengers per year at each airport. 1) "Local airports" are those with annual traffic between 100,000 and 1 million passengers. 2) "Regional airports" are those with annual traffic between 1 and 5 million passengers. 3) "Major regional airports" are those with annual traffic exceeding 5 million passengers, including Nice Côte d'Azur, Marseille Provence, Lyon-Saint Exupéry, Basel-Mulhouse, Toulouse-Blagnac, Bordeaux, Nantes Atlantique, and Paris-Beauvais.

Complementing the previous chart, this map highlights the hierarchy of French airports, providing a spatial illustration of the distribution of airports classified as "major regional airports," "regional airports," and "local airports." In this way, the map enhances the territorial understanding of the French air network and prepares the ground for the analysis by also illustrating the French rail network.

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Map 01 - French Airport Hierarchy and TGV Rail Network. Developed by: Théry, 2026.

According to the Decree of November 23, 1962, regarding the classification of aerodromes, it is emphasized that this classification is based on their aeronautical use and the conditions under which they are used. Thus, France does not classify airports solely by size or passenger traffic. The focus is on territorial and operational functions: what types of routes the aerodrome serves, under what conditions a given airport must operate, and what type of aircraft is taken into account in its design[2].

Methodologically, this analysis covers the period from 2019 to 2024, with the aim of demonstrating levels of industry concentration, as well as the path to recovery following the global health crisis that occurred during part of that period. However, since the approach presented here covers only a single period for analysis, a more comprehensive approach is needed to illustrate the trajectory of the French aviation sector, using sources and methodologies that can quantify and qualify this effect.

Based on this premise, Figure 1 provides a more comprehensive view of the sector's evolution. It can be observed that the data points for 2020 and 2021 show a significant decline in both commercial air traffic and French air traffic, as a result of the health restrictions imposed due to COVID-19. In contrast, the figures for 2022 through 2025 reveal a resumption of activity as restrictions were gradually eased; in 2024, the number of passengers and flight movements still does not indicate a full recovery to the levels observed in 2019, before the pandemic.

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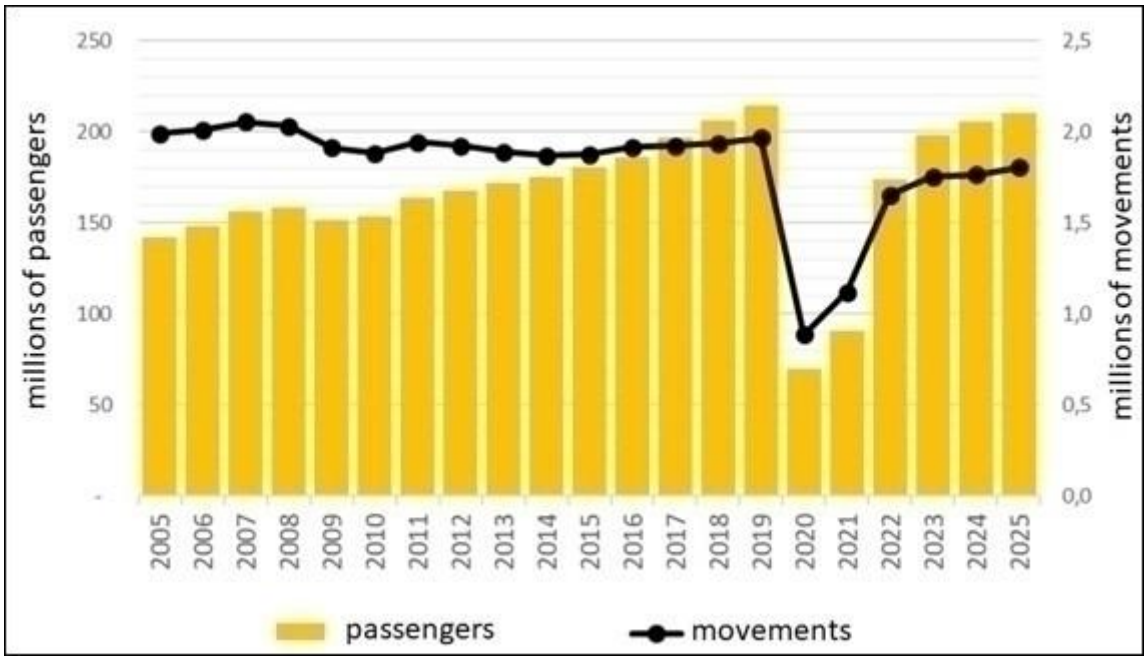



Figure 1 - Trends in French Commercial Air Traffic (2004–2025). Source: Union des Aeroports Françaises (UAF, 2025). Adapted by the authors.

According to UAF data, in 2025, French airports recorded an increase in traffic compared to 2020, but it remains below pre-crisis levels, standing at 1.8% below the 2019 figure. The data also show that in 2025, French airports handled approximately 210.5 million commercial passengers. However, the number of commercial flight movements (takeoffs and landings) in 2025 was approximately 1.8 million, representing a decrease of about 8.3% compared to 2019, but an increase of 2.2% compared to 2024 (UAF, 2025).

In absolute terms, a full recovery to the number of passengers carried prior to the coronavirus (SARS-CoV-2) pandemic - which began impacting the industry in 2020, has not yet been observed.

Passenger traffic in 2025 remained slightly lower than that recorded in 2019. Furthermore, as reported by the UAF (2024), although 2024 was marked by the Olympic Games, it was characterized by a diversion effect away from the French capital, meaning there was less traffic to Paris.

In general, some European countries experienced greater growth than France in the post-pandemic period, such as Cyprus (+24.1%), Poland (+22.4%), and Greece (+21.4%) (Eurostat, 2025). Rising operating costs, such as landing fees, security charges, and passenger fees, among others, partly explain the French aviation sector's lag. These measures encourage low-cost airlines to avoid French airports, especially regional and smaller airports (UAF, 2024).

When considering market share—that is, the market share held by domestic and foreign airlines—it is evident that airlines exclusively operating under the so-called "pavillon français" have been losing market power in recent years, both within France and in the international market for flights originating in and/or destined for France.

According to the DGAC (2024), the statistical bulletin on French commercial air traffic confirms the trend of declining market share among French airlines. This decline is primarily associated with short- and medium-haul flights, a segment in which competition from low-cost carriers is particularly intense.

Competition in the international market is directly impacted by the territorial size of European countries. As a result, low-cost carriers select their hub airports, which can intensify competitive and territorial dynamics in markets previously dominated by traditional flag carriers; for example, for traditional carriers such as Air France, the costs involved are prohibitive.

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An example of this is provided by UAF (2025), which presents statistics on the various sectors, highlighting that the low-cost sector carried more than 88 million passengers in 2025 and far exceeded its pre-crisis level, with a 25.1% increase compared to 2019.

A key finding in the literature and studies on French aviation is that traditional airlines, such as Air France, face competition from multiple sources, including high-speed rail (TGV): on short and medium-haul domestic routes, the TGV captures a significant share of passengers, especially on the Paris-Lyon, Paris-Marseille, and Paris-Bordeaux routes, among others (Université de Montpellier, 2024).

On the other hand, the airlines in the French flag carrier group also face competition from the TGV, which has been expanding its operations in France, serving high-demand routes and benefiting from environmental legislation that mandates a reduction in $CO_2$ emissions. Airlines face competition from the TGV on flights lasting less than two and a half hours, when there is a rail option with the same or shorter travel time, as will be discussed below.

Added to this is competition from low-cost airlines: carriers such as Ryanair, EasyJet, Transavia France, and others have significantly expanded their presence in the French market, offering lower fares and putting pressure on the margins of flag carriers on domestic and European routes. There is also competition from Gulf carriers and other long-haul airlines. It is worth noting that, starting in the mid-2010s, airlines such as Emirates, Etihad, Qatar Airways, and others gained prominence on intercontinental routes, capturing a share of the long-haul market that was previously dominated by traditional European carriers.

According to UAF studies (2025, p. 3): “The growth of low-cost flights, characterized by higher load factors (average load factor of 158 passengers), reinforces this trend toward traffic concentration.” However, the decline in the market share of French flag carriers cannot be attributed entirely to the entry and expansion of other airlines, particularly low-cost carriers, nor to pressure from long-haul carriers in other regions, nor even to competition from the TGV.

Given the current competitive landscape in the French air transport sector, it is possible to identify challenges and transformations stemming from the long-standing process of intense centralization in Parisian hubs, which contrasts with the growing importance of regional airports such as Nice, Lyon, Marseille, and Toulouse. This scenario leads to excessive centralization of the network and the consequent devaluation of other regional airports, impacting their international reach.

The dynamics of the French air network remain structured around the hub-and-spoke model, in which the main airports, notably Paris-Charles de Gaulle (intercontinental hub) and Paris-Orly (domestic and European hub), serve as centers for redistributing air traffic flows from regional airports. This model, consolidated by Air France since the 1990s, aims to maximize operational efficiency and international connectivity by centralizing flights into connection windows (wave systems). However, this structure ultimately reinforces the territorial hierarchy and reduces the functional autonomy of regional airports, which remain subordinate to Parisian traffic flows.

Currently, growing demand and economic development linked to other economic sectors in various French regions have posed challenges to the centralized model of flights through Parisian hubs. Increased traffic and the growing importance of regional airports, such as Nice-Côte d’Azur, Lyon-Saint-Exupéry, Marseille-Provence, and Toulouse-Blagnac, have fostered relative decentralization, accompanied by route diversification and greater participation by low-cost carriers.

This process is linked both to the liberalization of the European aviation market and to the expansion of low-cost carriers, which have helped integrate new regions into the continental network (Francis et al., 2006). However, this expansion is not sufficient to counterbalance historical centralization, resulting in an overdevelopment of the French air network and the relative devaluation of regional airports, which still rely heavily on connections to Paris to reach intercontinental markets.

The expansion of low-cost carriers and European policies on sustainable mobility, along with the increased integration of the TGV, may signal a gradual transition toward a more polycentric network model. However, the practical effects of this transformation have so far been limited.

In this context, a territorial reorganization of French air traffic is taking place. France’s air transport system is undergoing a period of transition, marked by a tension between structural

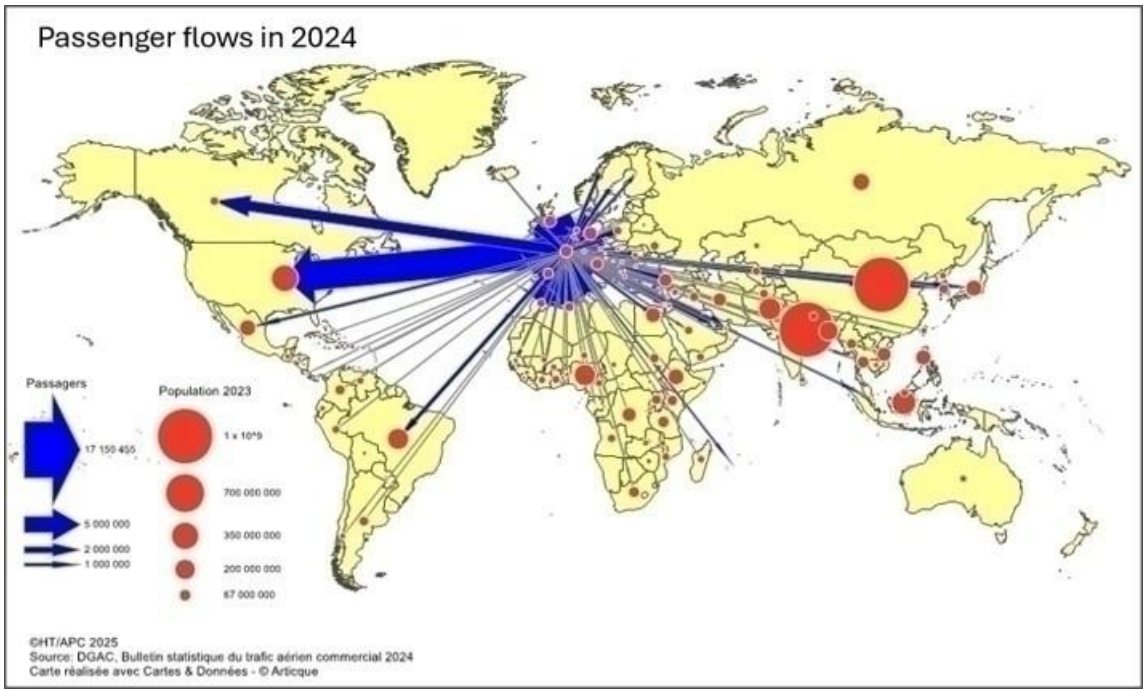
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centralization and demands for territorial balance. In this context, an analysis of its network becomes a key element in understanding connectivity trends in contemporary France.

Nevertheless, it is undeniable that France is one of Europe's largest air transport markets. France ranks as the fourth-largest aviation market in Europe, according to the IATA Connectivity Index (2024). Map 02 illustrates the extent of France's air connections, demonstrating the power of France's territorial connectivity dynamics.




Map 02 - Passenger Air Traffic (2024). Source: DGAC, 2024. Developed by: Théry, 2026.

In light of the above, the following is an analysis of the dynamics of competition in the national context with the TVG and the challenges faced by the French airline industry on short-haul routes. With regard to international routes, the role of flag carriers, also known as "pavillon français"—is particularly noteworthy in light of the redefinition of the airline network's geography and the competitive strategies of low-cost carriers.

## BETWEEN AIR AND RAIL: COMPETITION IN THE DOMESTIC MARKET WITH HIGH-SPEED RAIL (TGV)

The transformations that took place in terms of territorial organization, customs, culture, and the economy were decisive for the modernization of transportation infrastructure, as well as for the specialization of production and the evolution of modes of transportation. The latter have become faster and more technically advanced, enabling the movement of goods at an ever-increasing pace. Such processes intensify the metamorphoses of society and produce significant changes in territorial organization itself.

Circulation, by linking flows and fixed points and enabling fluidity, becomes one of the main vectors of territorial transformation, revealing how technology, in the service of capital, continually redefines territorial circulation. In recent decades, profound transformations have been observed in the technical composition of territories, which systematically impose new forms of circulation. In this context, there has been a significant reshaping of circulation systems and engineering systems, conceived from the "frenzy of speed," a term coined by Santos (1996).

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Consequently, these transportation systems require continuous adjustments, modernizations, and innovations to make them more accessible, interconnected, and flexible, in order to respond to the logic of the acceleration of time in space, an indispensable condition for the materialization of circulation. From this perspective, territorial circulation can be understood as an expression of an unceasing dynamic, driven by the need to ensure the expanded accumulation of capital (Camilo Pereira; Lencioni, 2026). In this sense, speed and fluidity become structuring principles of contemporary territorial organization.

Through these approaches, the development of passenger rail transport in France has historically been valued. The TGV began operations in the second five-year period of the 1970s, more precisely in 1976, with the first line built between Paris and Lyon under the management of the railway company Société Nationale des Chemins de Fer Français (SNCF). As noted by Zembri (2011, p. 349):

> High-speed rail began to be developed in France in the late 1970s, with the selection of a network structure tailored to the country's geography and the distribution of its population and economic activities. The "Parisian hypertrophy", that is, the demographic and economic concentration around Paris—led to the creation of a network centered on the capital, consisting of relatively long segments extending to the first urban centers that warranted rail service. In this context, speed played a decisive role, and the "point-to-point" model ultimately prevailed over the previous "bead-on-a-string" approach, that is, a sequence of successive intermediate stops between various medium-sized cities3.

Currently, France's high-speed rail network ranks fourth in the world (Map 01), with a total length of 2,700 km, trailing only China, Spain, and Japan. According to company management, the rail network connects numerous French cities, as well as cities in various other countries, such as Barcelona, Spain; Frankfurt, Germany; Brussels, Belgium; London, United Kingdom; and Geneva, Switzerland, among other locations.

For some time now, the airline industry has faced intense competition from this mode of transportation, particularly in France. The TGV offers a range of possibilities that are often not available through air travel. Among these advantages are the guarantee of travel at maximum speed, competitive prices, and the elimination of layovers due to transport capacity, such as in double-decker or two-story trains, among others (Frémont, 2019; Zembri, 2015).




Figure 02 - High-speed train on the INOUI service operated by the French National Railway Company (SNCF) in Marseille and Strasbourg (2025)*. Source: Authors, 2025.

*Note: The images show the high-speed train in the French cities of Marseille (October 16, 2025) and Strasbourg (December 11, 2025). As noted in the text, some high-speed trains have two levels, such as the TGV operated by SNCF's INOUI service.

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In 2023, the Climate and Resilience Act (Law No. 2021-1104), dated August 22, 2021, entered into force in the country through Decree 2023-385 of May 22, 2023. Article 145 of the law prohibits domestic flights lasting less than two and a half hours when a rail option with the same or shorter travel time is available, due to carbon dioxide emissions.

In France, public policies related to the Climate and Resilience Act, coordinated by the Ministère de la Transition Écologique and the DGAC, aim to balance the growth of air traffic with the country's commitments to greater environmental sustainability, both at the European and global levels.

This ban has led to increased competition with French rail transport, primarily affecting travel between Paris, especially between Paris-Orly Airport and airports located in regional cities such as Nantes, Lyon, and Bordeaux, which offer shorter travel times, despite the continued operation of connecting flights. The following table clarifies the impacts of the legislation's implementation on the main regional airports in France:

| **Route** (origin–destination) | **Status as of May 23, 2023** | **Approx. travel time by TGV** | **Compliance with the criteria set forth in Decree No. 2023-385** | **Notes** |
|---|---|---|---|---|
| Paris Orly - Nantes | Suppressed | +/- 2h00 | Meets the following criteria: same origin/destination; travel time ≤ 2 hours and 30 minutes; sufficient frequency; possibility of a same-day round trip with ≥ 8 hours at the destination. | Suppression immediately. |
| Paris Orly - Bordeaux | Suppressed | +/- 2h15 | It meets the same criteria listed above. | Suppression immediately; connecting flights are not affected. |
| Paris Orly - Lyon | Suppressed | +/- 2h00 | It meets the legal requirements. | Suppression immediately; Connections via CDG may be maintained depending on rail service availability. |
| Paris CDG - Rennes | Remained | +/- 1h30 | Does not fully meet requirements: rail service is considered insufficient under the terms of the decree (frequency, schedules, same-day round trip). | This illustrates a practical limitation of the rule: a duration of ≤ 2 hours and 30 minutes is not a sufficient condition. |
| Paris CDG - Lyon | Remained | +/- 2h00 | Maintained due to the current state of rail service (frequency and scheduling criteria not fully met). | The ban does not automatically apply to every pair of cities with a TGV travel time of 2 hours and 30 minutes or less. |
| Lyon - Marselha | Remained | +/- 3h00 | Does not apply: travel time > 2 hours and 30 minutes. | It does not fall within the scope of the law. |

Table 02 - Domestic air routes discontinued in France following Decree Nº. 2023-385 (May 22, 2023) and applicable legal criteria. Source: Decree No. 2023-385, dated May 22, 2023 (Official Journal of the French Republic); press releases from the Ministry of Transportation.

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This measure highlights the potential for increased competition, since the ban on these flights consequently drives passengers to the French rail sector. This trend is evidenced by the increase in passenger train frequency in 2024, which saw a 6% growth in France, specifically with an average increase of 4% in high-speed trains, driven by competition on the Paris-Lyon route, according to the Transport Regulatory Authority (2025).

In theory, and albeit preliminarily, an analysis of the competition between rail and air transport shows that radial air routes in France, particularly those connecting Paris to regional airports, may lose market share to the TGV in the medium and long term.

This shift is due to a number of factors associated with environmentally friendly public policies that have boosted the use of rail transportation over air travel. Additionally, the competitive advantages offered by rail travel, such as door-to-door service, more affordable ticket prices, and the convenience of travel, among other advantages already mentioned, also contribute to this trend.

The literature on this topic has not yet reached a consensus regarding the actual contribution of rail travel to green mobility. According to a study by Dobruszkes, Dehon, and Givoni (2014), the availability of high-speed rail services does not influence airlines' adoption of frequency strategies aimed at securing their competitive position. In this context, the authors' analyses highlight other proposals, such as the integration of rail and air transport modes.

However, this process also demonstrates that competition in the airline industry is linked to various factors and that companies must remain attuned to market demands, which do not necessarily stem solely from passengers but also correspond to external factors, such as environmental measures and changes that interact with global dynamics. These, in turn, have repercussions on different scales, whether in regional, domestic, or international flights.

However, the competitive challenges and current transformations faced by the French aviation sector are not limited solely to the national level. In the international context, the French aviation sector has had to adapt to the specific characteristics of the globalized market. In this context, the emergence of low-cost carriers and the liberalization of the French market have introduced new dynamics into the operations of these companies, contributing to a restructuring of European aviation dynamics in general.

## FLYING THROUGH THE CRISIS: THE STRATEGIC POSITIONING AND RISE OF LOW-COST AIRLINES

The discussion of the process of capital globalization in light of the technical-scientific-informational era (Santos, 1996) and its ramifications constitutes an essential element for understanding the national space within the international economy. This manifestation of the process of territorial circulation, which is becoming increasingly dynamic, rapid, and rational, is indispensable to global networks of production and accumulation.

From this global perspective, the emergence of low-cost airlines represents the most significant manifestation of capital, generating an extremely rational dialectic in which cost-reduction strategies not only attract passengers but also influence how airlines operate in a highly competitive and volatile market.

Low-cost airlines emerged in Europe based on the model of the U.S. low-cost carrier Southwest. The first airline to implement this model in Europe was the Irish carrier Ryanair. As noted by Dobruszkes, Givoni, and Vowles (2017), in September 2014, Ryanair announced the launch of nine additional routes from Madrid, operating a total of 40 routes from Spain's largest airport. As a result, Madrid-Barajas Adolfo Suárez Airport became the sixth-most-served airport by Ryanair in 2015, and the airline became the third-largest carrier locally (in terms of passengers in 2014), behind Iberia and Air Europa (Francis et al., 2006).

Notably, these airlines established a dominant market position by adopting a strategy of reducing operating costs, which are subsequently passed on to airfares, directly affecting consumers. Among the strategies mentioned, Francis et al. (2006, p. 51) highlight:

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> [...] high aircraft utilization, internet booking, use of secondary airports, minimum cabin crew, lower wage scales, lower rates of unionisation among employees, one class of seating thus allowing more seats per aircraft than traditional airlines (who oVer alternative seat pitches for diverent classes of travel), short 'on the ground' turn around times, no cargo carried to slow down turn around times, a simple fare structure and pricing strategy, e-ticketing, no seat allocation, passengers having to pay for food and drink, flexible working terms and conditions for employees relative to traditional airlines, point to point services and no connections offered.

However, like other sectors of great importance to the national economy, the European air transport sector, and more specifically the French sector, which is the subject of this analysis, has faced challenges stemming from competition, including from major companies such as Air France, which has led the French aviation market for decades. Nevertheless, in recent years, Air France has had to contend with strategies employed by low-cost carriers.

This strategic positioning by low-cost airlines has altered the geography of air services and competition among airlines in Europe. To this extent, it has contributed to the expansion of air network coverage to underutilized routes, a development also explained by the liberalization of the air transport sector, which has facilitated greater penetration by these companies into new market segments. On the other hand, these airlines have intensified competition with the major traditional leaders of the European air travel market (Dobruszkes, 2013). In France, this increased competition has affected Air France-KLM.

Currently, a large number of low-cost carriers operate international flights from France, including Ryanair, EasyJet, Vueling, Transavia (a subsidiary of Air France), French Bee, Wizz Air, and Volotea, among others. Chiambereto and Combe (2023) point out that these airlines already accounted for 40% of intra-European air traffic before

The following table 03 lists the main French airports serving domestic and international flights where these airlines operate:

| Airline | Major French airports where we operate |
|---|---|
| **Ryanair** | Paris Beauvais, Paris Vatry, Bergerac, Beziers, Carcassonne, Dole, Grenoble, Marseille, Lyon, Toulouse, Nice, Nimes, Bordeaux, Nantes, Lille, Limoges, Perpignan, Poitiers, Rodez, Lourdes, Estrasburgo, Bastia, Ajaccio, Figari. |
| **EasyJet** | Paris CDG, Paris Orly, Nice, Brest, Rennes, La Rochelle, Biarritz, Lyon, Toulouse, Marseille, Bordeaux, Nantes, Montpellier, Estrasburgo, Toulouse, Grenoble, Monaco, Nice, Bastia, Ajaccio, Figari. |
| **Vueling** | Paris Orly, Paris CDG, Marseille, Lyon, Toulouse, Nice, Bordeaux, Nantes. |
| **Transavia France** | Paris Orly, Ajaccio, Biarritz, Brest, Deuaville, Lille, Lyon, Nantes, Marseille, Bordeaux, Toulouse, Nice, Montpellier, Estrasburgo, Bastia, Montpellier, Perpignan, Rennes, Toulon, Figari. |
| **French Bee** | Paris Orly (principal), eventualmente Paris CDG |
| **Wizz Air** | Paris Beauvais, Paris Orly, Grenoble, Lyon, Marseille, Toulouse, Nice, Bordeaux, Nantes, Estrasburgo, Lille, Bastia, Ajaccio, Figari. |
| **Volotea** | Marseille, Nice, Lyon, Toulouse, Bordeaux, Nantes, Montpellier, Estrasburgo, Lille, Bastia, Ajaccio, Biarritz, Brest, Brive-la-Gaillarde, Caen, Calvi, Deauville, Limoges, Lourdes, Perpignan, Poitiers, Rennes, Rodez, Toulon, Figari, eventualmente Paris BVA/CDG |

Table 03 – Major French airports serving low-cost and regional airlines in 2025

In 2024, low-cost carriers accounted for 44.1% of total air traffic in metropolitan France, representing growth of nearly 1% compared to 2023 and 9% compared to 2019. At major regional airports, low-cost carriers currently account for 62.2% of traffic. At regional airports, this share reaches 59.7%. This trend is reflected in the significant increase in the market share of low-cost carriers at the

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fifteen major airports in metropolitan France, which grew by 8.9% between 2019 and 2025, jumping from 34.8% to 43.7% (UAF, 2025).

As a result, low-cost carriers exert even greater dominance at local airports, where they account for 66.0% of total traffic, placing these airports in a situation of high dependence on this operating model. In 2025, according to the UAF (2025), low-cost traffic exceeded 70% of the total at 19 French airports, compared to 11 airports in 2019, and exceeded 99% at five of them: Rodez, Paris Beauvais, Carcassonne, Béziers, and Nîmes.

These results mark a significant milestone, indicating a return to pre-pandemic traffic levels for low-cost carriers. In 2024, traffic for traditional airlines continues to decline, registering a decrease of -17.2% compared to 2019. In summary, low-cost carriers accounted for 70% of total traffic at 18 French airports.

The strategic positioning of low-cost carriers in the European aviation market has remained consistent over the years. Given the specific nature of France's air network and connections, these carriers have adapted their strategies to align with the recurring characteristics of this business model, namely, operations at the airport level.

As previously mentioned, this business model generally aims to operate at regional and/or secondary airports, whose market niche is often underutilized. However, in recent years, low-cost airlines have begun operating at major French airports with high traffic volumes, which has resulted in a shift in the geography of the country's air network and a decline in the importance of secondary and regional airports.

Fadel and Mondou (2020, p. 18) point out that these airlines no longer operate exclusively at regional and secondary airports, which was once a defining feature of the strategies of companies following this model. With the exception of Volotea and Ryanair, all other airlines have established a presence, at least partially, at Orly (Transavia, Wizzair) and/or Paris-Charles de Gaulle (EasyJet, Norwegian, Eurowings, Air Arabia Maroc, Jet2).

According to Chiambereto and Combe (2023), this strategic shift corresponds to the process they have termed "hybridization." The hybridization process of low-cost airlines consists of the gradual adoption of certain principles from the business model of traditional airlines, with the aim of competing in markets and serving customers who were not previously served by low-cost carriers, such as business travelers or routes with lower passenger density. As a result, major airlines have seen their competitive advantage diminished.

In summary, the rise of low-cost airlines represents one of the most significant manifestations of the globalization of capital in the techno-scientific-informational era, marked by an extremely rational dialectic that took advantage of the liberalization of air transport. This model has been consolidated through a strategic positioning aimed at maximizing the reduction of operating costs, passing these savings on to low fares and undeniably altering the way people travel, competition among airlines, and the geography of air services.

Although historically these companies had concentrated on regional and secondary airports, competitive dynamics are changeable, volatile, and seasonal, and France, in particular, has witnessed a process of "hybridization". This strategic shift involves adopting tactics from the traditional model to operate at major high-traffic airports, such as Paris-Charles de Gaulle and Orly, thereby intensifying competition with major traditional leaders like Air France. However, this brings us back to the starting point of this analysis, albeit on different scales: while the French domestic market is moving toward aviation decentralization, the international market is returning to aviation centralization.

# CONCLUSIONS

The French air transport sector, positioned as one of Europe's largest aviation markets and characterized by an extensive and diversified airport network, is at a crucial juncture in the geographic and strategic reorganization of air traffic flow and the structure of its network. The detailed structural transformations (2019–2025), driven by liberalization and new sustainability policies, require a critical assessment of the sector's resilience and adaptability in the face of global dynamics, which involve

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increased competition and environmental imperatives. The current reconfiguration of the French market is marked by the global health crisis, which has resulted in an incomplete recovery, with air traffic in 2025 still 1.8% below 2019 levels.

Additionally, France has sought to align itself with environmentally sustainable public policies, as evidenced by the intensifying competition with the TGV in the domestic market. This is not merely an environmental measure, but rather a factor driving a profound reorganization of regional transportation. This regulation drove a 6% increase in the frequency of high-speed trains in 2024. Although some authors remain skeptical of this outlook, statistical data suggest that, in the near future, there may be a shift of passengers from the air sector to the rail sector, particularly on radial routes between Paris and regional cities such as Nantes, Lyon, and Bordeaux.

The changes in the international European air transport landscape, driven by hybridization, are intensifying as flag carriers (pavillon français) lose market power to low-cost carriers, making this an even more critical factor. The low-cost model, which has revolutionized the air transport landscape, is considered a phenomenon of an integrated and competitive network.

The industry's outlook has been gradually shaped by the trend toward "hybridization." This trend is intensifying competition with traditional or flag-carrier airlines at major hubs and among business travelers, which, on an international level, is contributing to the centralization of the French airline network's geographic footprint.

This territorial concentration of low-cost carriers in France stems from the fact that, as they gradually migrate to the main Parisian airports (Paris-Charles de Gaulle and Paris-Orly), they are reshaping the geography of the air network and stimulating competition with traditional carriers. This forces flag carriers to adopt new "competitive strategies" (Porter, 1980) that will secure them a "favorable competitive position", a challenge in a segment (short- and medium-haul) where low-cost competition is particularly strong.

Esta hipertrofia da rede aérea parisiense, como já destacado, desvela as demais plataformas regionais, impactando a capilaridade nacional e internacional de cidades como Nice, Lyon, Marseille e Toulouse, podendo afetar até mesmo aeroportos com menor potencial de tráfego.

In short, the French airline industry faces a future marked by volatility and transformation. Changes in the geography of the French air network are driven by exogenous factors (environmental policies) and endogenous factors (low-cost strategies and hybridization). Competitive success will depend on the industry's ability to reassess its strategic positioning in light of these challenges, particularly by striking a balance between the need to maintain its central and strategic position within the European and global aviation landscape.

# ACKNOWLEDGMENTS

Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq/Brazil - National Council for Scientific and Technological Development) for its support and funding of this research.

Fundação de Apoio ao Desenvolvimento do Ensino, Ciência e Tecnologia do Estado de Mato Grosso do Sul (Fundect/Brazil - Foundation for Support of the Development of Education, Science and Technology of the State of Mato Grosso do Sul) for its support and funding of this research.

# DATA AVAILABILITY

Not applicable.

# NOTES

1 - According to the Direction Générale de l'Aviation Civile (DGAC), the authority responsible for regulating air transport in France, a "hub" is defined as an airport facility (or, in other modes of transport, a rail or port facility) where a large number of passengers or cargo is concentrated, organized

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by one or more transportation companies to structure their networks and ensure air connections between airports.

2 - According to the French Civil Aviation Code, aerodromes intended for public air traffic are classified based on the characteristics and volume of traffic they are designed to handle. They are classified into five categories: Category A: aerodromes intended for long-distance services normally operated under all circumstances. Category B: aerodromes intended for medium-distance services normally operated under all circumstances and for certain long-distance services operated under the same conditions, but which do not include long stopovers departing from those aerodromes. Category C: Airfields intended: (1) for short-haul services and certain medium- and even long-haul services that include only short stopovers from these airfields; (2) for large-scale tourism. Category D: Airfields intended for aviation training, air sports, and tourism, as well as certain short-distance services. Category E: Airfields intended for helicopters and aircraft capable of vertical or oblique takeoff. (France, 2023).

3 - La grande vitesse ferroviaire a été développée en France à partir de la fin des années 1970, avec le choix d'une structure de réseau adaptée à la configuration du territoire et à la répartition des habitants et des activités. L'hypertrophie parisienne a induit un réseau centré sur la capitale et des segments relativement longs jusqu'aux premières concentrations urbaines justifiant une desserte. La vitesse a donc joué un rôle important et le « point à point » a eu tendance à l'emporter sur la logique antérieure de desserte « en chapelet» (Translated by us).

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## Conflict of Interest

The authors declare that there is no conflict of interest.

## Research Data Availability

All the data supporting the results of this study were published in the article itself.

## Use of AI

No Artificial Intelligence tools were used.

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