



ICAO

Next generation of aviation professionals (NGAP) strategy



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Contents

Next generation of aviation professionals (NGAP) strategy	0
1. INTRODUCTION	2
2. MANDATE	2
3. NGAP STRATEGIC APPROACH: VISION, MISSION, OBJECTIVES AND KEY FOCUS AREAS	3
3.1. VISION	3
3.2. MISSION	3
3.3. OBJECTIVES	3
3.4. KEY FOCUS AREAS	3
KEY FOCUS AREA 1: ADVOCACY, OUTREACH, PROMOTION OF BEST PRACTICES AND KNOWLEDGE SHARING	3
KEY FOCUS AREA 2: WORKFORCE FORECASTING, PLANNING, AND MONITORING	5
KEY FOCUS AREA 3: EDUCATION AND TRAINING	5
KEY FOCUS AREA 4: RESOURCE MOBILIZATION, IMPLEMENTATION SUPPORT AND CAPACITY DEVELOPMENT	6
APPENDIX 1 – ASSEMBLY RESOLUTION A39-29	6
APPENDIX 2 – STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS (SWOT) ANALYSIS	8
APPENDIX 3 – AVIATION AND EDUCATION STAKEHOLDERS & PARTNERS	11
APPENDIX 4 – COLLABORATION WITH UNITED NATIONS SYSTEM AGENCIES	13
APPENDIX 4 – KEY RISKS FOR ICAO NGAP PROGRAMME	15





1. INTRODUCTION

The smooth functioning of the global aviation system relies heavily on a highly trained and skilled workforce. This workforce plays a crucial role in meeting the diverse demands of the industry and maintaining the highest standards worldwide, in line with ICAO's strategic objectives.

ICAO aviation safety and security audits have identified the lack of enough qualified aviation personnel as one of the common deficiencies and root cause for low levels of effective implementation (EI) of the critical elements (CEs) of a State's aviation safety/security oversight system, hence low levels of compliance with ICAO SARPs. This adversely impedes States' fulfilment of their international obligations under the Chicago Convention and effective participation in the global aviation market.

Aviation remains essential to global connectivity, driving both economic growth and social progress. Air transport has historically doubled in size every fifteen years, outpacing most other industries. Looking ahead, we expect world passenger numbers to grow by 3.8% annually. This growth means we will see 4 billion more passenger journeys in 2043 compared to 2023. The industry supports over 11 million direct jobs worldwide, with another 18 million in the broader air transport system.

The COVID-19 pandemic severely impacted this workforce, causing a 43% reduction and 4.8 million job losses globally. While the industry has recovered and demand has rebounded, we face a critical challenge: according to the latest projections of ICAO outlined in *the Global and Regional 20-year Forecasts* (Doc 9956), the industry will require approximately 665,990 new technicians, over 554,000 pilots, 922,678 cabin crew members, and 106,800 air traffic controllers to support the growing aircraft fleet by 2037. However, women are currently underrepresented in key aviation roles, accounting for only 5.1 per cent of pilots, air traffic controllers, and technicians worldwide.

In addition, technological innovation, digitalization, and automation also pose additional challenges for the aviation industry. Disruptive entrants such as the Advanced Air Mobility (AAM) and the increasing automatization level of future aircraft systems have impacted the traditional roles and required competencies and skills. The AAM ecosystem which is expected to be autonomous in the long-term will require a significant number of aviation professionals, with hi-tech skills based on Artificial Intelligence (AI), therefore needing to attract new talents, and competing with other industries for highly skilled professionals with expertise in these fields.

In its report released in 2023¹, the World Economic Forum predicts that 25% of jobs will change over the next five years and estimates that 83 million jobs worldwide would be lost over the next five years because of AI, with 69 million jobs created and 14 million jobs that will cease to exist during that timeframe and 44% of workers' core skills are expected to change. The proliferation of green technologies and renewable energy will be a key driver of job creation in the future of work. There will be a high demand for sustainability specialists, business intelligence analysts, information security analysts, renewable energy engineers, solar energy installation and system engineers.

To address these challenges, the aviation industry must remain agile, and invest in comprehensive workforce development programmes to attract, educate, and retain the Next Generation of Aviation Professionals (NGAP). These programmes should focus on promoting aviation as a career of choice amongst youth from very early education stages, attracting new talent, developing, and providing relevant training and education to embrace change and innovation, making the aviation sector an attractive field, facilitating the transition of incoming workers from other industries as well as the global mobility of the workforce. Reskilling and upskilling strategies should also be implemented to keep the existing workforce up to date with the latest technologies and industry practices.

2. MANDATE

The ICAO NGAP programme was launched to address the anticipated shortage in aviation professionals needed to sustain and advance the global air transport system. [Appendix 2](#) outlines the opportunities and the challenges faced in attracting a pool of young talents in the aviation industry.

In 2016, the 39th Assembly of ICAO adopted [Assembly resolution A39-29](#), highlighting the importance of the Next Generation of Aviation Professionals programme (NGAP) and urging States to identify long-term human resources requirements and formulate strategies to attract, train, educate, and retain aviation professionals, with a specific focus on promoting gender equality.

¹ [The Future of Jobs Report 2023 | World Economic Forum \(weforum.org\)](#)



To further support A39-29, the ICAO NGAP strategic approach, encapsulated in its Vision, Mission, Objectives, and Key Focus Areas, has been designed to guide the development of global, regional, and national plans and to unite the relevant [aviation stakeholders](#) and [United Nations sister agencies](#) to collaborate in addressing the current and future shortfall of human capital in the aviation sector.

The NGAP strategy is a dynamic framework that can be adapted and refined as necessary, based on the outcomes achieved and the evolving needs of the industry.

3. NGAP STRATEGIC APPROACH: VISION, MISSION, OBJECTIVES AND KEY FOCUS AREAS

3.1. VISION

A global aviation community that has sufficient and competent human resources to support a sustainable aviation system that connects the world for the benefit of all people.

3.2. MISSION

Guide the development of global, regional, and national planning and serve as a global forum for exchanging information, promoting strategies, sharing best practices and guidance to support States capabilities and industry partners in attracting, educating, and retaining the next generation of aviation professionals.

3.3. OBJECTIVES

The objectives of the NGAP programme are:

3.3.1. To address the global aviation industry's growing need for skilled professionals and ensure a sustainable and mobile workforce now and for the future. This objective aims to bridge the gap between the increasing demand for aviation professionals and the limited supply of skilled workers by educating, attracting, and retaining a competent workforce in the aviation sector including pilots, air traffic controllers, engineers, technicians, as well as all the other aviation professionals required to sustain the aviation system and facilitating the global mobility of the workforce.

3.3.2. To promote the attraction, recruitment, training, and retention of a diverse and inclusive pool of aviation professionals. This objective aims to address demographic and gender imbalances within the aviation industry by promoting diversity, equality, and inclusion (DEI) in the recruitment, retention, and advancement of aviation professionals.

3.3.3. To encourage dialogue, collaboration, and partnerships among States, key stakeholders within and beyond the aviation industry, and relevant United Nations agencies. This objective aims to leverage collective expertise and resources to address NGAP challenges and identify innovative solutions to improve education, training, and career opportunities by encouraging dialogue, collaboration and partnerships with industry stakeholders, academia, governmental agencies, aviation organizations, UN organizations as well as sectors outside of the aviation industry.

3.4. KEY FOCUS AREAS

The achievement of the objectives of the NGAP programme relies upon the proactive involvement, collaboration between all players across the following four (4) Key Focus Areas, which serve as a guiding framework to mobilize global efforts toward fostering a sustainable and diverse workforce capable of meeting the evolving demands of the aviation industry. It is imperative that all [stakeholders](#) join forces, align, and synergize their efforts, and forge partnerships to support the Key Focus Areas.

KEY FOCUS AREA 1: ADVOCACY, OUTREACH, PROMOTION OF BEST PRACTICES AND KNOWLEDGE SHARING

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Goal: All stakeholders work together towards common goals, leveraging collective knowledge, sharing best practices, raising awareness on NGAP issues, while engaging with youth, promoting STEM education and aviation careers and improving the industry's value proposition and public perception. This can be achieved by focusing on the following, not limited to, key actions:

AT ICAO LEVEL:



- Serve as a global forum to provide ongoing dialogue with the stakeholders and mobilize States to address their medium and long-term human resources and training needs and develop strategies to attract, educate and retain aviation professionals.
- Collaborate and establish partnerships across all 4 Key Focus Areas within and beyond the aviation industry, as well as, with relevant United Nations organizations.
- Advocate for the inclusion of NGAP into national aviation plans.
- Advocate for the implementation of human resources policies and regulations that promote equitable employment practices, including competitive compensation, work-life balance, and access to social protections to create an attractive and inclusive workplace to enhance the value proposition of the aviation sector.
- Organize global NGAP summits to engage the international aviation community in addressing workforce and skills shortages, facilitate the exchange of insights on key industry topics and secure political commitment for actionable solutions.
- Organize regional symposiums, in collaboration with the TRAINAIR PLUS Programme (TPP) to engage with subject matter experts and NGAP stakeholders, identify regional needs, challenges, opportunities, and solutions, raise awareness of local initiatives, and share successful NGAP models and lessons learned for replication in other regions/ States.
- Organize campaigns promoting aviation careers and educational pathways across all education levels (children, teenagers, and young adults), highlighting success stories, innovations, positive impacts of aviation's societal contributions including connectivity, economic growth, contribution to UN SDGs, humanitarian efforts, disaster response, green initiatives.
- Engage with the next generation through hands-on initiatives such as the Model ICAO forum, students' competitions organized during ICAO events. etc.
- Compile and disseminate effective outreach, recruitment and retention strategies highlighting successful programmes for attracting new talents and supporting talent development and retention within the aviation industry
- Promote the development and dissemination of research and publications that contribute to aviation knowledge and innovation.
- In line with the Global Gender Equality Implementation Plan 2.0., advocate for policies and regulations promoting gender equality, diversity, and inclusion in the aviation workforce to ensure equal opportunities and encourage participation from underrepresented groups.

AT THE NATIONAL/REGIONAL LEVEL:

- Establish national/regional NGAP Stakeholders group to advance the NGAP objectives, share experience and best practices.
- Formulate or update human resources policies that meet the needs and values of the next generations.
- Strengthen initiatives for recruitment, retention, career development and advancement.
- Partner with the industry and academia to conduct outreach campaigns, build relationships with social media and influencers to increase visibility of aviation-related topics and to engage with GenZ highlighting the positive aspects of aviation and its opportunities.
- Raise awareness on the education pathways that lead to aviation careers from pre-school to university.
- Develop educational materials and resources about aviation career opportunities and required skills.
- Arrange guided tours of aviation facilities and aviation immersion programmes for diverse age groups, with a focus on gender balance and underrepresented communities.
- Create national ambassador programmes to actively promote NGAP and its objectives.
- Promote innovation through sandboxes, incubator, and accelerators programmes etc.



KEY FOCUS AREA 2: WORKFORCE FORECASTING, PLANNING, AND MONITORING

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Goal: The availability of comprehensive and reliable data insights covering all aviation disciplines to inform policy decisions, identify areas for improvement, and develop targeted strategies to address the workforce requirements. This can be achieved by focusing on the following, not limited to, key actions:

AT ICAO LEVEL:

- Collect data on licensed personnel and training capacity.
- Encourage stakeholders to collaborate to collect and analyze data on the aviation workforce covering all disciplines, including skills gaps, new competencies required, training capacities, industry emerging trends, etc.
- Partner with relevant [aviation stakeholders](#) and [UN sister organizations](#) to collect and share relevant data.
- Conduct regular assessments of the aviation workforce needs, including skills gaps, new competencies required, and emerging trends.
- Establish effective mechanisms for data sharing and collaboration among stakeholders.

AT THE NATIONAL/REGIONAL LEVEL:

- Collaborate with key stakeholders to conduct analysis on the current and future aviation system needs (workforce demographics, skills gaps, industry technological advancements, new job training requirements, obsolete ones, and other relevant factors) to gain a holistic understanding of the needs in the aviation sector.
- Evaluate future aviation workforce and training requirements to address the gaps and shape relevant strategies for attracting, educating, and retaining aviation professionals in the sector.
- Establish mechanisms to monitor the effectiveness of implemented strategies and initiatives (e.g.: national NGAP steering committee).

KEY FOCUS AREA 3: EDUCATION AND TRAINING

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Goal: Bridging the gap between education/training and industry needs and fostering global mobility through mutual recognition of competencies and training credentials: a highly skilled and competent workforce that meets the evolving needs of the aviation industry. This can be achieved by focusing on the following, not limited to, key actions:

AT ICAO LEVEL:

- Promote cooperation among Civil Aviation Authorities, government education and labor bodies, the TRAINAIR PLUS Programme (TPP) network, academia, and the relevant [aviation stakeholders](#) to develop relevant curricula and training programmes at any level aligned with industry and regulatory requirements.
- Encourage States to approve or recognize training and education from other States to enhance training capacity on a regional level and global employability.
- Establish international mentorship and internship programmes with industry partners.
- In collaboration with TRAINAIR Plus members and academic partners, develop a portfolio of aviation training courses, and academic programmes, designed to train, educate, and retain the NGAP, with a focus on emerging areas such as Advanced air mobility (AAM), artificial intelligence and green technologies.
- Form strategic partnerships with technology firms to integrate the latest advancements like artificial intelligence and blockchain into aviation operations and training.
- Promote access to inclusive, gender balanced and equitable quality training.
- Promote and develop aviation and STEM education programmes, in partnership with [relevant stakeholders](#) and [UN organizations](#)

AT THE NATIONAL/REGIONAL LEVEL:

Training and education accessibility:

- Ensure access to inclusive, gender balanced and equitable quality training and aviation related education.
- Enhance affordability of and accessibility to aviation education and training for young aspiring aviation professionals through scholarships, grants, financial aid programs, apprenticeship, mentorships, and role model initiatives.
- Develop public-private partnerships to fund educational initiatives and provide financial assistance for aviation training programmes.
- Approve or recognize training and education from other States to optimize training capacity and meet qualified workforce demand on a regional/global level.



Academic curriculum and institutional development:

- Establish national NGAP focal points to coordinate education and training strategies between Civil Aviation Authorities (CAAs), relevant governmental bodies (labor, education) industry, universities, colleges, and aviation training centers and develop training programmes aligned with industry needs.
- Work with Partners and TPP Members to develop curricula content relevant to the forecasted skill gaps.
- Collaborate with educational institutions to incorporate aviation-related topics into curricula, promoting STEM education and fostering interest in aviation careers.
- Invest in the development of national or regional aviation infrastructure, including training facilities, flight schools, and simulators, to enhance educational opportunities and practical training if required.
- Modernize and expand existing aviation education institutions to accommodate the growing demand for skilled professionals if required.

Technological advancements and skill development:

- Foster research and innovation in aviation education and training (explore new teaching and learning methods, leveraging technology in training programmes, identify innovative approaches to enhance the learning experience for aviation professionals staying at the forefront of industry advancements).
- Promote the adoption of advanced data analytics tools in training programmes to prepare the workforce for future technological shifts.
- Identify optimal educational approaches and delivery methods (competency-based training).
- Promote upskilling of aviation professionals to meet the accelerated pace of innovations and introduction of new technologies.

Quality assurance and accreditation:

- Implement robust quality assurance and accreditation mechanisms to ensure standardization and consistency of aviation education and training.

KEY FOCUS AREA 4: RESOURCE MOBILIZATION, IMPLEMENTATION SUPPORT AND CAPACITY DEVELOPMENT

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Goal: No country is left behind by empowering Member States with the necessary technical expertise and capacity. The aspiring young aviation professionals and stakeholders have access to adequate financial support and resources. This can be achieved by focusing on the following, not limited to, key actions:

AT ICAO LEVEL:

- Provide tailored implementation support, products, and services to assist States in designing and implementing NGAP strategies and action plans into their civil aviation master plans.
- Manage the Developing Countries Training Programme (DCTP) and establish partnerships to provide scholarships to aspiring aviation professionals, with a focus on maintaining gender balance, particularly in regions in need such as LLDCs and LDCs, SIDs.
- Mobilize resources and donors to support NGAP initiatives including products and services such as ipacks and training courses, hosting of regional symposiums, scholarships and fellowships, the Young Aviation Professionals (YAPP) and Junior Professional Officers (JPOs) programmes, secondees and financial contributions etc.
- Forge strategic partnerships with relevant [UN organizations](#) and [aviation stakeholders](#) to support NGAP initiatives and projects.

AT THE NATIONAL/REGIONAL LEVEL:

- Share resources, including training facilities, simulators, research laboratories, data, to enhance efficiency, reduce costs, and accelerate innovation.
- Jointly invest in training centers of excellence that serve multiple members and regions.
- Mobilize resources, establish public-private partnerships to develop funding mechanisms that support access to aviation related training, promote STEM education, offer subsidies or reimbursements for training programmes in critical skill areas to encourage participation, raise awareness on career paths and jobs available in the aviation industry, and to support any other initiatives aimed at attracting, educating, and retaining the next generation of aviation professionals.

APPENDIX 1 – ASSEMBLY RESOLUTION A39-29

Recognizing that aviation is a growing industry that is critical for promoting global connectivity while supporting economic development and growth around the world;



Recognizing that in order to support growing aviation needs and ensure the safe and efficient operation of the air transportation system, qualified and competent aviation professionals, as well as a diverse aviation workforce, are required;

Considering that, to meet current and future human resources needs, it is important for States and industry to engage the next generation of aviation professionals;

Noting that partnerships between government, regional organizations, industry, and educational organizations are important to attracting, educating, and retaining the next generation of aviation professionals, considering gender equality.

The Assembly:

1. Urges Member States to work with the aviation community to identify long-term human resources needs and establish strategies to attract, educate and retain in the sector aviation professionals, considering gender equality;
2. Encourages Civil Aviation Authorities to communicate and cooperate with government education and labour bodies, the TRAINAIR PLUS Programme (TPP) network and the aviation industry to develop strategies for promoting aviation, developing competent aviation professionals, and retaining them within States;
3. Encourages Member States to facilitate, through internationally agreed upon guidance and assessment practices for mutual recognition of qualifications and licenses, administrative procedures to allow for the free flow of professionals across borders;
4. Instructs the Council to ensure a continued leadership role for ICAO, in facilitating communication and collaboration with States and industry to support the development of forecasts, strategies, sharing of best practices, planning tools, and guidelines for engaging and cultivating the next generation of aviation professionals;
5. Encourages Member States to promote best practices that focus on meeting the needs and values of the next generation of aviation professionals to enable employee productivity, performance, recruitment, retention, and safety; and
6. Encourages Member States, international and regional organizations, academia, and industry to support the NGAP Programme, as one of the integral elements of capacity building, by providing technical expertise and guidance, and resources (human, financial and data) to help achieve the Programme's objectives.

APPENDIX 2 – STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS (SWOT) ANALYSIS

To attract, educate, and retain the next generation of aviation professionals, the aviation ecosystem should leverage its strengths, such as growing demand and technological advancements. Addressing weaknesses, such as workforce planning, perceived barriers to entry and lack of visibility, and seizing opportunities like diversity and gender, embracing innovation will be crucial. Mitigating threats, such as industry competition and the aging workforce, through effective succession planning, human resources attraction and retention policies and strategies will help ensure a steady supply of skilled aviation professionals for the future. The SWOT analysis below addresses all key players involved in ensuring that a pipeline of experts is available to maintain the future global air transport system.

STRENGTHS²

1. **Growing air traffic and industry demand³:** The aviation industry is experiencing significant growth, linked with the post-covid recovery phase when aviation workforce was massively let-go, creating ample opportunities to attract and retain NGAP. The increasing demand for aviation professionals provides a favorable environment for recruitment and retention efforts.
2. **Technological advancements:** The aviation industry is undergoing technological transformations, making it attractive to the next generation. Emphasizing the industry's technological aspects, such as advancements in automation, artificial intelligence (AI), and sustainable aviation, can be a strong selling point for NGAP.
3. **Career advancement opportunities:** The aviation industry offers diverse career paths and opportunities for growth and advancement. Highlighting these opportunities, such as pilot progression programmes, management training tracks, and specialized roles, can attract ambitious NGAP looking for long-term career prospects.
4. **Aviation stakeholders' collaboration:** The aviation industry has a culture of collaboration and knowledge sharing among professionals and organizations. Promoting this collaborative spirit and fostering networks and mentorship programs can attract NGAP who value teamwork and professional development. Establishing partnerships with educational institutions, such as universities and flight schools, can help attract NGAP. Collaborative programs that provide industry training, internships, and scholarships can create a pipeline of skilled professionals who are better prepared for aviation careers.

WEAKNESSES

1. **Perceived barriers to entry:** The aviation industry is often perceived as having high entry barriers, including the accessibility, length, and cost, of training and certifications. The aviation learning curve is long and steep because of the complexity involved across technical and operational areas, and young people are less likely to make long term career commitments than in the past. Addressing these concerns by providing financial assistance, scholarships or grants, and flexible and shorter education pathways and training options can help overcome this weakness and attract more NGAP.
2. **Lack of visibility and awareness:** Many young individuals may not be aware of the diverse career opportunities available in the aviation industry. Enhancing the industry's visibility through targeted marketing campaigns, career fairs, and participation in educational events can help overcome this weakness and attract a broader pool of talent.
3. **Gender imbalance:** The aviation industry historically has a gender imbalance, with fewer women pursuing careers in aviation. Addressing this weakness through targeted initiatives, scholarships, mentorship programs, and awareness campaigns can attract and retain more female NGAP. In addition, offering gender-friendly policies such as parental leave, childcare support, and on-site childcare facilities to enable women to balance parenthood with their careers might be a decisive consideration for young females to join the sector.

² The SWOT analysis was conducted using a brainstorming approach, as well as IMF/WEF global and regional outlook, studies on Gen Z expectations, outcomes of discussions from various panels of experts held during ICAO events on NGAP and ICAO forecasts on licensed personnel and gender.



4. **Perception of work-life balance:** The aviation industry is often associated with demanding schedules and time away from home, which may deter some NGAP from seeking a better work-life balance. Emphasizing flexible work arrangements, mental well-being, employee wellness programs, and family support initiatives can help overcome this perception.
5. **Lack of harmonized qualifications:** Some aviation disciplines lack standardized and universally recognized qualifications and competencies, making it difficult to ensure consistency and quality across the sector. The establishment of a global framework that outlines the required competencies for some aviation disciplines, standardization of training and educational programmes that meet established ICAO standards will foster mutual recognition agreements and promote harmonization across borders.
6. **Regional disparities:** The availability of aviation personnel is not evenly balanced across different States and regions, leading to imbalances in workforce distribution. In regions with limited career opportunities or lower salaries, there may be a tendency for skilled aviation professionals to migrate to regions with better prospects. This brain drain can further exacerbate regional disparities. Implementing measures to create attractive career opportunities and competitive compensation packages can help mitigate this weakness. Regions experiencing a surplus of aviation professionals can establish collaborative partnerships with regions facing a shortage. This can include knowledge sharing, talent exchange programs, and joint training initiatives to address regional disparities. In addition, promoting mutual recognition of qualifications, licenses⁴, and certifications holds significant potential in fostering global mobility and addressing regional disparities and workforce shortage.
7. **Lack of coherent statistical data and reliable forecasts to drive strategic and policy interventions:** Lack of data on all aviation specializations poses challenges in planning for personnel shortfalls and establishing global policy guidelines. To address this issue, aviation regulatory bodies, industry associations, and educational institutions need to collaborate on collecting and analyzing data related to various aviation specializations. This could involve conducting surveys, gathering information from training providers, and analyzing industry trends to identify areas where comprehensive data is lacking. In addition, developing a standardized reporting framework that outlines the required data points for each aviation specialization such as the number of professionals in each field, gender, retirement projections, recruitment trends, new envisaged aviation specializations resulting from innovation, automation and new technologies as well as training capacity will make it easier to gather and compare data across different regions. Collaboration and information sharing with Member States on personnel shortages, training capacity, and emerging trends can help identify gaps and inform policy guidelines. Research studies and surveys on the workforce landscape, career aspirations, and training needs can provide valuable insights for policymaking and planning purposes. The establishment of a global database or repository of statistical data on aviation specializations could serve as a central hub for collecting and sharing information, enabling policymakers and industry stakeholders to access comprehensive data for planning purposes. Implementing these measures will address the lack of comprehensive statistical data on aviation specializations and will facilitate better planning, strategy and policy development, and decision-making on a global, regional, and national scale, while ensuring a well-prepared and skilled aviation workforce.
8. **Financial constraints for States:** Securing sufficient funds and resources to support their NGAP initiatives can be challenging. Implementing a resource mobilization and partnership strategy can facilitate access to funding.
9. **National policy on employment that deter movement of persons/attraction of foreign talents:** International air carriers, by the nature of their business, employ personnel of different nationalities. Consequently, such personnel require authorization from a State to reside and work therein. Depending on the laws and regulations of the State concerning residence and employment and how they are applied, these personnel may qualify for admittance for residence and employment with the air carrier. Only a small minority of the bilateral air services agreement (ASA) registered with ICAO contain provisions allowing a foreign air carrier to bring and maintain in a State certain types of non-national employees. Almost all of these provisions contain some type of restrictions, such as a reciprocal numerical limit and a requirement that a certain percentage of the foreign air carrier's local employees be nationals. The principal difficulty in this lies in the requirement that the admittance for residence and work of the non-national employee

⁴ It should be noted that in accordance with Article 33 of the Chicago Convention, licenses issued or rendered valid by the Contracting State in which the aircraft is registered, shall be recognized as valid by the other Contracting States, provided that the requirements under which such licenses were issued or rendered valid are equal to or above the minimum standards which may be established from time to time.

of the air carrier be subject to national law and regulations. In some cases, national law and regulations either make no provision for non-national employees of air carriers or impose requirements that the non-national employee cannot meet. To address this, ICAO has developed a provision in the Template of Air Services Agreement (TASA) – Doc 9587 to facilitate the movement of talents across the States. States are encouraged to adopt this provision in their ASAs.

10. **National policy that restricts ownership and control of aviation service providers may deter movement of natural persons / attraction of foreign talents:** Liberalizing air carrier ownership and control could produce many benefits, including enabling airlines to acquire suitable talents beyond the State through mergers, acquisitions, or formation of alliances. In addressing this, ICAO is currently developing a draft Convention on Foreign Investment in Airlines to enable multilateral liberalization of airlines ownership and control.

OPPORTUNITIES

1. **Addressing Workforce Shortages:** Building an NGAP programme aims to address the increasing workforce shortages in the aviation sector. It helps raise awareness, attract educate, and retain the next generation of aviation professionals, foster collaboration, and partnerships, share knowledge, exchange best practices, and joint initiatives and advocacy to address common challenges in developing aviation professionals.
2. **Producing upskilled Professionals:** Building an NGAP programme can train professionals who are well-equipped with the necessary skills, knowledge, and competencies to excel in the aviation sector. This benefits both the individuals by enhancing their employability and the industry by ensuring a skilled and competent workforce.
3. **Achieving ICAO Strategic Objectives and the United Nations (UN) Sustainable Development Goals (SDGs):** Building an NGAP programme can significantly help contributing to the achievement of ICAO's Strategic Objectives and the UNSDGs, while also promoting quality education (Goal 4), decent work and economic growth (Goal 8), innovation (Goal 9), reduced inequalities (Goal 10), and climate action (Goal 13).
4. **Growing importance of aviation in national, regional, and global economic growth and connectivity:** Aviation is an important enabler to achieving economic growth and socio development. For many countries, particularly Small Island Developing States (SIDS), Landlocked Developing Countries (LLDCs), and Least Developed Countries (LDCs), air transport is the fundamental driver of economic development. States' move towards liberalization of air transport have resulted in the opening of new markets, increased connectivity, competitive fares, and improved services. Developing a strong aviation workforce through the NGAP program is crucial in sustaining this momentum that continues to spur national, regional, and global economic growth. A skilled workforce attracts investments and business opportunities, fosters innovation, and supports the expansion of the aviation industry and other industries such as tourism, thereby creating new job opportunities and increasing productivity and economic growth.
5. **Diversity and Inclusion: The aviation industry can focus on diversity and inclusion efforts to attract NGAP from various backgrounds.** By actively encouraging the participation of underrepresented groups, such as women, minorities, and individuals from disadvantaged backgrounds, the program can foster a more inclusive industry. Emphasizing equal opportunities, creating mentorship programs, and highlighting successful professionals from diverse backgrounds can enhance the industry's appeal to a broader range of candidates.
6. **Leveraging Technological Advancements in training:** the utilization of the latest technological advancements to enhance training methods and provide immersive learning experiences can help prepare aspiring NGAP. Embracing digital technologies and innovative approaches can improve the effectiveness and relevance of the program.
7. **Aviation innovation:** The aviation industry is rapidly integrating new technologies, such as drones, electric aircraft, and advanced air traffic management systems. Emphasizing the industry's commitment to innovation and providing training and education in emerging technologies can attract NGAP interested in innovative advancements.
8. **Engagement with the community and Corporate Social Responsibility (CSR):** NGAP are increasingly drawn to organizations with strong CSR initiatives. Highlighting the industry's efforts, for example in sustainability, environmental footprint, vital role of aviation in emergency response and humanitarian aid can attract NGAP who are passionate about making a positive impact.

THREATS

1. **Industry competition:** The aviation industry faces competition from other sectors that offer attractive career opportunities. To mitigate this threat, the aviation industry needs to highlight its unique selling points, such as the thrill of flying, global travel opportunities, technology and innovation driven and the industry's contribution to society and economic growth.
2. **Aging workforce and succession planning:** The aging workforce in the aviation industry poses a threat to attracting and retaining NGAP. Implementing effective succession planning strategies, promoting career advancement opportunities, and creating mentorship programs can help bridge the gap and ensure a smooth transition of knowledge and skills to the next generation.
3. **Bust cycles and crisis management:** Global crises, such as pandemics, economic downturns, or security concerns, can disrupt the aviation industry and significantly impact aviation's attractiveness and reputation as an employer. Developing contingency plans, establishing strong industry-government partnerships, providing job stability, offering attractive compensation and benefits packages, and flexible employment arrangements can help mitigate the negative effects of such events on NGAP attraction and retention.
4. **Impact of AI-new technologies:** Growing industry does not always mean the increasing demand for professionals, especially considering automation and new technologies. Some jobs may disappear in the coming years. A good example is a profession of navigators that used to be an essential part of aircraft crew. However, modern aircraft do not require navigators anymore, which resulted in loss of jobs. Currently, industry is discussing one pilot in the cockpit. If this happens, the aviation industry will not have increasing demand for pilots.

APPENDIX 3 –AVIATION AND EDUCATION STAKEHOLDERS & PARTNERS

Success in achieving the objectives of the programme relies on the collaboration and partnerships between all players of the aviation ecosystem, who must align their efforts to support the Key Focus Areas. Roles and responsibilities of the stakeholders are highlighted below.

1. **ICAO** serves as a global forum and advocate for NGAP programmes, providing coordination for initiatives aimed at addressing the future shortage of skilled professionals, and attracting educating and retaining the Next generation of aviation professionals (NGAP). It mobilizes aviation stakeholders and UN sister organizations to collaborate on shared objectives and actions. Through various communication channels, ICAO raises awareness among Member States, industry stakeholders and educational bodies and encourages Member states and relevant stakeholders to integrate NGAP initiatives into their policy agenda while offering support in implementation.
2. **Governments and regulatory authorities** have a significant role in policymaking, regulating, and funding allocation to create an enabling environment for NGAP implementation. They shall ensure that NGAP initiatives are embedded within national aviation strategies and regulatory requirements. They shall develop policies, regulations, and frameworks that support the education, training, and career development of aviation professionals. They shall collaborate with their relevant government agencies and regulatory bodies for labor and education, CAAs, industry to identify skills gaps, establish competency standards, and ensure the recognition of qualifications. They shall allocate funding for educational programmes, scholarships, and internships to encourage the pursuit of aviation careers. They establish partnerships with educational institutions and aviation industry to promote aviation-related curriculum and training. They shall engage in outreach programmes with educational institutions - schools, colleges, and universities. They shall support NGAP initiatives by promoting STEM education and career guidance in aviation, gender equality and promote diversity and inclusion.
3. **Civil Aviation Authorities:** National civil aviation authorities shall collaborate with ICAO and other stakeholders to implement NGAP initiatives at the country level. They oversee harmonization of technical regulations, licensing, and training requirements for aviation professionals.
4. **Aviation industry employers** include airlines, airports, manufacturers, aviation maintenance organizations, air navigation service providers, ground-handling providers etc., have a pivotal role to play in shaping the next generation of aviation professionals. They shall actively participate in the development of industry-driven education and training programmes, apprenticeships, internships, and career development opportunities for aspiring aviation professionals. Employers offer industry expertise and guidance,



collaborate with educational institutions to develop curricula aligned with industry needs, and ensure graduates possess relevant skills. Additionally, they may foster flexibility and enhanced work-life balance to attract and retain the younger generation while providing insights into emerging trends and technological advancements. They offer career opportunities, training programmes, mentoring, coaching, and participation in industry events to promote aviation careers and attract talent. They can also provide resources, sponsorships, and donations to STEM and aviation programmes that target the attraction of young boys and girls starting from preschool.

5. **Academia:** Universities, colleges, training centers and academic associations are responsible for providing aviation education and training programmes. They play a crucial role in developing curricula that meet industry standards and requirements. Educational institutions collaborate with industry stakeholders to incorporate practical training, internships, and industry placements into their programs. They also engage in research and development to stay abreast of emerging trends in aviation and update their programs accordingly. Educational institutions also facilitate internships and industry placements for students to gain real-world experience. They continuously update curriculum and training methodologies to align with industry advancements and emerging technologies. They participate in academic fairs and promote aviation educational programmes.
6. **Training providers,** including flight schools, simulator centers, and specialized training organizations, offer specific technical and operational training for aviation professionals. They contribute to NGAP by delivering hands-on training, skill assessments, on the job-training and certification programmes. Training providers shall work closely with regulatory authorities and industry associations to ensure compliance with standards and maintain the quality of training. They shall also embrace technological advancements and innovative training methodologies to enhance the effectiveness and efficiency of training programs.
7. **Aviation organizations and associations** have a significant role to play in coordinating NGAP implementation globally and regionally. They provide guidance, best practices, and global and regional standards for aviation training and education. These organizations facilitate collaboration among Member States, industry stakeholders, and educational institutions to address common challenges and resources. They also conduct research, organize conferences, seminars, workshops, and support capacity-building initiatives to promote NGAP worldwide. They may provide grants, scholarships, and toolkits to influence NGAP at the regional level.
8. **Professional associations** represent the interests of aviation professionals and play a crucial role in NGAP implementation. They provide support, guidance, and advocacy for career development, professional standards, and work conditions. These organizations promote networking, knowledge sharing, and mentoring among industry professionals. They also participate in industry-wide initiatives, contribute to the development of competency frameworks, and advocate for continuous professional development.
9. **Non-governmental organizations focused on aviation,** such as Women in Aviation International (WAI) or the Organization of Black Aerospace Professionals (OBAP), actively contribute to NGAP by promoting diversity, equity, and inclusion in the aviation industry.
10. **Aviation professionals:** The current generation of aviation professionals also plays a role in NGAP attraction and retention. They can serve as mentors, trainers, and role models for aspiring professionals, sharing their knowledge and experiences to guide the next generation Aviation professionals.



APPENDIX 4 – COLLABORATION WITH UNITED NATIONS SYSTEM AGENCIES

ICAO shall explore partnership opportunities with United Nations sister organizations to support its Next Generation of Aviation Professionals (NGAP) programme. These collaborations aim to develop and implement policies, regulations, and frameworks that support the education, training, career advancement, data and research, fair employment practices, social protection, and well-being of aviation professionals. Additionally, joint efforts between ICAO and UN entities can further advance the diversity, equity, and inclusion agenda in the aviation industry, fostering initiatives that empower underrepresented groups such as women and minority communities. Below is an overview of potential collaboration areas with various UN entities.

The United Nations Educational, Scientific and Cultural Organization (UNESCO)

- Inclusion of Aviation in Educational Curricula: Collaborate with UNESCO to advocate for integrating aviation-related topics into educational curricula. This could involve developing guidelines or recommendations for integrating aviation education into existing subjects such as science, technology, engineering, and mathematics (STEM) or geography, allowing young people can develop a better understanding of the aviation industry and its impact on society.
- Advocacy for Aviation Education: Jointly advocate for the global importance of aviation education through conferences, workshops, and awareness campaigns, encouraging its prioritization within national education systems.
- Promotion of Gender Equality: Partner to promote gender equality in aviation education, supporting initiatives that encourage girls' participation in aviation careers and address gender biases.

The United Nations Children's Fund (UNICEF)

- Access to Aviation Education: Partner to ensure that aviation-related educational opportunities reach children and youth in underserved communities, promoting gender equality and advocating for children's rights.

The International Labour Organization (ILO)

- Employment and Labor Issues: Collaborate to develop guidelines and best practices for fair recruitment, training, and working conditions in the aviation industry. Advocate for work-life balance, well-being, social protection, and welfare of aviation workers.

The United Nations Development Programme (UNDP)

- Capacity-Building in Developing Countries: Collaborate with UNDP to support capacity-building initiatives in developing countries. Focus on enhancing training infrastructure, promoting sustainable development in the aviation sector, and facilitating knowledge exchange among the next generation of aviation professionals.

The World Health Organization (WHO)

- Health and Safety in Aviation: Collaborate to develop guidelines for ensuring the well-being and safety of aviation professionals, with a focus on mental health. Address health emergencies affecting the aviation industry.

The United Nations Department of Economic and Social Affairs (UNDESA)

- UNDESA Programme on Youth: Collaborate with the UNDESA Programme on Youth to empower young people in the aviation sector. Provide opportunities for youth to participate in aviation-related projects, programmes, and decision-making processes. Leverage the UNDESA network and platforms to raise awareness about the opportunities and benefits of a career in aviation among young people.
- Alignment with the Sustainable Development Goals (SDGs): Further align the NGAP programme with SDGs, particularly those related to gender equality, education, sustainable development, climate action, and economic growth.
- Capacity-Building and Technical Assistance: Deliver capacity-building programmes and technical assistance to countries, especially in developing regions, focusing on improving aviation infrastructure and human resources development.
- Policy Development and Advocacy: Advocate for policies promoting sustainable aviation and international cooperation, addressing emerging challenges in the industry.
- Data and Statistics: Improve data collection and analysis in the aviation sector, specifically on short, medium, and long-term human resources needs.



The United Nations High-Level Committee on Programmes (HLCP), the United Nations High-Level Political Forum (HLPF), the World Food Programme (WFP), and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA):

- Joint Advocacy Campaigns, Policy, Training, and Knowledge Sharing Initiatives: Raise awareness about the crucial role of aviation professionals in achieving global goals. Advocate for the importance of aviation professionals in sustainable development, artificial intelligence and automation, and humanitarian operations. Address unique challenges faced by aviation professionals in emergencies and disaster response.



APPENDIX 4 – KEY RISKS FOR ICAO NGAP PROGRAMME

KEY RISK 1: INSUFFICIENT COMMITMENT AND RESPONSE FROM STAKEHOLDERS

Potential mitigations:

- Advocacy and Awareness: Engage in proactive dialogue with States and other relevant stakeholders to advocate for the importance of NGAP initiatives. Organizing summits, regional symposium, can help in building consensus and support for investing in the next generation of aviation professionals. For example, this may involve presenting the long-term benefits of investing in aviation professionals' programmes, including economic growth, job creation, industry competitiveness, creating awareness about the impact of a skilled aviation workforce on national and international aviation safety and efficiency etc.
- Collaboration and Partnerships: Foster partnerships with States, industry, United nations sister organizations, international and regional organizations to demonstrate the value of NGAP initiatives to influence policy decisions and gain commitment from States and other stakeholders to support the development of the next generation of aviation professionals.

KEY RISK 2: INSUFFICIENT FUNDING AND IN-KIND VOLUNTARY CONTRIBUTIONS

Potential mitigations:

- Resource mobilization: Develop a comprehensive resource mobilization strategy that outlines the requirements, potential funding sources opportunities, including government grants, private sector partnerships, donors, and international funding mechanisms.
- Cost-Benefit Analysis: Conduct a cost-benefit analysis to demonstrate the return on investment of NGAP initiatives by highlighting the potential economic, social related benefits and contribution to the ICAO Strategic objectives and UN SDGs of a well-trained aviation workforce to emphasize the value of funding these programs.
- Regional cooperation, Public-Private Partnerships: Explore opportunities for public-private partnerships within and outside the aviation industry and regional cooperation to secure funding for NGAP initiatives, pooling of resources, data, and equipment etc.

— END —



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