



International Civil Aviation Organization

**Tenth Meeting of the Performance Based Navigation Sub-Group
(PBN SG/10)**

(Amman, Jordan, 10 - 11 December 2025)

Agenda Item 4: PBN Planning and Implementation in the MID Region

ADVANCING PBN TO ACHIEVE ICAO'S STRATEGIC GOALS FOR THE FUTURE AVIATION SYSTEM

(Presented by the Secretariat)

SUMMARY
This paper presents the ICAO's Strategic Goals for the Future Aviation System and outlines how the PBN Sub-Group (PBN SG) can support and align with ICAO's long-term goals.
Action by the meeting is at paragraph 3.
REFERENCES
- ICAO Strategic Plan 2026–2050

1. INTRODUCTION

1.1 The ICAO Strategic Plan 2026–2050 sets an ambitious trajectory toward a safe, secure, resilient, and environmentally sustainable global aviation system. The Strategic Goals and High-Priority Enablers outlined in the Plan emphasize system-wide performance improvement, sustainability, and digital transformation. Performance-Based Navigation (PBN), with its foundational role in modernizing airspace, flight operations, and enabling seamless gate-to-gate connectivity, is a strategic enabler to this vision.

1.2 The ICAO Strategic Plan 2026–2050 is provided at **Appendix A**.

1.3 This paper outlines how the PBN Sub-Group (PBN SG) can support and align with ICAO's long-term goals and ensure that PBN implementation remains a cornerstone of global air navigation modernization.

2. DISCUSSIONS

2.1 **Every Flight is Safe and Secure** PBN enhances the predictability, repeatability, and precision of flight paths, contributing to risk mitigation in all phases of flight. In particular, PBN-based approach procedures—such as RNP APCH and RNP AR—significantly reduce the risk of Controlled Flight Into Terrain (CFIT), especially at aerodromes with challenging terrain or limited ground-based infrastructure. By enabling stabilized approaches with precise vertical and lateral guidance, even in low-visibility or non-radar environments, PBN supports ICAO's goal of zero fatalities in international aviation from accidents or unlawful interference.

2.2 **Environmentally Sustainable Aviation.** PBN enables shorter, more direct routing and Continuous Climb and Descent Operations (CCO/CDO), directly supporting the Long-Term Global Aspirational Goal (LTAG) of net-zero carbon emissions by 2050. Fuel-efficient profiles and optimized terminal procedures reduce environmental impact at both global and local levels (noise, CO₂, NO_x).

2.3 **Seamless, Accessible, and Reliable Mobility.** Strategic implementation of RNAV and RNP supports flexible, efficient operations across high-density and mixed-fleet airspace. This directly advances ICAO’s goal of reliable and efficient flight operations while enhancing resilience and preparedness to manage evolving challenges.

2.4 **PBN Implementation as a Strategic Enabler.** Performance-Based Navigation (PBN) directly supports ICAO’s Strategic Objectives, notably: Air Navigation Capacity and Efficiency, Environmental Protection, and Safety. By enabling more precise and predictable flight operations, PBN contributes to improved airspace utilization, reduced emissions, and enhanced safety margins. The PBN Study Group (PBN SG) plays a pivotal role in developing guidance and promoting effective implementation strategies at the regional level.

2.5 **Supporting “No Country Left Behind”.** To achieve Regional harmonization, the PBN SG should advance tailored support for States with limited resources. This includes developing readiness assessments, regional roadmaps, and targeted training initiatives. A key priority is maintaining and regularly updating Regional PBN Implementation Plans to ensure they remain aligned with evolving operational needs and technological capabilities. The SG should also provide clear guidance and promote scalable, flexible PBN solutions that reflect the diverse capabilities and infrastructure maturity across ICAO Regions.

2.6 **Strengthening System Resilience.** Scalable and adaptable PBN strategies are vital to ensuring operational resilience in the face of disruptions—whether due to extreme weather, system failures, or health crises. By promoting robust and flexible airspace structures underpinned by PBN, the SG contributes to the continuity, agility, and sustainability of air navigation services.

2.7 **Way Forward**

To align with and support the ICAO Strategic Plan 2026–2050, the PBN SG should:

- Align its Terms of Reference, work program, and priorities with ICAO’s Strategic Objectives and high-priority enablers.
- Update Regional Plan and expand guidance material on PBN implementation to reflect emerging technologies and operational models.
- Enhance support for regional implementation and promote collaborative mechanisms to foster knowledge exchange, capacity building, and best practices.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note and discuss the information presented in this Working Paper regarding the alignment of PBN with the ICAO Strategic Plan 2026–2050;
- b) agree on the need to align the PBN SG’s Terms of Reference and work programme with the Strategic Plan;
- c) support the continued development of updated PBN guidance, tools, and Regional Implementation Plans; and
- d) endorse the proposed way forward to ensure that PBN continues to serve as a foundational enabler in ICAO’s long-term vision for global air navigation.

Strategic Plan

2026-2050



ICAO



ICAO Today and Tomorrow – Safe Skies, Sustainable Future

Foreword by the President of the Council and the Secretary General

As the United Nations specialized agency for international civil aviation, ICAO has built upon 80 years of success in creating today's international aviation law, policies and standards. The Chicago Convention, which formed ICAO, states the purpose of international aviation and its future developments is to "create and preserve friendship and understanding among the nations and peoples of the world."

In pursuit of this purpose, ICAO works with 193 Member States and several industry groups to reach consensus on international civil aviation Standards and Recommended Practices (SARPs) and policies. Over the past 80 years this work has led the international aviation sector to deliver dramatically improved services that connect nations and people as never before. Economic prosperity today draws enormous benefit from safe and secure movement of passengers and goods across the globe with greater ease and lower cost than at any previous time in human history. Aviation has helped create better economic and trade connectivity, especially for land-locked and small island developing states, as well as more understanding and friendship amongst nations and people. Aviation's crucial role is highlighted by historically strong growth in every region of the world due to popular demand which has resumed in 2024 after recovering to pre-pandemic levels in less than 3 years after public health restrictions for the COVID-19 pandemic began to ease.

In order for this growth trend to continue successfully, ICAO has laid out an ambitious agenda to

tackle the challenges outlined in this Strategic Plan. To achieve the bold goals set forth, such as the Long-Term Global Aspirational Goal (LTAG) of net zero carbon emissions by 2050 in international civil aviation, the rate of change must increase exponentially in the coming decade. This acceleration is necessary to accommodate the continuously growing air transport demand safely, securely, and economically while also making progress on other critical objectives.

The ICAO 2026-2050 Strategic Plan reflects the organization's long-term aspiration to achieve bold Strategic Goals for the strong growth of international aviation, underpinned by flawless delivery of safety and security, and enhanced by new initiatives including fostering investment for aviation infrastructures especially where significant gaps are exhibited, including innovative new services that streamline the passenger's facilitation and experience amid rising demand. It also delivers on the Long Term Global Aspirational Goal of net-zero carbon emissions for international aviation by 2050. These goals pave the way towards increased economic prosperity and social well-being delivered by air transportation of people and goods anywhere in the world.

This Strategic Plan will be implemented through complementary triennial ICAO Business Plans and Operating Plans, informing resource decisions for the triennial ICAO Budget. These plans will outline specific activities, deliverables, and milestones, which will be measured by key performance indicators to ensure sustainable

progress towards achieving the Strategic Goals. This Strategic Plan also serves as an overarching framework for the ICAO global and regional plans. To effectively address the industry's key challenges, coherent and well-coordinated action is essential. Today, specialized areas of work independently contribute toward positive developments in the aviation system. ICAO organizes this work within five notionally interdependent strategies: safety, air navigation capacity and efficiency, security, environmental protection and economic development. This method can be further enhanced through the implementation of cross-cutting programme management approaches in order to successfully retain our enviable safety and security record and rapidly expand aviation services and achieve LTAG. The Triennial Business Plan will define specific near and mid-term actions, ensuring alignment with the Aspirational Goals outlined in this Strategic Plan. As appropriate, future versions

of ICAO global plans will also reflect key milestones necessary to achieve the Strategic Goals outlined here.

Resilient to the future challenges, ICAO will review and update the Strategic Plan every six years in alignment with the United Nations' best practices of Results-Based Management and the United Nations 2030 Agenda for Sustainable Development, its Sustainable Development Goals (SDGs), and future UN instruments on sustainable development. This process will analyze new challenges and opportunities, then incorporate them into the plan as necessary.

This Strategic Plan reflects the commitment of all ICAO's Member States and its bodies, including the Regional Offices, to work together for a more safe, secure, economically viable, efficient, and environmentally sustainable aviation sector for the benefit of all people, leaving no country behind.



Salvatore Sciacchitano
President of the Council



Juan Carlos Salazar
Secretary General

Introduction

The International Civil Aviation Organization (ICAO) has been shaping the international civil aviation sector since its establishment in 1944. As we enter a new era marked by unprecedented challenges and opportunities, ICAO has developed a comprehensive Long Term Strategic Plan for 2026-2050 that aims at the strong growth of international aviation, guiding our efforts in leading the sector toward a more safe, secure, economically viable, efficient, and environmentally sustainable aviation sector.

This Strategic Plan comes at a decisive moment for international civil aviation. Traffic growth has resumed and is forecast to accelerate. This will also increase facilitation challenges to manage this growth. While ICAO continues to support Member

States in their ongoing efforts to comply with current international standards, it is important to anticipate and prepare for the world that lies ahead.

New types of highly automated aircraft are approaching entry into service, necessitating their safe integration into an already complex airspace environment. This integration, alongside the projected growth in air traffic, presents new safety, security and cybersecurity challenges that must be addressed.

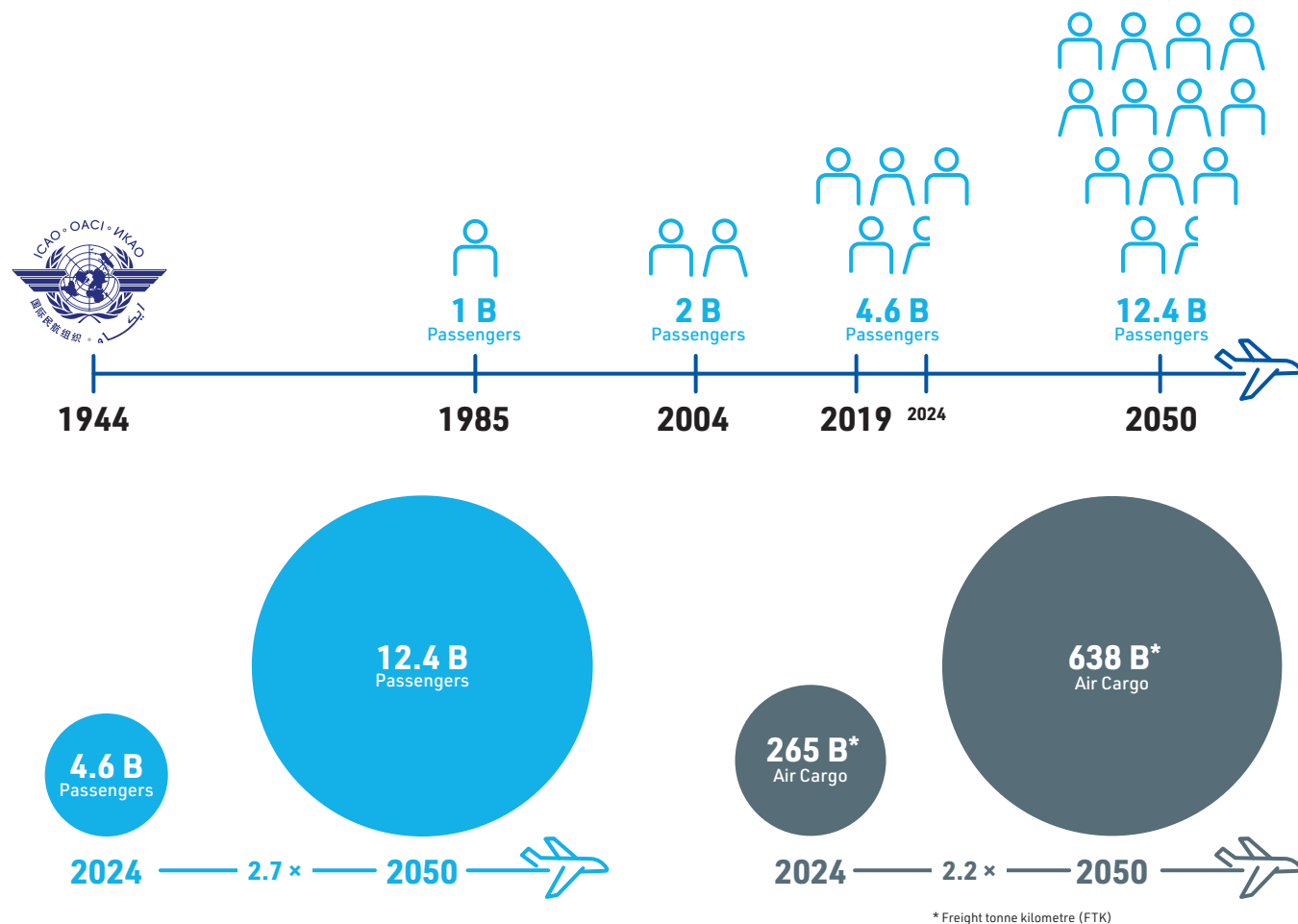
As the world embarks on a clean energy transition triggered by climate change, it presents an opportunity to reshape aviation's foundation, moving towards a more environmentally friendly future.



Context of Civil Aviation Present and Future (2050)

The Covid-19 pandemic caused the worst crisis in international civil aviation since World War II. However, the sector is expected to recover to 2019 levels by 2024 and is returning with

great vitality and vigour. To understand where we are today and what we expect aviation to be in 2050, it is essential to consider key figures:



To put this growth in perspective, consider that the threshold of 1.0 billion passengers annually was reached in 1985 roughly 40 years after ICAO was created; then 2 billion passengers in 2004 – just 19-years later. In the following 15 years traffic increased to 4.6 billion passengers.

These impressive growth figures will present enormous challenges for international civil aviation as it strives to meet the increased demand and long-term environmental sustainability, ensuring that all countries will be in a position to benefit from this growth. ICAO has identified several key areas that require attention:

- 1 Building upon today's outstanding safety and security performance record, new safety and security initiatives are needed to continue improving these outcomes while we also keep pace with growing volumes of passengers, cargo and traffic and enable solutions for the other challenges outlined below.
- 2 Reducing aviation's impact on the environment and climate change through the progressive and collective decarbonization of air transport and cleaner energy transition, as well as the reduction of other environmental impacts, particularly noise and emissions affecting local air quality, while urgently adapting aviation operations to the impacts of a changing climate.
- 3 Improving passenger travel experience and cargo facilitation by enhancing efficiency of the movement of aircraft, passengers, crew and cargo across borders, and while focusing on significantly reducing flight disturbance and efficiently accommodating innovation and new entrants such as drones, advanced air mobility, high altitude operations, and commercial space transport operations alongside conventional aircraft operations.
- 4 Fostering the development of a sound and economically viable civil aviation system, on the basis of equal opportunity and meeting the needs of the peoples of the world for safe, regular, efficient, environmentally sustainable and economical air transport.
- 5 Availing adequate aviation infrastructure and systems that correspond to safe, secure, accessible, efficient and sustainable service delivery for passengers and cargo in airports, air navigation services and airline operations to narrow long-standing gaps and respond to the future growing demand, particularly in developing states.
- 6 Digitalizing aviation systems and improving infrastructures to create more resilient services, by leveraging AI, advanced communication, navigation and surveillance technologies for air traffic management, including satellite-based systems and big data.
- 7 Ensuring the availability of talented professionals for aviation, promoting diversity and gender equality throughout the industry, integrated and adapted to new modes of operation and technological changes.
- 8 Developing systematic capacity building, resource mobilization and capital investment tools aligned with the challenges outlined in this Strategy to help ensure all Member States enjoy the benefits of sustainable growth.

ICAO is committed to working with all stakeholders, keeping its independence, to successfully face and overcome these challenges through 2050, ensuring that "no country is left behind."

ICAO Vision

A safe, secure and sustainable international civil aviation system that connects the world for the benefit of all nations and people.

THREE ESSENTIAL ASPIRATIONS CRYSTALLIZE THIS VISION



The goal of Zero fatalities in international aviation from accidents and acts of unlawful interference.



The long term global aspirational goal of Net-zero carbon emissions by 2050 for international civil aviation operations.



The goal of aviation to serve as an integral part of a thriving, connected, accessible, inclusive, and affordable transport system for people and goods, contributing to socio-economic development, while ensuring no country is left behind.

ICAO Mission

To lead international civil aviation as a key driver of social and economic development while enhancing aviation safety, security, economic development and environmental sustainability for a growing aviation system by advancing air law, developing policies, plans and standards, monitoring and auditing, and supporting States' capabilities for the benefit of all nations and people.

ICAO provides a leadership role and forum for all matters relating to international civil aviation, which Member States and the wider aviation community expect, particularly in times of major challenges when international leadership is needed. In the spirit of leaving no country behind, ICAO consistently responds to the needs of Member States by delivering services and support where required. This includes, to the extent of its mandate, resource mobilization and capacity building, often in partnership with other institutions and collaborators. ICAO provides multiple instruments

and services to Member States in several shapes and forms, including the international law instruments and regulatory frameworks necessary to underpin effective member state implementation of standards, recommended practices and guidance material that takes into account the socio-economic benefit for all Member States.

Our mission is supported by our three main processes of work: policy development and standard setting, monitoring and auditing, and implementation support.



ICAO Values

ICAO is aligned with the UN values and behaviours framework, and ICAO personnel are committed to acting in accordance with the principles and values as outlined in the ICAO Service Code and Framework on Ethics: Staff members shall abide at all times during their service with the Organization by the principles and values of integrity, loyalty, independence, impartiality, tolerance and understanding, non-discrimination, gender equality, accountability and respect for human rights.



[ICAO Service Code](#)



[ICAO Framework on Ethics](#)



Strategic Goals

ICAO has identified six Strategic Goals to achieve and support the vision and mission of the Organization. They serve as the guiding principles for the outcomes that ICAO strives to achieve, forming the foundation for all ICAO's programmes, projects and activities.



EVERY FLIGHT IS SAFE AND SECURE

ENSURE continuous protection for air passengers and cargo, the general public and staff from all safety risks and from security threats posed by any act of unlawful interference.

ACHIEVE zero fatalities resulting from aviation accidents or incidents.



AVIATION IS ENVIRONMENTALLY SUSTAINABLE

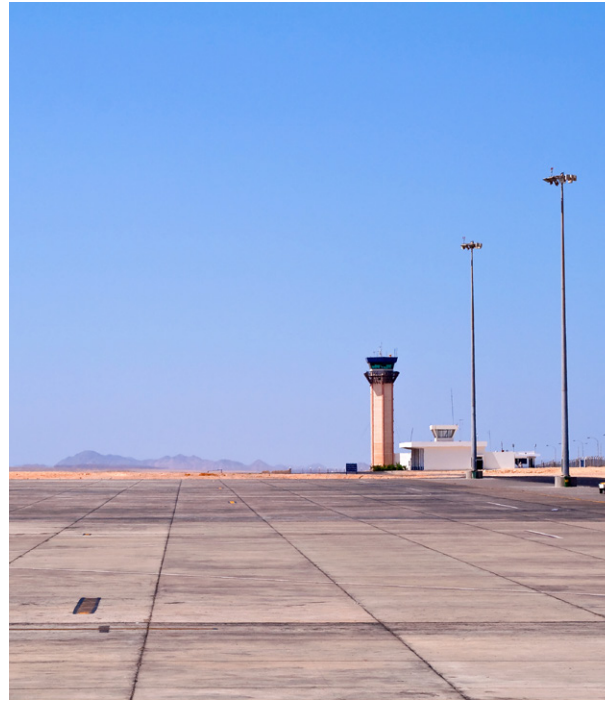
STRIVE to achieve the global long term aspirational goal of net-zero carbon emissions for international aviation by 2050, and ensure that international aircraft noise and emissions are mitigated to the lowest level possible, in accordance with international provisions. Additionally, adapt aviation operations and infrastructure to the impacts from climate change.



AVIATION DELIVERS SEAMLESS, ACCESSIBLE, AND RELIABLE MOBILITY FOR ALL

ENSURE that regulations, procedures and systems facilitate seamless air navigation and travel through airports and borders for all flights, passengers, air cargo and air crew with easily understood, well-coordinated, predictable and affordable access to quality international travel services.

ENSURE that flight operations are reliable, and highly efficient by continuously advancing aircraft operations and airspace management. This accommodates the needs of all types of aviation operations, while also enhancing overall aviation resiliency and crisis preparedness to effectively address unanticipated challenges.



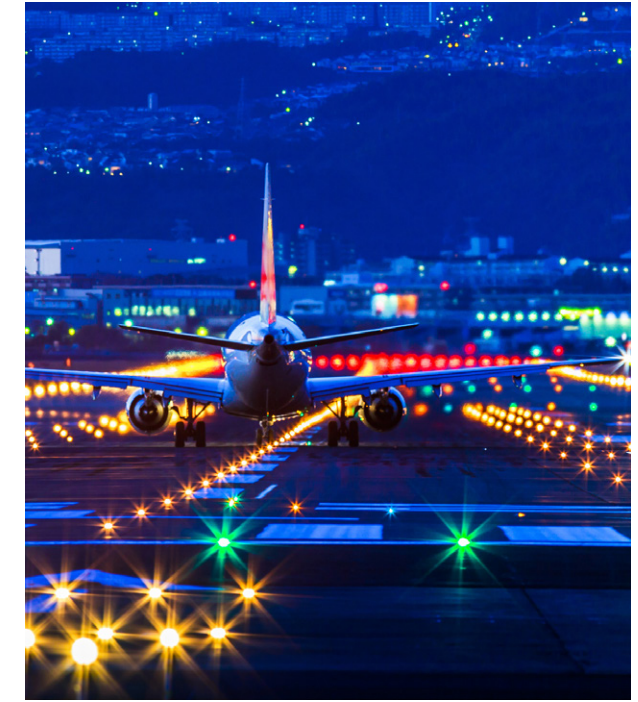
NO COUNTRY LEFT BEHIND

LEAD collaboration and cooperation, including with the support of its Member States and stakeholders, for continuous capacity building and support, enabling the achievement of safety, security, efficiency, and sustainability goals. This means States will benefit from ICAO's implementation support and resource mobilization activities, which are designed to promote the effective implementation of policies, standards and recommended practices and help overcome resource limitations that impact infrastructure, finance, training, supply chain access and coordination, especially in developing countries. This approach ensures that the benefits described in this strategic plan are enjoyed by all people, leaving No Country Left Behind.



THE INTERNATIONAL CIVIL AVIATION CONVENTION AND OTHER TREATIES, LAWS AND REGULATIONS ADDRESS ALL CHALLENGES

ADAPT International Air Law (legal frameworks, agreements, conventions and regulations) as necessary to ensure the international civil aviation legal framework remains responsive to current and emerging challenges and opportunities, thereby fostering strong Member States support for all aspects of ICAO's work as it moves towards its centenary and beyond.



THE ECONOMIC DEVELOPMENT OF AIR TRANSPORT ASSURES THE DELIVERY OF ECONOMIC PROSPERITY AND SOCIETAL WELL-BEING FOR ALL

FOSTER the development of a sound and economically viable and affordable civil aviation system, that will facilitate the achievement of measurable prosperity and well-being for everyone through aviation, with ICAO supporting every Member State using a balanced approach across all strategic areas.

High Priority Enablers

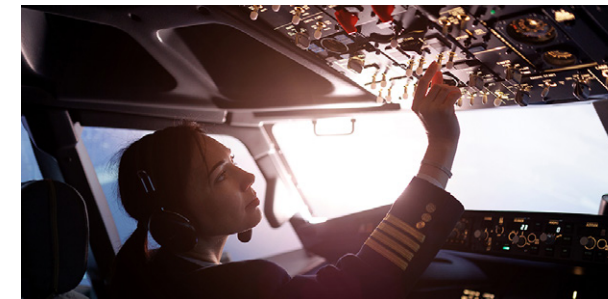
To successfully achieve the Strategic Goals outlined in this plan, ICAO has identified a set of High Priority Enablers. These enablers are critical cross-cutting factors that underpin the successful implementation of the Strategic Goals and ensure that the benefits of aviation are realized across all strategic areas. The High Priority Enablers focus on key areas which are essential for addressing the complex challenges facing the aviation industry. By prioritizing these enablers and integrating them into the implementation of the Strategic Goals, ICAO aims to create a more resilient, sustainable, and inclusive international civil aviation system. The progress and impact of the High Priority Enablers will be regularly monitored and assessed to ensure their effective contribution to the overall success of the Strategic Plan.



ICAO Continuous Organizational Improvement – focused on enhancing organizational efficiency to ensure the greatest possible efficiency and effectiveness in the operations of ICAO to meet the strategic goals, including Human Resource Management, Digitalization, Financial Management, Multilingualism, Governance and Accountability, and Business Operations and process management.



Innovation – recognizing the real and potential benefits and challenges that innovation can bring to the air transport sector and providing Member States with the tools, knowledge and mindsets to realize these benefits in a manner that leaves no country behind. Innovation actively promotes new solutions that support the Organization's Strategic Goals and increase the efficiency and effectiveness of ICAO. The aim is to encourage innovation to be embedded throughout ICAO's work.



Gender Equality and Attracting New Talent to Aviation – ICAO will expand on its ambition to achieve ICAO's Strategic Goals, and contribute to the UN Sustainable Development Goals, by achieving gender equality. Viewing international aviation as a vital enabler within the UN SDGs and to address multisector challenges affecting aviation, ICAO aims to expand opportunities for all as we seek out the best possible talent including the next generation of aviation professionals. By promoting and fostering fairness and impartiality for a sustainable, resilient, diverse and inclusive future of the aviation sector ICAO seeks to remove gender, diversity, equity and inclusivity barriers so as to optimally support sustainable expansion of the aviation sector, as well as the human resources needs of the Organization.



Partnerships, Resource Mobilization and Financial Sustainability – ICAO acknowledges partnerships as being intrinsically intertwined to aviation and to resource mobilization for States and the Organization, facilitating ICAO to achieve its Strategic Goals in support of the UN Sustainable Development Goals. ICAO will unite Member States, UN system organizations, agencies, funds and programmes, international associations and other stakeholders to leverage the diverse capabilities, resources and knowledge of ICAO's partners, while ensuring alignment to the Organization's principles, objectives and values, and the financial sustainability and flexibility of the Organization.





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