

Prospective Study on Employment Trends in the Aeronautics and Airline Sector in France

*Produced by Secafi (Groupe Alpha) on behalf of Réseau Action Climat and
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REPORT SUMMARY

I. In the aviation industry,¹ employment trends in France over the last 10 years have been mixed.

- Prior to the health crisis, the aeronautics sector was creating jobs, while the airline sector was eliminating them, despite growth in air traffic.

Airline employment has fallen by 17% over the last ten years, despite the fact that air traffic is increasing both nationally and globally. This is due to cost-cutting strategies by airlines; the choices made by Air France-KLM in the development of various hubs; the highly competitive environment; as well as the emergence of low-cost airlines, which are less intensive in terms of human capital. Low-cost air travel was the main driver of growth in France, with traffic increasing by an average of 10% a year.

In contrast, employment in the aeronautics sector had been on the rise before the health crisis, with a 30% increase over ten years. The aeronautics companies, especially Airbus, have benefited from a sharp increase in orders from their main customers, most of which are based outside France. The aircraft repair and maintenance sector also saw a 17% increase in employment between 2008 and 2019. Nevertheless, offshoring of some jobs, especially subcontracted ones, is detrimental to employment in the aeronautics sector. According to the Insee in 2019, the supply chain was under constraint to cope with price pressures and production rates increases, which favored relocation to low-cost countries, even before the Covid-19 crisis.

- **In the aviation industry, the trend of aging of workers is higher than the French national average.**

Aviation is an aging industry. The share of seniors (50-64 years old) is higher and increasing faster than the national average: it reached 32% in the aeronautics industry and 33% for airlines in 2017. This is mainly due to the drop in recruitment in the sectors, which poses problems of workforce renewal, productivity, skills, and training.

¹ In this report, the “aviation industry” includes five sectors: aircraft and spacecraft manufacturing, passenger airlines, cargo airlines, service activities incidental to airlines, and aircraft repair and maintenance.

- For 10 years, recruitment rates have been very low within airlines, especially at Air France. The number of employees has decreased and the age pyramid was distorted in favor of employees over 40 and to the detriment of the younger employees. While in 2007, employees under 40 represented 48% of the workforce, they only represent 28% in 2017, i.e. a collapse of more than 20 points in 10 years. **Skilled and technical jobs, but with significant disparities between the various aviation sectors**

In the aircraft and spacecraft manufacturing sector, the salaried employees are much more highly qualified and skilled: 30% are managers and engineers, 16% are skilled technicians, and 13% are skilled workers. **The increase in the share of engineers and managers in employment (+5 points over 10 years) has come at the expense of certain intermediate jobs** (administrative technicians and support services) **and certain skilled jobs** and unskilled jobs.

In airlines, the level of qualifications is lower and has been decreasing over the last 10 years (only 13.7% have a 5-year university degree, a drop of 7 points in 10 years; 44% of employees hold a diploma lower than or equal to the *baccalaureate* high school diploma). This can be explained by the drop in recruitment by airlines, particularly Air France, but also by a strategy of raising in-house qualifications based on maintaining professional structure and on internal mobility.

II. The impact of the health crisis on employment is strong and confirms long-term trends.

- **Considerable job losses despite State aid**

Between January 2020 and March 2021, the two key sectors of the aviation industry announced net job losses: around 6.5% of jobs in aircraft manufacturing and around 13.6% of jobs in the passenger airline sector. Air France KLM announced the loss of approximately 7,500 jobs. Yet, the company has received 10 billion euros in financial support, including 7 billion euros in direct loans or loans guaranteed by the French State, which is a shareholder. The management of Airbus announced the loss of 4,248 jobs, despite an aeronautics recovery plan with a budget of 1.5 billion euros over three years.

In both sectors, the immediate employment adjustment was achieved mainly by reduction in recruitment (6700 recrutements in 2020 in the aeronautics industry, a reduction of 65% compared with 2019 according to the GIFAS, the French aeronautics trade body) and by non-renewal of short-term contracts (fixed-term and temporary contracts). Permanent employment in the aeronautics sector held up better than in the rest of the industry during 2020, reaching a similar level in October 2020: -1.4% compared to October 2019. Temporary employment however decreased substantially: a reduction of 49% compared to the same period the year before, whereas it was only a 10% reduction for the industry.

In a second phase, job cuts were implemented, in most cases combining voluntary and forced departures. At Airbus, 70% of applications for voluntary departures were made by employees engaged in a process of assisted retirement or early retirement. The choices guiding Airbus' job cut policy were rather guided by age or the professional project of the employees rather than by the targeting of

certain specific professions. Given the time frame for the implementation of these plans, the effects on employment will be most visible from the second half of 2021.

- **Strong geographical concentration of job losses, confirming regional dependency**

The Île-de-France Region accounts for 44.4% of employment in the industry and specializes in passenger transport. It is followed by the Occitanie Region, which accounts for 20.8% of employment and specializes in aeronautics. These two regions accounted for 70% of the job losses due to the health crisis.

- **The jobs considered “threatened” are now even more so.**

In the airline sector, if we look at the types of jobs that have been eliminated and placed on the government’s long-term part-time activity scheme (*activité partielle de longue durée* - APLD) during the crisis, we see that they were already targeted by job elimination plans before the crisis. These are mainly **ground personnel jobs**, in particular intermediate professions, support positions, ground and ramp personnel, etc. Thus, the jobs threatened in the airline sector before the crisis are still threatened today.

In the aeronautics industry, **production staff jobs, whose share of employment had fallen before the crisis, were particularly targeted by the APLD agreements** during the health crisis. The crisis could also accentuate a trend that was already visible before the crisis, **namely the offshoring of companies to low-cost countries.**

III. Post-crisis employment trends are subject to great uncertainty.

- **Three structural changes unfavorable to employment in the airline sector: decline in business travel, advantage for low-cost carriers, increase in single-aisle aircraft**

The share of leisure travel is expected to increase at the expense of business travel, but more due to a decline in the latter than to growth in the former. For airlines, this trend will have negative consequences in the short term, but these could be offset in the longer term by increased leisure travel.

The crisis is likely to give low-cost airlines an even greater advantage: they are more profitable, are positioned exclusively on flights within Europe, and are primarily targeted at leisure customers. They are intensifying their competitive practices.

At the same time, **the rise of single-aisle aircraft** will create proportionally fewer jobs because they require fewer in-flight staff.

Given the financial situation of the airlines, consolidation of the sector is likely to be limited in Europe. The APLD scheme might help maintain staffing levels until business picks up again, but if economic pressure on Air France remains strong, there is a risk of further job cuts or the transfer of activities to Transavia, a subsidiary of Air France-KLM.

- **A sharp slowdown in fleet renewal, but Airbus is maintaining its competitive edge and new aircraft projects.**

The deteriorating financial health of airlines is bringing a halt to fleet renewal. This has resulted in a **slowdown in aircraft orders for manufacturers. Leasing companies are also reducing their orders.** In addition, the financial difficulties of the companies will lead some of them to sell all or part of their fleets, which will lead to a swelling of the used aircraft market.

The battle between Airbus and Boeing will be fought in the short- and medium-haul segment, rather than in the long-haul segment, where estimates remain more pessimistic. The dominance of this segment should give Airbus a decisive commercial advantage over Boeing.

- **The effects of R&D programs: need for engineers and reorganization of the value chain**

Use of hydrogen aircraft had been scheduled for 2050. In announcing that these will enter into service by 2035, the manufacturers have moved up the realization of this project by fifteen years. This represents a considerable technological challenge within a tight time frame. **In the short term, implementation of these projects will have initial effects on employment.** In any event, hydrogen aircraft will rapidly generate additional employment over the years required for design. **Their design will require many more engineering jobs** than for a conventional program, as well as evolution of skills and know-how in the production professions. In the immediate future, companies will be looking for engineers who are immediately operational and who master today's technologies. There is a real risk of a skills shortage, particularly in digital technology, because there are not enough trained engineers.

Production jobs will depend on success in the design of the new aircraft. They will require a change in skills and know-how, due in particular to the increasing use of composite materials and more complicated operations on new aircraft than on conventional aircraft.

Moreover, the implementation of these innovative projects will have consequences on the supply chain. These innovations require greater control over the integration and interfaces between the engine, fuel tanks, support structure, and all the other subsystems. In view of these new innovations, Airbus is reviewing the way in which it develops airframes and plans to consolidate such activities into two companies (one in France and one in Germany). **The effects on employment for Airbus could be negative in the short term as a result of the pooling of resources made possible by this improved integration.**

- **In the long term, a slowdown in activity is inevitable in order to meet decarbonization targets.**

An extremely favorable technological innovation scenario would be one in which the most effective innovations would focus on the most CO₂-emitting segments under very optimistic assumptions. This is the essence of the Shift Project's "Maverick" scenario. But this scenario seems hardly plausible given that only Airbus is investing in hydrogen (Boeing did not make that choice), that the capacity of the hydrogen aircraft models on which Airbus is working do not seem sufficient to cover long-haul flights,

and that some companies may not be ready to opt for hydrogen aircraft, as it would not meet their customers' expectations.

The results show that, even under the most optimistic scenario, decarbonization through technology alone would not be able to reconcile the continuation of the pre-Covid traffic growth rate with the sector's commitment to reduce CO₂ emissions by 50% by 2050.

There would then be two possibilities. The first would be that the sector does not meet its commitments, insofar as they are not legally binding. The second option would be to reduce air traffic. The later and more abrupt that reduction is, the more the effects on employment will be swift and difficult to manage socially.

IV. There is significant potential for reconversion in the aeronautics and airline sectors.

- **Plan professional transitions in those sectors by identifying the “threatened” jobs.**

Analysis of possible future reconversion requires prior identification of the jobs under threat, in the short and long terms.

In the aeronautics sector, in the period between 2007 and 2017, two positions can be seen to have undergone decline in employment, both in absolute terms and as a proportion of total aviation employment: **administrative positions and blue-collar workers in production**. Analysis of the APLD scheme agreements confirms this hypothesis. In the event of a further slowdown in activity or technological change, it will be these professions that will be affected by job cuts first. Thus, despite the current difficulties in recruiting some blue-collar positions, now is the time to ask whether we should provide for professional transitions for these types of jobs.

In the airline sector, an analysis of job distribution over 10 years shows that three job families have declined: **intermediate professions (sales and administrative), salaried employees, and blue-collar workers**, due to airlines' cost-cutting policies. These jobs have been particularly shaken up by the health crisis, but their adjustment is not yet over. Nevertheless, **these types of jobs could be more easily transferable to other sectors because of their cross-cutting skills.**

The literature-based analysis of the part-time activity and job cuts agreements during the health crisis suggests that **the profession of pilot (cockpit crew) was not threatened prior to the health crisis, but that today its future seems to be blocked, if not truly threatened. Flight attendant (cabin crew) positions were reduced during the crisis; however, with the prospect of a return to pre-crisis traffic in 2024, these jobs do not appear to be significantly threatened. A decrease in jobs could nevertheless occur due to possible substitution phenomena induced by the growth of low-cost airlines, which are less labor-intensive.**

- **Opportunities for job change in-house, especially in the aeronautics industry**

To prepare for reconversion of professions in decline, the aeronautics sector is putting priority on in-house reclassification. **Investment in R&D and technological breakthroughs are thereby increasing**

the need for engineering jobs, which are characterized more by artificial intelligence, data, cybersecurity, composite materials, and the environmental dimension. Salaried employees in the sector could enjoy advancement to specialist technician or engineer positions, which are essential for creating the aircraft of the future. Airbus, for example, has far-reaching goals in this area: the rate of in-house mobility, which was 2% in 2007 and is 13% today, is expected to increase to 20% within two to three years.

In the airline sector, there are fewer opportunities for in-house reconversion, as overall employment has been declining for several years. Nevertheless, Air France has also launched an in-house mobility plan.

- **Cross-cutting skills in aeronautics, for external reconversion to more sustainable sectors**

Joint analysis has been carried out on the jobs under tension in the Occitanie Region in particular, on the skills of aeronautics employees, and on job forecasts by sector in the medium term. The results highlight several examples of transitions towards six “sustainable” or “socially useful” sectors. The chosen sectors are electricity, railways, health, energy retrofit, green energy, and ecological agriculture. The table below summarizes the skills of employees in the aerospace industry that are in common with those of five other growth sectors.

	Ferroviaire (construction)	Santé (médecine du futur & biotechnologies)	Renovation énergétique	Energies vertes	Agriculture écologique
Ingénieurs	gestion de projet, logiciel, R&D, design, essais, certifications, conception	gestion de projet, R&D, traitement des données (big data pour la médecine du futur), IA, robotique, génie des procédés, gestion de la production	gestion de projet, R&D, normes qualité, IT	Structure, aérodynamique, mécanique, électricité, IT, acoustique	normes qualité, normes environnementales, gestion de projet, analyse des risques, calcul de coût
Ouvriers qualifié	Lecture de plans, maîtrise des normes, maîtrise robotique, maintenance mécanique, impression 3D		Compétences en mécanique, matériaux, systèmes, électricité, électronique, système hydrauliques, de chauffages et d'air conditionnés avec contraintes thermiques importantes	Habilitation électrique, industrialisation et transport de matériaux de grande envergure Connaissance de base en mécanique et électrotechnique	Travail manuel, rigueur, suivi de normes techniques
Techniciens	Maintenance, peinture industrielle, électricité, électronique, métallurgie, logistique	compétences technico-commerciales, simulation et tests, qualité, processus de production industriel		Peinture industrielle, maintenance, manipulation de grandes structures en matériaux composites, Maintenance & installations	
Fonctions supports	Compétences généralisables à d'autres secteurs : vente, et après-vente, support et administration, logistique industrielle SI, RH, finance et comptabilité, qualité, hygiène sécurité et santé				

The electricity sector in France is a low-carbon sector that is recruiting. It could be suitable for some production workers in the aeronautics sector, whose jobs seem to be potentially threatened in the medium term due to automation of the production process.

Employees in the railway sector share certain skills with those in the aeronautics sector. Engineers from the aeronautics sector could be retrained in railway construction, thanks to their skills in project management, software, R&D, design, testing, and certifications. Similarly, technicians and workers specialized in aeronautics can apply their skills in the railway industry, in mechanical maintenance, industrial painting, electronics, metallurgy, 3D printing, as well as robotics.

The health crisis has highlighted the importance of health care and research-related jobs in the medical field. Aeronautics employees (especially engineers) could be retrained in two promising fields: the medicine of the future and biotechnology.

The needs in energy retrofit are very high and will remain so for several decades. The positions most needed to be filled tend to be those for skilled workers and craftspeople. Those positions may be quite similar to the positions identified as ‘declining’ in the aeronautics industry.

Aeronautics employees could also be retrained in the global renewable energy sector, as there is a considerable need for jobs in this area. The desired profiles range from those holding a vocational training certificate to an 8-year university degree. They especially concern maintenance, installation, and manufacture and assembly of equipment. There are many bridges between the two sectors, as they both use innovative materials and both require a high level of precision and safety. Aeronautics engineers, for example, have skills in mechanics, structure, aerodynamics, thermodynamics, acoustics, systems, and design that can be useful for designing wind turbines.

Finally, the ecological agriculture sector also has many needs, particularly in the Occitanie Region. It could attract people from the aeronautics sector in a context marked by the pandemic and climate change. The jobs in this sector are very diverse and might be suitable for engineers, technicians, and workers.

- **Cross-cutting skills in the airline sector, for external reconversion to more sustainable sectors**

In the airline sector, external retraining efforts for threatened jobs (and others) will have to be made in the Île-de-France Region. However, due to an aging population pyramid, reconversion may not be necessary for some employees in the sector’s jobs (especially pilots). Three sectors have been identified as possible avenues of reconversion for airline employees: the rail sector, health, as well as the aeronautics industry of the future.

The railway sector is one of the possible avenues of reconversion for pilots (cockpit crew), flight attendants (cabin crew) and operating personnel. First of all, train drivers and airplane pilots share common skills, including visual and auditory acuity, good reflexes, preciseness, compliance with technical and safety standards, mastery of navigation systems, piloting/driving, transporting people, managing rest time, and working with stopovers. The skills of the cabin crew are also easily transferable to the rail sector: passenger service and passenger (customer) relations, rest time management, stopover management, teamwork, first aid, team leadership, and safety and security. Reconversion of airline jobs to the railway sector could also be applicable to employees working in air freight, who can reconvert to rail freight.

There is considerable need in jobs related to health care and personal care, especially in the Île-de-France Region. These could be particularly suitable for cabin crew and ground staff, insofar as they are well-versed in interpersonal skills, listening skills, adaptability, emergency medical procedures, and verbal and non-verbal communication techniques.

Finally, aircraft pilots could also undergo reconversion in the aeronautical sector, insofar as they have skills similar to those required for engineering positions in that sector, where there will be many needs.
