



WORKING PAPER

SEVENTH WORLDWIDE AIR TRANSPORT CONFERENCE (ATCONF/7)

Montréal, HQ, 16 to 20 November 2026

Agenda Item 3: Strengthening regulatory and institutional frameworks

3.1: Strengthening regulatory oversight and evolving institutional frameworks

THE AVIATION SECTOR AND THE CHANGING NATURE OF WORK

(Presented by Ireland on behalf of the European Union, its Member States¹ and the other Member States of the European Civil Aviation Conference²)

EXECUTIVE SUMMARY

This paper addresses how new technologies such as automation, robotisation, Artificial Intelligence (AI), digitalisation, the introduction of remote towers and uncrewed aircraft systems are transforming the nature of work in aviation in the nearby future. Work is shifting from manual tasks to supervising automated systems, requiring more digital and technical skills from workers. The biggest impact will be on air traffic controllers, pilots and ground handling staff and to a lesser extent on cabin crew. Roles will increasingly focus on monitoring systems, data-driven decision-making processes, remote control and customer oversight. The paper also highlights the subsequent risks caused by these developments, such as skills and competence shortages, and overreliance on automation by professionals working in the industry. It stresses the need for different and continuous training of staff. The paper furthermore stresses the importance of decent working conditions that also respond to the changing nature of work and a stronger cooperation between the International Civil Aviation Organization (ICAO) and the International Labour Organization (ILO), States and industry stakeholders, which could help to attract and retain workers in the aviation industry.

Action: The conference is invited to:

- note the rapid technological changes that affect the nature of work in the aviation sector;
- identify and explore what skills and competences will be needed in the nearby future and address this for example through identifying and incorporating new training requirements in the ICAO programme Next Generation of Aviation Professionals (NGAP); and
- encourage the reinforcement of the cooperation between ICAO and the ILO under the current ILO-ICAO Agreement to promote policy coherence in relation to the future of decent and sustainable work in aviation.

<i>Strategic Goals:</i>	This working paper relates to Strategic Goal - <i>The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All.</i>
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¹ Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

² Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, Monaco, Montenegro, North Macedonia, Norway, Republic of Moldova, San Marino, Serbia, Switzerland, Türkiye, Ukraine and United Kingdom.

<i>Financial implications:</i>	The activities referred to in this paper will be undertaken with the resources available in the Regular Programme Budget and/or from extra-budgetary contributions
<i>References:</i>	N/A

1. INTRODUCTION

1.1 The aviation industry's growth worldwide over the last decades has led to increased demand and job opportunities as it provides both considerable direct, as well as indirect employment to related sectors. At the same time, the sector faces pressures in terms of globalisation and financing climate action policies like the energy transition towards the increased use of Sustainable Aviation Fuel (SAF) and more sustainable aircraft, changing geopolitical relations and other challenges in a rapidly changing world.

2. DISCUSSION

2.1 Technological changes and developments and the impact on the nature of work

2.1.1 Rapid technological changes such as the use of different energy resources and more sustainable aircraft, digitalisation, automation and robotisation, the impact of artificial intelligence on the sector, the development of uncrewed aircraft systems, new entrants and remote towers, may impact employment and change the nature of work in the aviation sector in all domains in the mid-term and long-term.

2.1.2 The impact on the nature of work and pace of change in aviation may differ within the sector. Future developments in flight operations, including possible single-pilot or uncrewed operations, may have significant implications for the organisation of pilots' work, the allocation of operational responsibilities and the interaction between human operators and automated systems.

2.1.3 Nonetheless, any consideration of single-pilot or uncrewed operations would require a comprehensive safety assessment, a robust certification and regulatory framework, appropriate human oversight, the preservation of critical operational skills, and a careful assessment of operational and social impacts, in consultation with relevant stakeholders, including representative organisations of flight crew.

2.2 Changing nature of work and skills by domain

2.2.1 **Air traffic control systems** are moving from manually directing aircraft to supervising highly automated systems. Systems developed under programmes like Single European Sky Air Traffic Management (ATM) Research (SESAR) and Next Generation Air Transportation System (NextGen) provide conflict detection, trajectory prediction and optimised routing and also remote and digital towers. Such systems may require new certification approaches, for example where compliance needs to be demonstrated through automated verification frameworks. Controllers can now manage airports from centralised facilities using cameras and sensors instead of physical towers. Data-driven operations and satellite-based navigation replace radar in many regions, improving precision.

2.2.2 **Ground handling** is becoming more like a high-tech logistic operation with the introduction of self-service and biometrics, robotics and autonomous vehicles. Baggage handling systems and ramp vehicles will be partially automated and future automatic tracking allows precise baggage tracking across airports etc. This means that in the near future, traditional ground handling jobs will become less common, creating more opportunities for different types of staff.

2.2.3 For **pilots** there will be a further switch from flying the aircraft to managing automation. Key changes will be fly-by-wire and advanced autopilot, software controlled flight systems and Flight Management Systems (FMS). Route planning, fuel optimisation and navigation are largely automated and AI-assisted decision tools will become commonly used. A single pilot operation or even an uncrewed operation may become common in the near future. The impact on work for pilots would in this case be a greater emphasis on monitoring, decision-making, and exception-handling and a critical need for situational awareness when automation fails.

2.2.4 For **cabin crew** technological change is transforming their work in quieter, but very real ways. Unlike for pilots or air traffic controllers, their role is not being automated away, but it is shifting from routine service towards safety, customer experience and digital coordination, while coping with challenges, for example caused by increasing numbers of unruly passengers. Cabin crew now use tablets and mobile apps to access passenger data (preferences, connections, special meals) and digital reporting tools.

2.3 **Different skills, education and training are necessary**

2.3.1 The impact in general on the changing nature of work in aviation will be a skills shift (the biggest change), from physical and interpersonal, towards more cognitive, interpersonal, digital and analytical skills. As a result, continuous training becomes essential. Because of the human-machine interaction workers will act as supervisors of automation. However, new risks will occur, like too much trust in and over-reliance on automation, and this can reduce manual skills (“automation complacency”). Challenges surrounding attraction and retention of aviation personnel may derive from a variety of factors, including the cost of training, certification, work-life balance, reskilling and lifelong learning.

2.4 **Impact on social issues and employment conditions**

2.4.1 In order to ensure a just transition to the future of work and attract and encourage workers to remain in the aviation industry and preserve jobs, career prospects and terms and conditions for work should be competitive and promote decent work, including in terms of operational safety and a safe and healthy working environment. Challenges that need to be addressed to ensure this already exist and will continue to exist. This for example includes addressing the effects of different contracting models and employment arrangements and new business models in the industry to ensure adequate labour and social protection and fundamental principles and rights at work.

2.4.2 Social dialogue and just culture (positive safety culture, where workers are encouraged to identify and report safety hazards and errors without fear of retribution) are among the important measures to address these challenges. International cooperation involving states, stakeholders and relevant international organisations to explore measures, priorities, challenges and strategies would facilitate this work. The International Civil Aviation Organization (ICAO) and International Labour Organization (ILO) are already cooperating on these issues through their cooperation on the future of decent and sustainable work in aviation, and this cooperation should be continued and enhanced.

3. **CONCLUSION**

3.1 ICAO is invited and encouraged to note the rapid technological changes that affect the nature of work in the aviation sector. ICAO is also invited to identify and explore what skills and competences will be needed in the nearby future and what new training requirements should go with them.

3.2 ICAO should consider addressing skills shortages through retraining and upskilling, for example by addressing this through the Next Generation of Aviation Professionals Programme (NGAP).

3.3 Regarding increasing human capital shortages in quantity and in quality with sufficient up-to-date skills and competencies, there is now a need to increase further cooperation between ICAO, Member States, stakeholders and educational institutions.

3.4 Greater attention should be paid to the impact of labour conditions on human capital shortages in accordance with the ILO's Decent Work Agenda.

3.5 ICAO is invited and encouraged to reinforce its cooperation with ILO under the current ILO-ICAO Agreement to promote policy coherence in relation to the future of decent and sustainable work in aviation, recognising the strong, complex and crucial links between social, trade, financial, economic and environmental policies.

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