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Agenda Item 2: Fostering aviation growth and air connectivity through investments in infrastructure, human capital and partnerships
2.2: Investment for the development and modernization of civil aviation infrastructure

SUSTAINABLE STAFFING AS A CORE COMPONENT OF CRITICAL ATM INFRASTRUCTURE

(Presented by International Transport Workers' Federation (ITF))

EXECUTIVE SUMMARY

Air traffic management (ATM) and airspace infrastructure are increasingly recognised as critical strategic infrastructure essential to the safe and efficient growth of global aviation. Their effectiveness, however, depends equally on the availability of sufficient numbers of appropriately trained and qualified air traffic controllers (ATCOs).

ATCO staffing shortages have been recognised in International Civil Aviation Organization (ICAO) and regional aviation fora as a growing constraint on aviation capacity and workforce sustainability. Evidence gathered through the International Transport Workers' Fedreation (ITF)'s global study examining ATCO staffing levels reinforces these concerns and provides current workforce feedback on the scale and consequences of understaffing across multiple regions. Recruitment and training pipelines can take several years to produce qualified controllers, making shortages difficult to correct once they have emerged.

Sustainable ATCO staffing should therefore be recognised as a core component of critical ATM infrastructure and addressed through long-term workforce planning and investment alongside physical and digital infrastructure. This includes credible independently validated staffing methodologies, sustained finance for recruitment and training on a continuity and resilience principle, and meaningful engagement with ATCOs and their representative organisations in determining and monitoring staffing requirements.

1. INTRODUCTION

1.1 Agenda Item 2 recognises infrastructure, human capital and partnerships as fundamental to future aviation growth and connectivity. In air traffic management, these elements are closely interconnected. Investment in airspace capacity, digitalisation and new technology cannot deliver its intended benefits without a sufficiently staffed, trained and resilient workforce.

1.2 Air traffic controllers perform safety-critical functions while enabling the capacity upon which aviation connectivity and growth depend. Persistent understaffing can increase reliance on overtime, contribute to fatigue and workload pressures, restrict available capacity and contribute to delays and disruption. ATCO shortages cannot be resolved quickly: recruitment, selection, training and operational qualification require substantial time and investment. These concerns are not new. The International Civil Aviation Organization (ICAO)'s Next Generation of Aviation Professionals (NGAP) work has long identified the need to ensure sufficient numbers of qualified aviation professionals, including ATCOs, while more recent papers presented through ICAO regional fora have identified ATCO staffing shortages and their implications for capacity, safety, efficiency and workforce sustainability.[1]

1.3 To better understand the scale, causes and consequences of ATCO understaffing, ITF conducted a global survey of ATCO organisations as part of its research on staff levels. As of 1 September 2026, the survey had received 71 responses from 39 organisations in 36 countries, providing critical insights on staffing conditions and their reported consequences across multiple regions.

1.4 The survey findings reinforce wider evidence of ATCO staffing challenges. Only 7 percent of respondents reported that national staffing targets were being met without qualification. A further 16 percent reported that targets were being met but were inadequate, while 10 percent reported local shortfalls despite national targets being met. Sixty percent reported that staffing targets were not being met nationally, with half of these also reporting local shortfalls, while a further 7 percent reported having no staffing target.

1.5 Respondents identified significant consequences associated with understaffing: 67 cited ATCO fatigue, 39 erosion of safety standards, 28 more serious incidents and 27 delays or disruption, while 44 per cent reported overtime being used because of understaffing.

2. DISCUSSION

2.1 Sustainable staffing requires long-term workforce planning

2.1.1 ATCO staffing requirements cannot effectively be managed only in response to current traffic levels. The long lead time required to recruit, train and qualify controllers means workforce planning must anticipate future traffic and capacity requirements. Staffing targets should reflect traffic complexity, workload, fatigue, leave, training requirements and resilience during disruption; meeting a numerical target does not necessarily mean staffing is sufficient if the target itself does not adequately reflect operational needs. This forward-looking approach is reflected, for example, in the United States Federal Aviation Administration's (FAA) 2026–2028 Air Traffic Controller Workforce Plan, which establishes a full-staffing target based on forecast demand and an independent review of staffing models and methodologies.[2]

[1] ICAO, Next Generation of Aviation Professionals (NGAP); IFATCA, "Air Traffic Controller Staff Shortage in the Asia Pacific Region", DGCA/60-DP/08/08, 2025

[2] Federal Aviation Administration, Air Traffic Controller Workforce Plan 2026–2028, 2026.

2.1.2 Sustainable staffing should therefore be treated as part of long-term ATM capacity and infrastructure planning rather than primarily as a short-term operating cost. The workforce required to operate physical and digital infrastructure needs sustained investment ahead of anticipated demand.

2.2 Recruitment and training pipelines must be sustained

2.2.1 ATCO recruitment presents particular challenges. Survey respondents identified difficulty finding candidates with the required aptitudes, the relatively low public profile of ATC as a specialised career, occupational stress and shift work, as well as citizenship requirements and language skills that can constrain international recruitment.

2.2.2 Training presents an additional constraint. Qualification can take several years, while limited training positions within operational units can restrict the rate at which new controllers become qualified. Respondents also identified pressure to reduce training costs and the risk that attempts to accelerate training can reduce successful completion rates.

2.2.3 Recruitment and training pipelines therefore require continuity and long-term commitment. Allowing them to contract during periods of lower traffic can create shortages that cannot be corrected quickly when demand returns.

2.3 Understaffing affects workforce sustainability, capacity and safety

2.3.1 Overtime can provide limited short-term flexibility, but sustained reliance on it is not a substitute for adequate staffing. Forty-four percent of survey responses identified understaffing as a reason for overtime. Where staffing shortages increase workload or reduce opportunities for adequate recovery, the resulting pressures can undermine workforce sustainability and make retention more difficult, potentially reinforcing the original shortage.

2.3.2 Capacity implications are also significant. Physical and digital ATM infrastructure may theoretically provide additional capacity, but that capacity cannot necessarily be realised if insufficient qualified personnel are available to operate the system safely. In Europe, the International Air Transport Association (IATA) reports that ATC staffing and capacity issues accounted for 84.5 percent of air navigation services provider (ANSP)-controllable delays in 2025, with staffing-related delays increasing by 192.1 percent between 2015 and 2025 while traffic increased by 11.5 percent.[3] Human-capital constraints therefore need to be considered alongside technological and physical constraints when States and ANSPs assess future ATM capacity requirements.

2.4 Workers should have a meaningful role in staffing decisions

2.4.1 Staffing methodologies need to be credible, transparent and capable of reflecting operational realities. According to the survey, 63 percent of respondents reported staffing targets being determined by the ANSP, 23 percent by a public entity, and only 3 percent by an ATCO union. A further 6 percent reported that no staffing target existed.

2.4.2 ATCOs and their representative organisations, including trade unions, possess direct operational knowledge of traffic complexity, workload, fatigue, rostering, training demands and local conditions. Their meaningful participation in developing and reviewing staffing methodologies can

[3] IATA, Air Traffic Control Delays in Europe, 2026, based on IATA and EUROCONTROL data.

improve workforce planning and help identify emerging capacity and resilience risks. Such engagement also supports the partnership approach envisaged under Agenda Item 2.

2.5 Technology and infrastructure investment must be matched by investment in people

2.5.1 ATM modernisation, automation and new technologies can improve safety, efficiency, capacity and human performance, but investment in technology and investment in people should form part of an integrated approach to infrastructure planning.

2.5.2 Technology may change the nature of ATCO work and improve safety, efficiency and human performance, but should augment rather than replace human capability and professional judgement. Where automation or AI materially influences human life and safety-critical functions, ATCOs should retain the skills, situational awareness, information and explicit and assured human authority necessary to understand, question and, where necessary for safety, override technology-supported outputs.

3. CONCLUSION

3.1 Aviation's ability to accommodate future growth and connectivity depends not only on physical and digital ATM infrastructure, but also on the workforce required to operate that infrastructure safely and effectively. The ITF survey reinforces wider concerns about ATCO understaffing, with respondents reporting fatigue, increased reliance on overtime, operational disruption and safety concerns. Long recruitment, training and qualification timelines mean shortages emerging today can affect ATM capacity and workforce sustainability for years.

3.2 Sustainable ATCO staffing should therefore be recognised as a core component of critical ATM infrastructure and incorporated into long-term aviation infrastructure, capacity and human-capital planning.This includes credible independently validated staffing methodologies, sustained finance for recruitment and training on a continuity and resilience principle, and meaningful engagement with ATCOs and their representative organisations in determining and monitoring staffing requirements.

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