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Reports on Legal Seminar Africa, GAsEP  
AsiaPac, Green Airports, Alternative Fuels,  
Runway Safety, IWAF/3 in Nigeria

NEWS AND DEVELOPMENTS FROM THE INTERNATIONAL CIVIL AVIATION ORGANIZATION - VOL.73 - NO.1

# ICAO JOURNAL



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## MESSAGE FROM THE PRESIDENT OF THE COUNCIL

# HUMAN CAPACITY DEVELOPMENT

## A Critical Component of Air Transport Sustainability



✈ This issue of the *ICAO Journal* provides a useful recap of the inaugural Next Generation of Aviation Professionals (NGAP) Global Summit which ICAO convened at its Headquarters in Montreal at the end of 2017. It also helpfully reminds us that human capacity development can be a too-often neglected component of aviation development and modernization strategies of States and industry alike.

The numbers surrounding this issue largely speak for themselves. As you will discover in our feature story on the Summit, many hundreds of thousands of skilled air transport professionals will need to be trained and certified to keep our network running smoothly and safely over the next several decades.

The gap equates to roughly 67 new pilots and 13 new air traffic controllers entering into service *each and every day* between now and 2036, in order to satisfy forecast global demand.

But besides the new personnel needed for the legacy air transport professions we are all aware of, current capacity-enhancing and modernization projects being undertaken, for instance Air Traffic Flow Management (ATFM), global aircraft tracking via space-based ADS-B, and other developments supported by new conceptual approaches such as airport Collaborative Decision-Making (CDM) and System-Wide Information Management (SWIM), will mean that many States will soon be utilizing new and cutting edge technologies to manage their air traffic volumes and related air transport needs.

In addition, aviation is currently experiencing nothing short of a revolution in new air transport innovations, with new unmanned and autonomous aircraft entering into use which pose a wide range of challenges in terms of airspace integration and management at lower altitudes, for example in high-density urban environments where operational risks are of a much higher magnitude.

As aviation operations are moving into lower altitude airspace, at the other end of this spectrum, sub-orbital planes will soon be moving at super- or hyper-sonic speeds, and at very high and even stratospheric altitudes. Some of these new aircraft, balloons and other vehicles will continue to do what airplanes have traditionally done – transporting people and goods – but many will also be providing non-traditional services such as broadband internet access or other forms of communications or geolocation support.

ICAO is presently coming to terms with how all of these new technologies and players in air transport will need to be supported by a diverse and integrated range of communications, navigation and surveillance tools which are ground, air, and space-based. We are also advising national civil aviation administrations to prepare much sooner than later to support these burgeoning operations, an adaptation which will require new regulatory services and competencies.

But beyond regulatory preparedness, one of the most important enabling priorities for all of these developments will be the highly skilled professionals that will be needed to adopt and leverage these technologies to their optimized extent, while at the same time supporting core harmonization objectives for global aviation and ICAO's Member States.

labour bodies, ICAO's TRAINAIR PLUS Programme (TPP) network and the aviation industry.

And in a related Decision from our 38th Assembly (A38-14), Member States had also instructed the ICAO Council to develop one single set of long-term traffic forecasts from which customized or more detailed forecasts can be produced for various purposes, such as safety, air navigation systems planning and environmental analysis.

The Multi-disciplinary Working Group on Long-term Traffic Forecasts (MDWG-LTF) was established to carry out this work, and it submitted its detailed results to the Economic Commission at A39. The follow-on personnel forecasts to be derived from this base data were completed as of April 2018.

With new numbers in hand our sector will be able to improve its awareness and plan for the future with greater certainty and effectiveness. Across the length and breadth of global aviation we are now operating some 28,000 aircraft through the services of 1,400 scheduled airlines and supported by more than 4,100 airports and 170 air navigation centres.

These numbers too will grow significantly in the coming decade, and help us to appreciate again, the sheer scale of the challenge confronting us.

ICAO guides all of its related work in this domain through its NGAP Programme, an activity which cuts across all of our current Strategic Objectives for air transport and which is closely aligned with the ICAO TPP network mentioned above and other strategies and initiatives pursued by our Global Aviation Training Office.

We are seeing great progress thus far in these endeavours, but we continue to need the active support and engagement of States and industry, working together through ICAO, to ensure our ultimate success. [J](#)

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*“States’ voices have been loud and clear on the NGAP topic, and at ICAO’s 39th Assembly they noted that qualified and competent aviation professionals and a diverse aviation workforce are urgently needed to support growing aviation needs and the safe and efficient operation of the air transportation system.”*

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States’ voices have been loud and clear on the NGAP topic, and at ICAO’s 39th Assembly (A39), recognizing that aviation is a growing industry and one which is critical for promoting global connectivity and economic development and growth around the world, they noted that qualified and competent aviation professionals and a diverse aviation workforce are urgently needed to support growing aviation needs and the safe and efficient operation of the air transportation system.

They also stressed that partnerships between government, regional organizations, industry and educational organizations will be critical to attracting, educating and retaining the next generation of aviation professionals, with due consideration given to gender equality, encouraging Civil Aviation Authorities to communicate and cooperate with States’ education and

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**DR. OLUMUYIWA BENARD ALIU**  
President of the ICAO Council

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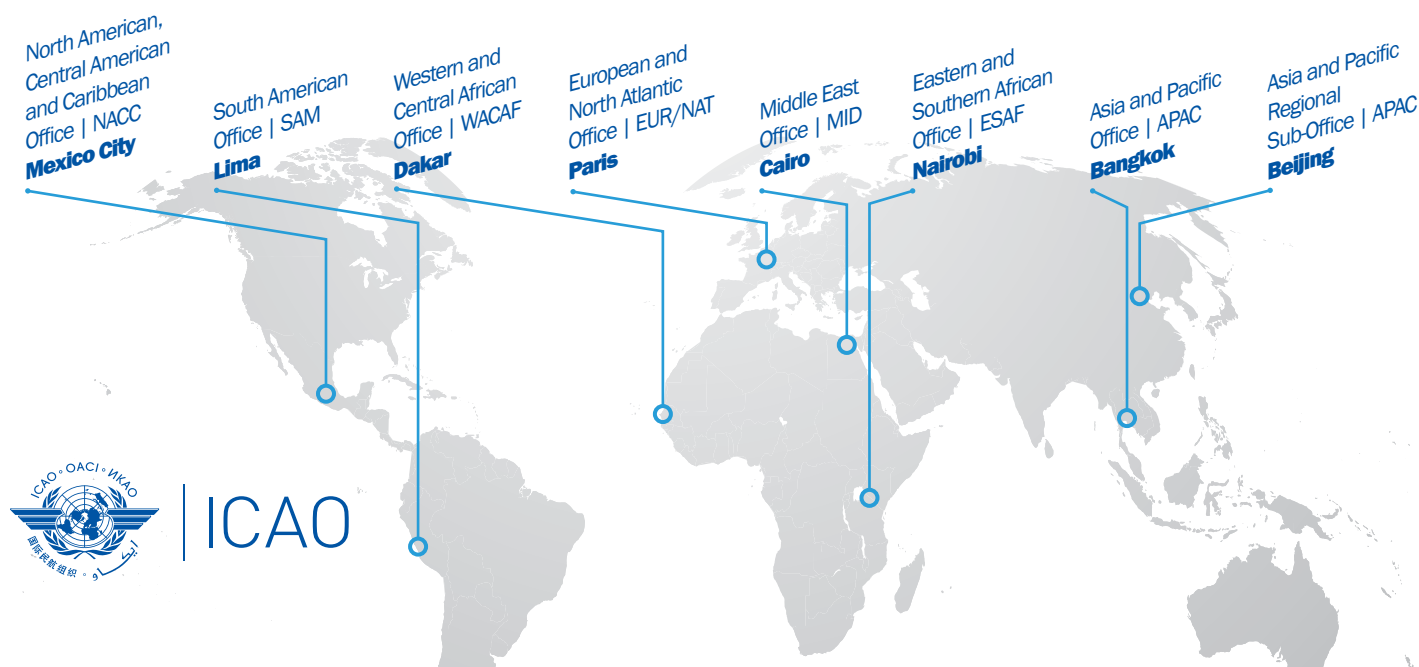
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## ICAO'S GLOBAL PRESENCE



# SKILLED PERSONNEL GAPS AND A GROWING SECTOR

ICAO recently updated its forecasts for three key air transport professions: pilots, air traffic controllers and aircraft technicians. Preliminary numbers revealed that 620,000 pilots will be needed by 2036 to fly the world's 100-seat-and-larger aircraft. "Even more important than this figure is the fact that no less than 80 percent of these future aviators will be new pilots not yet flying today," said Dr. Fang Liu, ICAO Secretary General.





✈️ “A similar story is playing out with respect to the future air traffic controllers, maintenance personnel and other technicians needed,” she added, “but we should also recall that these are just a few of literally hundreds of direct and indirect aviation-related career categories being impacted by current air transport growth and attrition factors.”

The NGAP Task Force was established in 2009 and the Next Generation of Aviation Professionals was elevated to full ICAO Programme status in 2015. “What we have learned since ICAO’s NGAP work commenced is that promoting excitement and passion for aviation is not enough,” Dr. Liu commented. “We also need to facilitate access to aviation training and education programmes which lead to dependable recruitment opportunities and shorter-term career advancement

returns. Attrition dynamics can assist with these types of outcomes, and so we should appreciate them not only as one of our challenges, but also as one of our solutions. We also need to broaden our scope and begin instilling greater aviation awareness in high school and younger students, and especially young girls, in addition to our work with the university-level and young professional demographics.”

In preparation for the Summit, ICAO embarked on new relationships and partnerships with United Nations agencies to promote the need to engage youth and promote Science, Technology, Engineering and Mathematics (STEM) and gender in aviation. New relationships were established with the United Nations Educational, Scientific and Cultural Organization (UNESCO), UN Women, the International Telecommunication Union (ITU)

and the International Labour Organization (ILO). By working with these agencies, ICAO was able to raise awareness of the importance of working together to identify long-term human resource needs and establish strategies to attract, educate and retain aviation professionals, considering gender equality and the importance of the United Nations 2030 Agenda for Sustainable Development.

The Summit also provided the setting for several other events that brought together youth of all ages and provided them an opportunity to learn more about aviation and to engage and discuss new and emerging aviation issues.





II NEXT GENERATION OF AVIATION PROFESSIONALS II

#### EVENT

## NEXT GENERATION OF AVIATION PROFESSIONALS (NGAP) GLOBAL SUMMIT

27-28 November 2017

ICAO Headquarters, Montréal, Canada

#### HOST

International Civil Aviation Organization (ICAO)

#### OBJECTIVE

The Summit provided a unique opportunity to bring together important stakeholders, including young people, to discuss the future of aviation – with the goal of developing strategies to help aviation attract the best and brightest to operate and manage the future air transport network.



## MODEL ICAO FORUM

University students were challenged to explore and debate a wide range of topics in the field of aviation, including the socio-economic benefits of air transport, dangerous cargo, unmanned aircraft systems, capacity-building and aviation security. The Forum provided students with an opportunity to learn about exciting aviation issues and to develop and hone their public speaking skills.

At the conclusion of the Forum, four teams were recognized as having the most innovative solutions to the case studies that were presented.

## SPEED MENTORING

Speed Mentoring was another student-focused activity that provided an opportunity for the next generation of aviation professionals to meet and learn from experienced mentors from various fields of expertise.

The aim of the speed mentoring activity was to briefly introduce students and young professionals to the diverse career options available in the aviation sector by hearing directly from aviation professionals about their career paths and their experience in the aviation sector.

Students and young professionals met individually with aviation professionals for 20 to 45 minutes with a total of 138 sessions.

## UNESCO 'THINK PINK' HARD HATS WORKSHOP

UNESCO and WomEng, a non-governmental organization in South Africa, are working together to conduct hands-on workshops for girls around the world as part of the One Million Girls in STEM campaign. The goal of the campaign is to reach one million girls through STEM education and awareness initiatives in at least 10 regions in the next 10 years.

ICAO and UNESCO collaborated to conduct a 'Think Pink' Hard Hat workshop during the NGAP Summit for 60 middle and high school girls. The aim of the workshop was to encourage more girls to consider careers in STEM, engineering, and especially aviation, which are usually stereotyped as male-oriented fields. The workshop was facilitated by Ms. Rovani Sigamoney,

Programme Specialist, Section for Innovation and Capacity Building in Science and Engineering, UNESCO. Remarks were also provided by Dr. Fang Liu, Ms. Marie Paule Roudil, Director of UNESCO Liaison Office in New York, and Shaesta Waiz, the 'Dreams Soar' pilot who completed a solo round-the-world flight to promote STEM.

## NGAP SUMMIT OUTCOMES

ICAO, through the NGAP programme, will continue to collaborate with States, partner international organizations, educational institutions, training centres and UN agencies to promote human resources planning and development in aviation.

### THE SUMMIT:

- Continued to raise awareness regarding the impending shortage of aviation professionals and encouraged Civil Aviation Authorities (CAAs) to communicate and cooperate with government education bodies and institutions to promote aviation as a profession;
- Promoted cooperation and coordination for the development of NGAP guidelines and best practices for use by all aviation stakeholders (i.e. CAAs, industry, educational institutions and training centres);

- Promoted the exchange of knowledge, ideas, best practices and experiences regarding NGAP-related activities among States, industry, international organizations, educational institutions and training centres;
- Promoted collaboration between States and the aviation community to identify long-term human resource needs and establish strategies to attract, educate and retain aviation professionals, considering STEM and gender equality;
- Recognized the need to establish a network of academic institutions that would aim to collaboratively develop initiatives to attract next-generation aviation professionals, as well as play a leading role to create, publish, distribute, and promote educational programmes serving the needs of NGAP. The network would also serve as a means to conduct research on a collaborative basis on aviation initiatives to further support the work of ICAO;

- Explored the possibility of establishing an Educational Institution Accreditation or Recognition Programme as well as the establishment of a Civil Aviation Management Programme; and
- Recognized that human and institutional capacity development should address the specific needs and conditions of States/regions, especially for States in special situations, reflecting their national development strategies and priorities.

In his closing Summit remarks, ICAO Air Navigation Bureau Director Mr. Steve Creamer recognized the challenges ahead: "ICAO is under no illusions. We know that everything we need to pursue in this domain will require resources, expertise and enhanced communication and cooperation, but we also know that we can assure a successful outcome by working together." [\[1\]](#)



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# COMBATTING HUMAN TRAFFICKING

## ONE FLIGHT AT A TIME



Human trafficking – also referred to as trafficking in persons – is a global criminal enterprise second only to the trafficking of drugs and tantamount to modern-day slavery. Victims and perpetrators can sometimes make use of commercial passenger flights, and ICAO has made it a priority to collaborate with the Office of the United Nations High Commissioner for Human Rights (OHCHR) to combat this widespread issue. Together these two agencies have now developed comprehensive guidelines to help airlines train cabin crew to recognize and help combat the trafficking in persons – one flight at the time.



Trafficking in persons is a form of slavery. It involves the trading of human beings for the purposes of exploitation. This exploitation can take different forms: prostitution, forced and bonded labour, forced marriage, organ harvesting.

The International Labour Organization's (ILO's) Global Estimates 2017 indicates that some 24.9 million people are currently forced to work under threat or coercion as domestic workers, on construction sites, in clandestine factories, on farms and fishing boats, and in the sex industry. An estimated 15.4 million people are living in forced marriage. This equates to about 5.4 victims of modern slavery for every thousand people in the world.

The financial implications of trafficking in persons are just as staggering, with related activities ranking second only to drug trafficking in terms of profits, measured in billions of dollars.

The first step in combatting this global issue is increasing awareness; the second step is training aviation personnel, including cabin crew members, in recognizing victims and/or perpetrators. Due to the growing numbers of victims being transported by air, cabin crew training is now seen as a key component of the global responses being coordinated by UN agencies such as ICAO, the OHCHR, and the Office on Drugs and Crime (UNODC).



## WHY IS ICAO INVOLVED IN THE ISSUE?

As a specialized agency of the United Nations, ICAO recognizes its potential to initiate global action. ICAO actively contributes to the achievement of the UN SDGs adopted under the 2030 Agenda for Sustainable Development, which includes a focus on fighting and combatting trafficking in persons. The Organization worked in collaboration with the OHCHR to develop new guidance material which can serve as a steppingstone for cabin crew training at individual airlines.

The joint *ICAO-OHCHR Guidelines for Training Cabin Crew on Identifying and Responding to Trafficking in Persons* (Circular 352) are the result of this collaboration. Circular 352 provides States and operators with the framework and topics that should be included in the training package; the material focuses on the identification and response to trafficking in persons and is aimed particularly at the role of cabin crew members.

## WHAT CAN STATES DO TO HELP?

States' civil aviation authorities should require that operators develop policies, procedures, training and guidance for their employees – specifically to raise awareness on trafficking in persons and appropriate responses to such events.

Youla Haddadin, Advisor on Trafficking in Persons, OHCHR, was an active member of the team of experts that developed the new guidelines. She noted that “this joint circular comes as a good example of cooperation between United Nations entities that are targeting a new constituency and that can play an important role in combatting trafficking in persons.”

If a State has other agencies that mandate or provide training on the identification and response to trafficking in persons, the Civil Aviation Authority (CAA) should leverage partnerships and collaborations that support, update and renew their current initiatives. “We highly recommend that Civil Aviation Authorities use the content of this circular as the basis for training programmes for cabin crew and other aviation personnel,” remarked Ms. Haddadin.

## WHAT CAN OPERATORS DO TO HELP?

The aviation industry is one of the primary modes of transportation utilized by traffickers, making it likely that airline personnel will come face-to-face with victims or perpetrators. ICAO recommends that each air operator develop a set of dedicated policies, procedures and reporting protocols for when such encounters occur. Specialized training should be provided to cabin crew, as they would be a first point of recognition

*International Air Transport Association (IATA) #eyesopen awareness campaign poster.*





onboard, along with flight crew members (pilots), as they would be the first point of reporting suspected cases of trafficking to law enforcement.

Sky Regional Airlines, which operates as Air Canada Express, was the first airline in Canada to implement a joint flight and cabin crew training programme to identify and respond to suspected cases of trafficking in persons onboard. Ms. Mikaela Dontu, Director of Inflight at Sky Regional, pioneered the training programme. "Cabin crew continue to be our best asset when it comes to ensuring the safety, security and wellbeing of our passengers on board," she said. "It seems only natural to benefit from their expertise. The training we developed is based on specific guidelines and it gives our crews the knowledge and tools they need to handle suspected cases of human trafficking for a best possible outcome."

### HOW SHOULD CABIN CREW MEMBERS RESPOND TO TRAFFICKING IN PERSONS?

Cabin crew members are in a unique situation where they can observe passengers over a certain period of time, allowing them to use their observation skills to identify a potential victim of trafficking. Cabin crew training already encompasses reactions expected of crew members in various types of situations, from emergency situations to security threats, and the appropriate responses expected from them. If cabin crew members suspect a case of trafficking in persons onboard, a proper assessment of the situation is necessary before any response can be initiated. Cabin crew members should be on the lookout for certain key indicators that may be present in the cabin environment which can help cabin crew members with that assessment, such as: passengers who avoid eye contact and social interaction, who are not in control of their travel documents, or who are not wearing appropriate clothing for their destination.

The role of cabin crew should be limited to observing the situation, initiating non-threatening conversations with the suspected victims to gather information, and reporting their concerns to the Captain, who will ultimately decide if law enforcement needs to be alerted. Suspected cases of trafficking in persons are dealt with by



law enforcement. Therefore, cabin crew members should not confront the suspected traffickers or try to rescue the victims, as this may do more harm. This notion is reflected in the concept of "Do No Harm," which is meant to ensure that a potential victim is not further jeopardized and to safeguard the crew members and passengers.

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*"... cabin crew members should not confront the suspected traffickers or try to rescue the victims, as this may do more harm"*

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### GOING BEYOND THE CABIN

Although the content of the guidelines is applicable to cabin crew members, the issue of trafficking and combatting it involves several stakeholders, not just the cabin crew. In addition to flight crew, all personnel at airports should also be trained to recognize trafficking in persons and how to report any suspected case to the appropriate authorities. The content of Circular 352 may be used and adapted to create training packages for different transportation stakeholders (i.e. trains, buses, cruise lines).

### BRINGING THE STAKEHOLDERS TOGETHER

ICAO and OHCHR will hold a joint *Forum to Combat Human Trafficking in Aviation* in Geneva, Switzerland on 28 May 2018. The event will bring together representatives from States, human rights organizations, and industry. Kate Gilmore, UN Deputy High Commissioner for Human Rights, and Dr. Fang Liu, Secretary General of ICAO, will open the event, where States and airlines will share their initiatives to combat trafficking in persons and exchange best practices to further advance the issues. "Our goal with this initiative is to ensure that civil aviation's remarkable ability to connect global citizens and societies is not abused by those with such malicious intent," said Dr. Lui. "States and Civil Aviation Authorities can contribute to this noble aim by adopting the new guidelines we developed and by disseminating them to the airline operators registered in their national jurisdictions." <sup>[3]</sup>

Forum information is available at <http://www.icao.int/meetings/HTForum2018>. There will be no registration fee.

### MARTIN MAURINO, M.ENG.

Safety, Efficiency and Operations Officer,  
ICAO Air Navigation Bureau (ANB)

### RESOURCES

The ICAO-OHCHR Guidelines for Training Cabin Crew on Identifying and Responding to Trafficking in Persons (Circular 352) can be obtained from the ICAO Cabin Safety Website, at: [www.icao.int/cabinsafety](http://www.icao.int/cabinsafety).



|| NO COUNTRY LEFT BEHIND ||

#### EVENT

### ICAO WORLD AVIATION FORUM (IWAf)

20-22 November 2017

Abuja, Nigeria

#### HOSTS

Federal Republic of Nigeria with support from the African Union Commission (AUC), the African Development Bank (AfDB), and the Planning and Coordinating Agency of the AU's New Partnership for Africa's Development (NEPAD).

#### PARTICIPANTS

More than 500 high-level participants from governments, development banks and international organizations

#### HIGHLIGHTS

- Communiqué: Financing the Development of Aviation Infrastructure
- Declaration and Framework of a Plan of Action for Development of Aviation Infrastructure in Africa
- Nigeria is the first State to host the IWAf outside ICAO Headquarters in Montréal, Canada

*ICAO Council President Dr. Olumuyiwa Benard Aliu (left) and Secretary General Dr. Fang Liu (right) with Nigeria's Minister of State, Aviation, the Honourable Hadi Sirika, at the first World Aviation Forum to be held outside ICAO Headquarters.*

## AVIATION INFRASTRUCTURE REQUIRES MASSIVE INVESTMENT



"The global investment needs for airport infrastructure are estimated at 1.8 trillion dollars from 2015 to 2030," ICAO Council President Dr. Olumuyiwa Benard Aliu remarked in his opening address at IWAf/3. The estimate is based on analysis by the Organization for Economic Cooperation and Development (OECD).

"Taken together," Dr. Aliu explained, "the impacts of air transport on nations, societies and businesses are as numerous as they are substantial. This explains why aviation development is such a high priority today, but it also brings to mind the many challenges which face us along that path. These include impacts on air transport capacity and efficiency if new infrastructure is not established, the new and more complex systems which must be set in place to manage the coming growth safely, and, perhaps most importantly, the skilled local

workforce needed to operate all of these new capabilities, professionally and sustainably."

"Indeed, all of our *No Country Left Behind* efforts seek to ensure that our Member States can access and optimize, on a more equitable and dependable basis, aviation's numerous socio-economic benefits," he stated.

Dr. Aliu remarked that the air transport development now needed in Africa will require massive financing commitments,

# 3 RECOMMENDATIONS FROM DR. ALIU

1

States need to determine their strategic aviation infrastructure plans and targets to be consistent with the ICAO Global Plans. They can accomplish this by conducting gap-analyses between forecast demand and current capacity, and according to their national and regional needs. Business case analyses should also be conducted to accurately estimate the financial requirements for identified projects. This reduces investment risks and aids in the evaluation of future returns.

2

Institutional, legal and regulatory frameworks, together with effective monitoring and evaluation mechanisms, should be established to encourage investments and handle the complex nature of project finance transactions. This takes into account the fact that the involvement of private entities in public infrastructure projects is not always straight-forward.

3

Focus should be placed on investment in “soft infrastructure” such as human capacity development. Business investment in infrastructure development requires both simultaneous financial investment and enhancement in human capacity – these are directly linked and completely dependent of each other.

*Excerpt from opening remarks by Council President Dr. Olumuyiwa Benard Aliu at the Third ICAO World Aviation Forum*



NO COUNTRY LEFT BEHIND

especially considering that most African airports will be exceeding their capacities by just 2020. Air navigation technologies continent-wide are also in need of urgent upgrading.

He welcomed the new Declaration and Framework of a Plan of Action for Development of Aviation Infrastructure in Africa that was adopted at the event, within the framework of the “Lomé Plan of Action 2017 – 2019” of the African Union.

The economic activity of the continent is improving, and still catching up to other regions of the world in certain respects, but it is also characterized by a dynamic and emerging industrial sector, and great potential in servicing a large and developing population.

ICAO Secretary General Dr. Fang Liu remarked that credible means of planning and implementation are urgently required to manage future air transport traffic growth safely, securely and efficiently. “I call on all governments which have not already done so to analyze their current

capacities and expectations, and to urgently establish national and/or regional aviation infrastructure programmes and plans respective of those aims.”

Dr. Liu also emphasized that ICAO “will re-double our efforts to enhance and develop tools, analyses and services to support governments in identifying their aviation deficiencies and infrastructure gaps.” She called on States to align and integrate their aviation infrastructure programmes based on a balanced development approach, one which includes multi-modal transport and related urban planning initiatives.

In the IWAF/3 concluding communiqué, “Financing the Development of Aviation,” the participants stated: “We acknowledge that each State has the primary responsibility for its own aviation development and reiterate that the role of national development plans and strategies cannot be overemphasized. We call on States to commit to aligning and integrating their aviation infrastructure programmes and plans with an appropriately balanced

development of transport modes, including multi-modal and urban planning initiatives; and linking them with national and/or regional development plans and strategies. Such planning and development efforts also need to be harmonized with the international economic and financial frameworks, and supported by economic cooperation and, when needed and as appropriate, international assistance for development.

“We reiterate our call on States to take pragmatic measures to build a transparent, stable and predictable investment climate to support aviation development, for example, by engaging multi-stakeholders, diversifying funding sources and elevating the role of private sector, including through private investment, business reform, private finance initiatives, public-private partnership (PPP) and various incentive schemes. International private capital flows, particularly foreign direct investment, along with a stable international financial system, are also vital complements to domestic public and private resources.” [\[1\]](#)



# AFRICA SECURING CIVIL AVIATION

SECURITY & FACILITATION

|| SECURITY & FACILITATION ||

## EVENT

### ICAO LEGAL SEMINAR FOR STATES IN AFRICA

27-28 November 2017

Nairobi, Kenya

## HOST

International Civil Aviation Organization (ICAO)  
Regional Office for Eastern and Southern  
Africa (ESAF)

## KEY DISCUSSIONS

- Benefits and obligations of States of international legal instruments adopted by ICAO, including the Beijing Convention, the Beijing Protocol and the Montréal Protocol of 2014
- Other ICAO provisions dealing with emerging threats
- Ratification and implementation of international air law instruments



As the ICAO Legal Seminar for States in Africa got underway in Nairobi, Kenya, last November, Uganda deposited its instrument of ratification, the 22nd ICAO Member State to do so, bringing the Beijing Protocol into force on 1 January 2018. Ten African States are currently party to the Beijing Convention and Beijing Protocol of 2010, the result of collective efforts of the international community to modernize the legal framework for aviation security. The Beijing Convention and Protocol supplement the Convention for the Suppression of Unlawful Seizure of Aircraft (The Hague Convention 1970 and Montréal Convention 1971).

More than 50 attendees from 22 States and two regional safety oversight organizations (RSOOs) participated in the seminar, facilitated by the ICAO Legal Affairs and External Relations Bureau (LEB). It was convened to promote the ratification and implementation of various aviation security instruments, namely, the Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation and the Protocol Supplementary to the Convention for the Suppression of Unlawful Seizure of Aircraft (Beijing 2010 Instruments) and the Protocol to Amend the Convention on Offences and Certain Other Acts Committed on Board Aircraft (Montréal 2014 Protocol). The Montréal Convention of 1999, the Cape Town Convention and its Aircraft Protocol of 2001 and the Protocols amending Articles 50 (a) and 56 of the Chicago Convention, both signed at Montréal on 6 October 2016, were also covered.

The Beijing 2010 Instruments are intended to provide an international legal framework for States to respond to new and emerging threats to aviation security and safety. In particular, by criminalizing a number of acts constituting new and emerging threats against civil aviation, the Beijing instruments will strengthen the capacity of States to prevent the commission of these offences, and to prosecute and punish those who commit such offences wherever

in the world they occur. In addition, the Montréal Protocol 2014 will enable States to curb the escalation of the severity and frequency of incidents of unruly behaviour by passengers onboard aircraft

Mr. Barry Kashambo, ESAF Regional Director, highlighted that an aim of such events was to support the *No Country Left Behind* initiative and to contribute to the United Nations Sustainable Development Goals (SDGs). The Beijing 2010 Instruments also contribute to the implementation of the United Nations Global Counter-Terrorism Strategy, adopted in 2006, by enhancing the global treaty regime on counter-terrorism.

ICAO has in the past facilitated several legal seminars in Africa dealing with multilateral treaties on international air law prior to their adoption. The event in Nairobi, Kenya was designed to review the status of implementation of the air law treaties and establish the assistance that States need to become parties and implement them. Seminar participants included officials from civil aviation authorities (CAAs) responsible for air law and aviation security and government ministries involved in the implementation process.

The seminar also had support from partners in the States and industry: Kenya, Mali, Singapore, and the International Air

## RATIFICATION STATUS, MONTRÉAL PROTOCOL 2014

- 22 States required to bring MP14 into force
- Portugal acceded in November, bringing the current total to 12

Bahrain,  
Congo,  
Cote d'Ivoire,  
Dominican Republic,  
Egypt,  
Gabon,  
Guyana,  
Jordan,  
Malta,  
Mozambique,  
Portugal  
and Uganda

Transport Association (IATA), who together with LEB, ESAF and the Western and Central African (WACAF) regional offices provided expert facilitators to the event. The event was also supported by funds from the ICAO AFI SECFAL Plan, of which one objective is to address aviation security and facilitation deficiencies including ratification and implementation of air law instruments in that field. Seminar participants called upon ICAO to arrange similar events on a regular basis as a means to promote awareness while facilitating sharing of experiences and to assist States in dealing with implementation challenges. [3]





## II SAFETY &amp; EFFICIENCY II

## EVENT

ICAO'S 2018 ASIA PACIFIC  
(APAC) MINISTERIAL  
CONFERENCE

31 January – 1 February 2018

Beijing, China

## HOSTS

People's Republic of China

## PARTICIPANTS

Nearly 300 people, including Ministers in charge of civil aviation representing 36 governments; persons in charge of civil aviation agencies in France, Russia, the United Kingdom, and the United States; plus six international organizations.

## KEY OUTCOMES

- First such high-level gathering in the ICAO APAC Region in recent years.
- Endorsed a new declaration formalizing shared commitments on high-priority aviation safety and efficiency objectives, including aviation safety oversight, State Safety Programme (SSP) implementation, airport certification, timely implementation of the Asia/Pacific Seamless Air Traffic Management Plan, and sharing of information and best practices for air navigation and search and rescue services.



✈ The ICAO Asia Pacific Region has the second largest market share of international traffic at 29 per cent, and by 2022 China is expected to become the world's largest air traffic market. Against that backdrop, high-level civil aviation officials met early in 2018 at the first ICAO APAC Ministerial Conference to solidify shared commitments to critical aviation safety priorities, as well as to identify opportunities and challenges ahead.

With the theme of "Sharing, Inclusion, Collaboration and Jointly Shaping the Future Aviation of Asia Pacific," the conference focused discussions on safety and efficiency challenges to reach a broad common understanding, establish sound safety regulation systems, increase investment in air transport infrastructure and aviation personnel training, and further facilitate the safe, efficient, balanced and sustainable development of civil aviation in the APAC region.



# ASIA & PACIFIC MINISTERS DECLARE AVIATION SAFETY AND EFFICIENCY PRIORITIES

SAFETY &amp; EFFICIENCY

The conference adopted the Beijing Declaration, which demonstrates common concerns, positions and visions shared by Asia Pacific States.

The Minister for Civil Aviation from Papua New Guinea, the Honourable Alfred Manase, said, “The Declaration reflects the common concerns, positions and vision of all APAC Member States in terms of aviation safety, air navigation services, accident investigation and human resources. It is not only a consensus on promoting the development of the aviation industry in the Asia Pacific region, but it will also be a multilateral policy guideline for promoting the development of Asia Pacific civil aviation in the future. It will be of great significance in strengthening the cooperation among the countries in the field of civil aviation, further enhancing the level of

aviation safety in the Asia Pacific region, promoting the healthy, sustained and high-quality development of civil aviation in the region for the social and economic enhancement of our communities.”

“The purpose of the Declaration will be to formalize shared commitments to cooperative progress on objectives relating to safety oversight and State Safety Programme (SSP) implementation, airport certification, the timely implementation of the Asia/Pacific Seamless Air Traffic Management (ATM) Plan, and the sharing of information and best practices for air navigation and search and rescue services,” highlighted ICAO Council President Dr. Olumuyiwa Benard Aliu. “This new declaration will also reinforce agreements and actions supporting the establishment of independent accident investigation

authorities, as well as toward some additional and very critical objectives for human capital development and the training and retention of this region’s next generation aviation professionals,”

Dr. Liu Fang, ICAO Secretary General, noted that the civil air transport sector in Asia Pacific today employs more than 30 million people and contributes more than US\$ 630 billion in Gross Domestic Product (GDP). “These results, while very positive and forecast to continue, also point to some serious challenges for many local governments,” she cautioned. “For example, while there is rapid growth with respect to your region’s traffic, operators, and fleets, there is also quite low corresponding growth in many of your civil aviation authorities’ resources and capabilities.”



Mr. Feng Zhenglin, Administrator, Civil Aviation Administration of China (CAAC), called on Asia Pacific countries to further strengthen coordination, build consensus, work together and stick to the principle of finding solutions to civil aviation issues in the APAC region, noting that this was the collective responsibility of the whole civil aviation community in the region.



ICAO Secretary General Dr. Fang Liu commented that Asia Pacific today is seen as a very promising region with great potential, but there are also some serious challenges for many local governments. For example, while there is rapid growth with respect to the region's traffic, operators, and fleets, there is also quite low corresponding growth in many States' regulatory authorities' resources and capabilities.



ICAO Council President Dr. Olumuyiwa Benard Aliu said of the Declaration endorsed by the APAC Ministerial Conference: "From a broader standpoint, it should be appreciated as an unprecedented platform for high-level interaction between your States, a signal of the level of your safety and efficiency commitments to the travelling public and industry, and a tool to help foster long-lasting relationships in the areas of bilateral or multilateral technical cooperation and assistance."

Some ICAO Member States have yet to establish an effective regulatory system for aviation safety. Air traffic management levels need to be enhanced. With the increase in digital technologies, internet security also poses a threat to aviation safety and security. Dr. Liu pointed out that the APAC states should strengthen building of air traffic services, improve air traffic management levels, establish new route structures, accelerate development of infrastructure including airports, change the design and operation mode of airports, and follow the growing trends of future air transportation.

The Secretary General indicated that ICAO will strengthen its cooperation with APAC States with a focus on assistance. "ICAO's Regional Office in Bangkok is now a better-resourced and more assistance-focused partner for Asia and Pacific States," she stated. She also cited the new APAC Development and Assistance Tool, regional assistance and capacity building activities coordinated with donor States and partner organizations, the new safety enhancement initiatives to mitigate accident risks due to Loss of Control Inflight (LOCI), and the new programme for improving airport certification (in conjunction with States and Airports Council International - ACI).

Mr. Ma Kai, Vice Premier of the State Council in China, pointed out that the Belt and Road initiative proposed

by Chinese President Xi Jinping has received "overwhelming response and support" from the countries and regions involved as well as from the international community. China, he added, stands ready to conduct policy-wise communication, support smooth trade and financial flow and make closer people-to-people contact with countries along the Belt and Road, and create a new platform for international cooperation, thus fueling common development.

Mr. Kai encouraged APAC countries to better harmonize their infrastructure construction plans and technical standard systems related to airports and air traffic control and routes, jointly promote "big regional air corridors," further liberalize the regional aviation market by adopting a more positive, open and flexible aviation policy and constantly optimizing flight route networks, and fully implement the ICAO No Country Left Behind initiative to enable more countries and their people to enjoy the fruits of civil aviation development.

Mr. Feng Zhenglin, Administrator, Civil Aviation Administration of China (CAAC), emphasized that Asia Pacific is a vibrant region in terms of civil aviation growth and would maintain sound development in the next 20 years. He said that, in line with the principle of friendly consultation, mutual benefits and win-win cooperation, China civil aviation stands ready to reduce its market-access restrictions, further liberalize

air traffic rights and share development achievements with APAC countries in order to make contributions to the long-term and sustainable development of civil aviation industry in the region.

The CAAC Administrator called on Asia Pacific countries to further strengthen coordination, build consensus, work together and stick to the principle of "finding solutions to civil aviation issues in the APAC region," (which) is "the collective responsibility of the whole civil aviation community in the region" so as to develop in a shared, inclusive and collaborative way, create a better environment and more favourable conditions for the APAC civil aviation community to achieve better quality development, establish a more closely intertwined civil aviation community with shared interests and future in the region, and shape a brighter civil aviation future for Asia Pacific.

He noted that China made an active response to ICAO's No Country Left Behind initiative, participated in the Aviation Safety Implementation Assistance Partnership (ASIAP), professionals training and other civil aviation cooperation projects, and would further deepen its cooperation with all countries in the APAC region and contribute more Chinese wisdom and strength to promoting the development of civil aviation industry in the region. [\[3\]](#)



# COMMITMENTS FROM THE DECLARATION OF ASIA PACIFIC MINISTERIAL CONFERENCE ON CIVIL AVIATION

## SAFETY

- Progressively enhance safety oversight capability to achieve a USOAP EI score higher or equal to the global average by 2022
- Implement an effective State Safety Programme (SSP) by 2025
- Endeavour not to have any Significant Safety Concerns (SSCs) under the USOAP Continuous Monitoring Approach (CMA), and to resolve any future SSCs within the time frame agreed with ICAO
- Certify all aerodromes used for international operations by 2020
- Use data driven methodologies to identify high-risk categories of occurrences (e.g. runway safety, loss of control in flight and controlled flight into terrain), and implement collaborative solutions to reduce accident rates and fatalities in the Region
- Include aviation safety in national planning frameworks such as National Development Plans (NDPs) supported by robust Civil Aviation Master Plans
- Promote regional government and industry collaboration for sharing of best practices in safety management through the Regional Aviation Safety Group (RASG).

## AIR NAVIGATION SERVICES

- Implementation by 2022 of the Asia Pacific Seamless Air Traffic Management (ATM) Plan to enhance ATM capacity and harmonisation in the Region, including a focus on:
  - › Transitioning from Aeronautical Information Service (AIS) to Aeronautical Information Management (AIM) System
  - › Performance Based Navigation (PBN) implementation
  - › Common ground/ground telecommunication infrastructure to support Air Navigation Services (ANS) applications
  - › An enhanced level of civil/military cooperation
  - › Enhanced surveillance capability including Automatic Dependent Surveillance-Broadcast (ADS-B) technology
  - › Air Traffic Flow Management/ Collaborative Decision Making (CDM) implementation for high density airports
  - › Air navigation in national planning frameworks such as National Development Plans (NDPs) supported by National Air Navigation Plans.
- Promote sharing of best practices in the provision of ANS, including Aeronautical Search and Rescue (SAR), Meteorological Services for International Air Navigation (MET) and Air Traffic Flow Management (ATFM) through regional cooperation and enhanced coordination.

## ACCIDENT INVESTIGATION

- Establish an accident investigation authority that is independent from State aviation authorities and other entities that could interfere with the conduct or objectivity of an investigation or where appropriate develop a bilateral, sub-regional or regional partnership to support the establishment of accident investigation capabilities to serve the Region, sub-region or State.

## HUMAN RESOURCE DEVELOPMENT

- In line with the ICAO initiative on “Next Generation of Aviation Professionals (NGAP),” accord priority to human capital development to provide sufficient qualified and competent aviation professionals to support the Region’s growing needs, including where appropriate:
  - › Establish access to quality training
  - › Encourage sharing of resources bilaterally and/or multi-laterally as well as with industry partners
- Promote the attraction of new talent and the retention of trained, qualified and experienced personnel among State Aviation Organisations (e.g. regulators, air navigation service providers).







## ICAO GLOBAL AVIATION SECURITY PLAN

# PRIORITIES AND TARGETS ENDORSED BY ASIA & PACIFIC STATES

SECURITY &amp; FACILITATION

 The new *Global Aviation Security Plan (GASeP)* was established by the ICAO Council in November 2017. “It includes an ambitious framework for enhancing international aviation security over the coming years, and through the 32 actions and 94 tasks identified in its Roadmap, the aviation security community will now be much better prepared and more effectively aligned with Security Council Resolution 2309,” ICAO Secretary General Dr. Fang Liu told participants in the ICAO Regional Aviation Security Conference in Bangkok, Thailand in December. “And while aggressive in some respects, these targets and dates are also fully achievable with dedicated effort.”

Dr. Liu welcomed the endorsement of a new Asia and Pacific (APAC) Aviation Security Roadmap, which will now align national and regional programmes and targets with the GASeP.

She said the GASeP, together with United Nations Security Council Resolution 2309, adopted in September of 2016, “provide us with an important foundation from which to pursue better coordinated and more effective actions to combat unlawful acts of interference against civil aviation targets.”

She noted that the new GASeP Roadmap will entail important and fairly significant work for a number of Asia and Pacific States, calling on them “to be open to accepting assistance to enhance their

## EVENT

REGIONAL CONFERENCE  
TO ADDRESS COMMON  
CHALLENGES THROUGH  
IMPLEMENTATION OF  
THE GLOBAL AVIATION  
SECURITY PLAN (GASEP)

20-21 December 2017

Bangkok, Thailand

## HOSTS

Kingdom of Thailand  
ICAO

## PARTICIPANTS

150 delegates representing 23 Member  
States and 6 International Organizations

## KEY DISCUSSIONS

- Priority setting at the Regional and State levels to address common aviation security challenges
- Goals and targets established by the ICAO *Global Aviation Security Plan* (GASeP)

local effective implementation, whether it involves training, technology, or mentoring, as well as to ensuring that any solutions set out are fully sustainable.”

The Secretary General reiterated that ICAO will continue to help coordinate assistance and capacity-building activities – consistent with its ongoing *No Country Left Behind* initiative – between donor and partner States, and organizations and recipient States. She highlighted ICAO’s Regional Aviation Security Coordination Forums and the Asia and Pacific’s Cooperative Aviation Security Programme (CASP-AP) as examples.

She also stressed that human resources development is fundamental to how sustainably Asia and Pacific States would

*“It will only be by virtue of sustained political will, especially at the highest levels of government and industry, that the Global Aviation Security Plan will succeed in its ambitious mandate.”*

*Dr. Fang Liu, ICAO Secretary General*





be able to meet their new obligations under the GASeP: “Within the APAC Region in particular, States will need to ensure that they have available, and can retain, sufficient numbers of trained, experienced and professional regulatory and operational aviation security professionals.”

“It will only be by virtue of sustained political will, especially at the highest levels of government and industry, that the Global

Aviation Security Plan will succeed in its ambitious mandate,” she concluded.

The Bangkok conference was officially opened by His Excellency Prayut Chan-o-cha, Prime Minister of Thailand. He expressed his country’s thanks to Dr. Liu for ICAO’s leadership in aviation safety and security and commending the expanded role now being played by ICAO’s Bangkok Regional Office in Asia and Pacific aviation affairs. [J](#)

*ICAO Secretary General, Dr. Fang Liu (centre left), and His Excellency Prayut Chan-o-cha, Prime Minister of Thailand (centre right), open the ICAO Regional Aviation Security Conference in Bangkok, Thailand*



In separate discussions with the Prime Minister of Thailand, His Excellency Mr. Prayut Chan-o-cha (right), and the Minister of Transport of Thailand, His Excellency Arkhom Termpittayapaisith, Secretary General Dr. Fang Liu (left) commended the successful efforts made by Thailand to resolve Thailand’s Significant Safety Concerns (SSC).

Dr. Liu emphasized the critical importance of increased investment more generally in aviation infrastructure and human resource development to enable the Thai government to optimize its global aviation connections to the benefit of local citizens and producers. She also stressed that Thailand should begin integrating its aviation

development objectives into its National Economic Development Masterplan.

She noted the importance of developing world-class training organizations in order to develop high-quality next-generation aviation professionals for the entire Asia and Pacific Region.

The ICAO Secretary General also held a number of bilateral meetings with senior government and aviation officials while in Bangkok, accompanied throughout by Minister Termpittayapaisith, Mr. Djibo Boubacar, Director of ICAO’s Air Transport Bureau, and Mr. Arun Mishra, ICAO’s Asia and Pacific Office Regional Director.



## THE NEW GAsEP

An Interview with **Sylvain Lefoyer**

✈ In September 2016, delegates at the 39th Session of the ICAO Assembly agreed to accelerated development of a Global Aviation Security Plan (GAsEP) as a future aviation security policy and programming framework. The Plan calls for action at the global, regional and national levels, as well as by states, industry and other stakeholders, in raising the level of implementation of Annex 17 – Security; intensified efforts are also required for ICAO to enhance its capacity to support States.

**What is the fundamental purpose of the new Global Aviation Security Plan (GAsEP)?**

**Mr. Lefoyer:** There are two ideas. The first is to develop a practical way to help States improve their aviation security, and the second to streamline the processes in ICAO, to have a common approach for safety and security, similar to the framework of the *Global Aviation Safety Plan (GASP)* and *Global Aviation Navigation Plan (GANP)*.

The previous framework, the ICAO Comprehensive Aviation Security Strategy (ICASS) was strategic, high level. The ICASS produced some very good outcomes and raised AVSEC as a high-level priority, but it was not regionalized and nationalized. The experts who participated in the Task Force wanted this new framework to be more operational.

This Task Force produced the first draft of the GAsEP in March 2017. It was submitted to the Unlawful Interference Committee (UIC), then to the ICAO Council. After review, a State Letter was transmitted, and comments received were processed last summer. The final version of the GAsEP was presented to the Council and approved in November. One thing this highlights is that it is possible for ICAO and Member States to work on a fast-track mode on critical issues.

**There have been two regional conferences to discuss the GAsEP – one for the Africa and Middle East regions last August and for the Asia-Pacific region in December. Similar conferences will be held in 2018 for Europe and the Americas. What are the objectives here?**

**Mr. Lefoyer:** The GAsEP is not a new set of standards or requirements; it's a way to define the priorities, actions and tasks that support the implementation of the ICAO Standards and Recommended Practices (SARPs) in aviation security.

At the ICAO level we can define global priorities, actions and tasks but each Region and State has to define adapted to their local risk context and development needs. The idea of the regional conferences is to help everybody understand the same thing, to work on the same grounds, to help each stakeholder identify what is expected of him.

There will be a High-Level Conference on Aviation Security in November, which will provide an opportunity to take the feedback from the regional conference process and update the GAsEP, if needed, to prepare for the 40th Assembly in 2019.

**What tools are applied to help define the priorities, actions and tasks?**

**Mr. Lefoyer:** The main tool is ICAO's Universal Security Audit Programme



*Sylvain Lefoyer is Deputy Director of Aviation Security and Facilitation in the ICAO Air Transport Bureau*

(USAP) that assesses the level to which States are implementing ICAO standards.

We are also conducting needs assessments to help States and Regions identify what topics have to be addressed.

One thing we have been working on quite extensively the past two years is risk assessment. We are trying to acculturate the aviation security community to a risk assessment process so they can have the tools to analyze their own vulnerabilities, their own threats they are facing.

**Are AVSEC issues consistent around the world?**

**Mr. Lefoyer:** Actually, it varies a lot. The global priorities are the same but at the regional and national levels, actions and tasks are really different. States don't have the same effective level of implementation; they don't have the same resources; they don't have the same level of involvement of governments.

One priority is cooperation and assistance so States that are able to do so are invited to share their resources and knowledge with other States and help them progress.

We have to make sure we don't disclose sensitive information that would help circumvent security. But we have to communicate more and better on aviation security in order to have the traveling public confident in the fact that we are actively working on their protection. **J**

# GREENER AIRPORTS

|| ENVIRONMENTAL PROTECTION ||

## EVENT

### SEMINAR ON GREEN AIRPORTS

29-30 November 2017

ICAO Headquarters, Montréal, Canada

## ORGANIZER

International Civil Aviation Organization (ICAO)

## KEY DISCUSSIONS

- Smart buildings, renewable energy, green mobility, climate change resilience, community engagement and sustainability reporting.
- New business models and green financing for environmental projects in the spirit of the ICAO *No Country Left Behind* initiative and the UN Sustainable Development Goals (SDGs).

✈ “There are presently close to 400 airports worldwide which are either under construction, undergoing major expansions, or are at advanced planning stages for related objectives,” remarked ICAO Secretary General Dr. Fang Liu at this seminar designed to encourage forward-looking thinking on innovative environmental projects at airports. This represents a 25 percent increase compared to 2016.





*Left: The new terminal at Singapore Changi Airport is infused with plants.*

*Above: Incheon Airports New Terminal 2*

*Right: Zha Beijing New Airport*



"This underscores why it is so important today that future increases in air transport capacity are managed by airports which have been built or modernized on the basis of the most effective environmental policies and capabilities available," she stressed.

"Effective investment paradigms have always called for a clearly detailed and positive business case, featuring concrete and quantifiable returns, but over and above this the financing community has now also become adamant that environmental compliance must be a clear pre-requisite for their future involvement in major infrastructure projects," said the Secretary General.

"Each new airport infrastructure project is in and of itself a new opportunity to surpass compliance with the latest sustainability standards, minimize the impact of airport activities on the environment, and reduce the effect of climate change on related infrastructure and operations," she added.

The seminar was organized to permit ICAO Member States and industry stakeholders to exchange ideas on the latest technological, operational and policy advancements with an environmental focus which can assist the ongoing efforts of airports globally to decrease greenhouse gas emissions

and assure more sustainable operations. The event highlighted experiences of the greenest airports in the world (including Galapagos Airport, running solely on solar and wind power) and presentations from key industry stakeholders such as Airports Council International (ACI), Aéroports de Paris, EUROCONTROL, Car2go, ICF International, KPMG and many more.


Among the topics discussed: effective management of environmental impacts at airports, certification schemes for operators, clean energy solutions from wind, solar, biomass, and tidal energy sources, sustainable mobility initiatives, climate adaptation and resilience, community engagement, the financing of environmental projects and current investor expectations, and the key benefits of sustainability monitoring, reporting and outreach.

"Airports have been very encouraged by the way ICAO, States, and the industry have worked together to deliver a robust climate change response from the sector," said Ms. Angela Gittens, Director General of ACI World. "Clearly, collaboration is key. Continuing to work together is the best way forward to ensure that our efforts and commitments are a reality on the path to sustainable aviation. We need to continue to work together on technology and operational and policy advancements

that can support the airport sector's sustainability strategy."

During the event, ICAO, the United Nations Development Programme (UNDP), and the European Union (EU) launched a compendium of new guidance material, tools and resources for governments which had been developed under various capacity-building and assistance projects. These are intended to provide States with information on how to implement measures to reduce CO<sub>2</sub> emissions from international civil aviation.

ICAO also launched an e-learning course for the preparation of States' Action Plans on CO<sub>2</sub> Emissions Reductions during the seminar, developed in cooperation with the United Nations Institute for Training and Research (UNITAR), and with the financial assistance of the EU under the framework of the ICAO - EU Assistance Project Capacity building for CO<sub>2</sub> mitigation from international aviation.

Secretary General Liu noted, "The guidance material, new tools, and resources we are delivering here showcase ICAO's commitment to partnerships and capacity-building, in the spirit of our *No Country Left Behind* initiative, and towards States' full attainment of the Agenda 2030 UN Sustainable Development Goals." 

# SUSTAINABLE AVIATION FUELS

ENVIRONMENTAL PROTECTION

II ENVIRONMENTAL PROTECTION II

## EVENT

### SECOND ICAO CONFERENCE ON AVIATION AND ALTERNATIVE FUELS (CAAF/2)

## ORGANIZER

International Civil Aviation  
Organization (ICAO)

## KEY DISCUSSIONS

- Developments in research and certification of aviation alternative fuels
- Financing and assistance programmes for aviation alternative fuels
- Challenges and policy making
- Defining the ICAO vision on aviation alternative fuels and future objectives



✈ The second ICAO Conference on Aviation and Alternative Fuels (CAAF/2) developed an ICAO Vision on Aviation Alternative Fuels that will encourage States to take action at the national and international levels to further develop and deploy sustainable aviation fuels (SAF). The ICAO Vision calls for a significant proportion of conventional aviation fuels (CAF) to be substituted with SAF by 2050, based on the assumption of a progressive increased use of SAF.

Left: Genève Aéroport

Below: Dr. Olumuyiwa Benard Aliu (centre), ICAO Council President, discusses aviation fuels at CAAF/2.

The use of sustainable fuels has been one of the fastest-growing green initiatives implemented by the aviation sector.

ICAO and its Member States continue to play an active role in the development and deployment of sustainable aviation fuels. Ten years after the first blended alternative fuel demonstration flight by a commercial airline, it is estimated that more than 100,000 commercial flights, operated by over 25 airlines, had used a blend of alternative fuel.

Sustainability of aviation fuels is essential to the efforts of international civil aviation to reduce its CO<sub>2</sub> emissions. ICAO is currently developing sustainability criteria as part of the work on the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

To continuously assess progress on SAF development and deployment and to coordinate with States and other stakeholders, ICAO will organize regular workshops and seminars leading to the third ICAO Conference on Aviation

Alternative Fuels (CAAF/3), to be convened no later than 2025.

The CAAF/2 also recognized the ICAO Global Framework on Aviation Alternative Fuels (GFAAF) as the platform for sharing examples of policy implementation, results, and lessons learned. The GFAAF was created following a CAAF/1 recommendation in 2009 and now contains more than 550 news announcements. It showcases details of past and ongoing initiatives, facts and figures, and answers to frequently asked questions.

ICAO also maintains a record of the States that have expressed interest in sustainable aviation fuels through the voluntary State Action Plan initiative. More than three dozen States have indicated interest in reducing their CO<sub>2</sub> emissions from international aviation through the use of SAF.

As part of technical assistance activities, ICAO, through the ICAO-European Union Assistance Project, has completed SAF



5

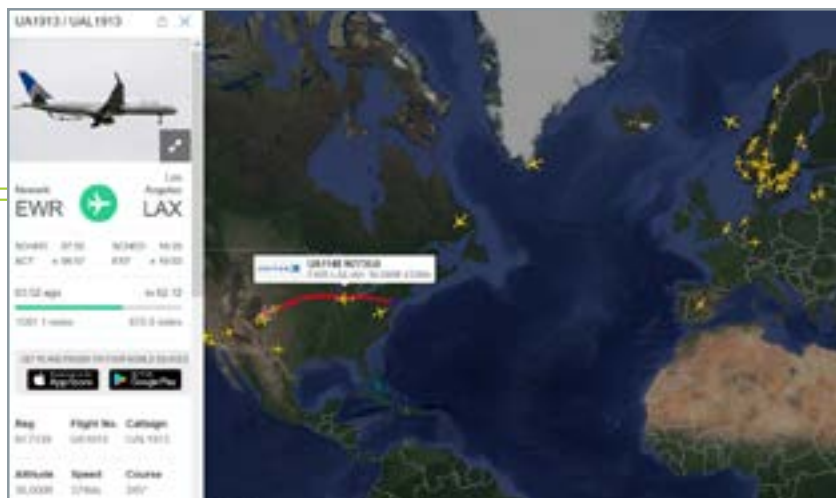
CERTIFIED  
CONVERSION  
PROCESSES  
TO PRODUCE  
ALTERNATIVE  
FUELS

100,000  
COMMERCIAL FLIGHTS  
HAVE USED  
ALTERNATIVE FUELS

ENVIRONMENTAL PROTECTION

**Announced alternative fuel off-take agreements.** Many airlines have committed to purchasing alternative fuels from new fuel producers to establish and guarantee a market for these fuels. As of November 2017, these agreements total about 0.9Mt/year.

PRODUCER	PURCHASER	OFF-TAKE PRODUCTION PER YEAR		START/ LENGTH OF AGREEMENT (YEARS)
		(MILLION GALLONS)	(MT)	
Air Total	Airbus / China Airlines	5 A350-900 deliveries at 10% blend		2017 / N/A
AltAir	United Airlines	5	0.015	2016 / 3
	Gulfstream / World Fuel	N/A	N/A	N/A / 3
	SkyNRG / KLM	N/A	N/A	2016 / 3
AltAir/Neste	KLM / SAS / Lufthansa / AirBP	0.33	0.001	N/A / 3
Amyris / Total	Airbus / Cathay Pacific	48 A350 deliveries at 10% blend		2016 / N/A
Fulcrum	Cathay Pacific	35	0.106	N/A / 10
	United Airlines	90-180	0.274-0.547	N/A / 10
	AirBP	50	0.152	N/A / 10
Gevo	Lufthansa	8	0.024	N/A / 5
RedRock	Southwest	3	0.009	N/A / N/A
	FedEx	3	0.009	N/A / 7
SG Preston	Jet Blue	10	0.030	2019 / 10
	Qantas	8	0.024	2020 / 10
TOTALS		212.33 to 302.33	0.645 to 0.918	



**The ICAO Global Framework on Aviation Alternative Fuels (GFAAF) online platform includes an alternative fuel live feed.** The live feed is based on publicly available information from airports and airlines involved in on-going alternative fuel purchase agreements. The live feed displays United Airlines and KLM departures from Los Angeles International Airport; Lufthansa, SAS, and KLM departures from Oslo Airport; SAS, KLM, and Brathens departures from Stockholm Arlanda Airport; and all departures from Bergen Airport.

feasibility studies in the Dominican Republic and Trinidad and Tobago. Additional studies are ongoing in Kenya and Burkina Faso. These studies will lead to a roadmap of proposed actions for these States to embark on the production or use of SAF as part of their State Action Plans.

Additionally, through the ICAO-United Nations Development Programme (UNDP) assistance project funded by the Global Environmental Facility (GEF), ICAO is developing a guidance document on the implementation of SAF, aimed at assisting Small Island Developing States (SIDS). This document could also assist any ICAO Member State in analyzing the potential for developing a SAF supply chain in their State. [3]

**JANE HUPE**

Director, Environment,  
in ICAO's Air Transport Bureau and  
Secretary of the Committee on Aviation  
Environmental Protection (CAEP)



# CORSIA

## A ROBUST, WORKABLE AND FAIR SOLUTION FOR AVIATION CARBON EMISSIONS

Alexandre de Juniac,  
Director General and CEO,  
International Air Transport Association (IATA)



✈ The importance of the landmark Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) cannot be overstated. Approved by ICAO States at the 39th Assembly in 2016, CORSIA is a fundamental plank of the international aviation industry's sustainability strategy. The aviation sector is committed to technology, operational and infrastructure advances to continue to reduce the sector's carbon emissions, but without CORSIA, our pledge for carbon-neutral growth from 2020 cannot be fulfilled.

While carbon offsetting does not require companies to reduce their emissions at source, it provides an environmentally effective option for sectors where the potential for further emissions reductions is limited or the abatement costs are unduly high. Carbon markets have been a fundamental component of global, regional and national emissions reduction policies. They have operated in various capacities for decades, and continue to be an effective mechanism to underpin action against climate change.

Costs are always a big factor for the industry, but while the costs associated with CORSIA are not insignificant, they will be manageable for operators,

especially when compared with the costs that would result from multiple national or regional schemes. In this context, Assembly Resolution A39-3, which provides that CORSIA is to be the market-based measure applying to CO<sub>2</sub> emissions from international aviation, is very important. A proliferation of carbon pricing instruments on aviation would result in an unsustainable and costly patchwork of measures for operators and for governments. The implementation of CORSIA will avoid the need for existing and new carbon pricing measures to be applied to international aviation emissions on a regional or national basis.

The successful adoption of CORSIA was a significant success for pan-industry cooperation, and vindicated the vision and endeavor of the ICAO leadership. Agreement at the Assembly was not, however, the end. It was merely the end of the beginning. We are now in a crucial period of preparation for CORSIA's implementation. All airlines and other aircraft operators need to develop emissions monitoring plans by the end of September this year and then to start monitoring and reporting their emissions from 2019, just a few months from now. To do that successfully, they must have confirmation of the harmonized rules for

the monitoring, reporting and verification (MRV) procedures that CORSIA will entail so that they are able to put the necessary compliance systems in place. Since the 39<sup>th</sup> Assembly, a tremendous amount of work has been going in ICAO's Committee on Aviation Environmental Protection (CAEP) to define these MRV requirements. Through the hard work of more than 100 experts, a new volume to Annex 16 to the Chicago Convention is set to be adopted by the ICAO Council in June.

We believe that the draft Annex 16, Volume IV is robust, workable, and fair. Of course, in a complex agreement like CORSIA, not everyone is going to get exactly what they want. That is why our membership has arrived at the view that some compromises are worth it to secure the ultimate prize: a single global carbon-offsetting scheme. Any substantial changes at this point of time could upset the careful balance struck in the proposal.

As we move towards the hugely important milestone of the first stage of CORSIA MRV, on behalf of IATA's 280 members and the wider aviation industry, I thank the ICAO Council for its continued leadership, and urge it to once again demonstrate its determination to secure the environmental sustainability of air transport. [\[1\]](#)



# NEW GLOBAL RUNWAY SAFETY ACTION PLAN LAUNCHED

✈ With runway safety and in particular runway excursions and incursions remaining among civil aviation's top safety risk categories, ICAO and its Runway Safety Programme Partners met at the Second Global Runway Safety Symposium (GRSS2017) to launch a new *Global Runway Safety Action Plan* (GRSAP).

"Runway safety has been a global aviation priority for more than 15 years, and this new action plan is an important outcome of the detailed analysis of runway risk factors recently undertaken by ICAO," commented ICAO Secretary General Dr. Fang Liu.

Runway safety-related accidents continue to represent the most significant source of aviation accidents worldwide and remain aviation's number one safety risk category. Over the past eight years, about half of all aviation accidents reported to ICAO were runway safety related. Of those runway-related accidents, 35 percent were the result of a runway excursion, which occurs when an aircraft veers off or overruns the runway.

The good news in recent years is that accidents related to runway safety have resulted in relatively low numbers of fatalities, despite being the highest percentage of accidents. Much of that





success can be accredited to the work of ICAO's collaborative Runway Safety Programme and stakeholders' efforts, such as the establishment of Runway Safety Teams at airports. Still, with global air traffic predicted to double in the next 15 years, it's important to continue efforts to reduce runway-related risks to as low as possible.

"Regardless of the success achieved thus far, the numbers still reveal for us that we have more work to do to fully mitigate runway-related risks," Dr. Liu emphasized.

The new GRSAP will guide the integrated activities of States, airports, airlines, air navigation service providers and manufacturers to implement runway safety improvement and risk reduction measures, with an overall objective of reducing runway safety related fatalities and accidents globally.

## II SAFETY II

### EVENTS

## SECOND GLOBAL RUNWAY SAFETY SYMPOSIUM (GRSS2017)

20 – 22 November 2017

Lima, Peru

### ORGANIZERS

ICAO Air Navigation Bureau and the South American Regional Office

### HOST

Government of Peru

### PARTICIPANTS

155 participants from 27 States and 12 International Organizations

### OUTCOMES

- Launch and support for the ICAO-led collaborative Runway Safety Programme – *Global Runway Safety Action Plan* (GRSAP), with recommendations for implementation of runway safety improvement initiatives and linked to the ICAO *Global Aviation Safety Plan* (GASP).
- Provided a global forum to exchange information on best practices in improving runway safety through the implementation of effective and innovative strategies, tools, and technologies.
- Promoted improved runway safety worldwide through global, regional, national and airport collaboration.
- Launch of the third edition of Eurocontrol's European Action Plan for the Prevention of Runway Incursions (EAPPRI).

*An Engineered Materials Arrestor System (EMAS) to minimize the severity of overrun incidents.*

*(Photo: Zodiac Aerospace Arresting Systems)*

The GRSAP targets and timelines have been developed to support the runway safety targets already established under ICAO's *Global Aviation Safety Plan* (GASP), which is looked to by aviation safety specialists all over the world as a high-level strategic tool to help align international actions and initiatives and avoid duplication of efforts.

## RUNWAY SAFETY PARTNER SUCCESSES

The GRSS2017 in Peru also provided an opportunity for ICAO and the Runway Safety Programme Partners to inform participants on the latest runway safety innovations and achievements. Airports Council International (ACI) informed participants about its Airport Excellence Programme (APEX), which is an on-site assessment of an airport conducted by industry peers and provides airports access to a global network of expertise with support, training and mentoring. The International Air Transport Association (IATA) described development of the second edition of their Runway Excursion Risk Reduction Toolkit (RERR). The Civil Air Navigation Services Organisation (CANSO) highlighted the launch of the latest edition of its Standard of Excellence in Safety Management Systems Maturity Questionnaire.

Eurocontrol used the opportunity of the GRSS2017 to launch its third edition of the European Action Plan for the Prevention of Runway Incursions (EAPPRI). This version recognizes the emergence of EU provisions intended to improve runway safety in Europe, while continuing to recognize ICAO Standards and Recommended Practices (SARPS), making it suitable for universal application.

It was also encouraging to see aircraft manufacturers continue to work on developing systems to prevent runway overruns. Airbus and Boeing presented their respective systems: Airbus' Runway Overrun Prevention System (ROPS) and Boeing's Runway Situation Awareness Tools (RSAT). The development of these systems and other runway safety technologies, such as the Engineered Materials Arrestor System (EMAS) installed at airports with short runways and small overrun areas, can greatly reduce the number of runway-related occurrences and their severity when they do occur.

The FAA Academy in partnership with ICAO TRAINAIR recently developed a standardized training package on "Runway Incursion Prevention" and conducted the first course in Lima ahead of the GRSS2017.

## GLOBAL RUNWAY SAFETY ACTION PLAN (GRSAP)

In early 2017 the Runway Safety Programme Partners established the Runway Safety Action Plan Working Group (RSAP-WG) with the aim of reviewing the RSP achievements, objectives and priorities, and to develop the GRSAP.

Through a review and analysis of runway safety occurrence data, the RSAP-WG identified runway excursions and runway incursions as the top high-risk occurrence categories for runway safety. The GRSAP provides recommended actions for all runway safety stakeholders, with the aim of reducing the global rate of runway excursions and runway incursions.

In line with safety management principles, the RSAP-WG conducted an analysis of available runway safety accident and serious incident data and conducted a risk assessment to identify the runway safety high-risk categories, in order to prioritize the efforts of the Runway Safety Programme.

The analysis identified runway excursions as the highest-risk category with a total risk weight significantly higher than all other categories.

ICAO and Runway Safety Partners also identified runway incursions as a high-risk category. Although the number of runway incursion accidents reported between the period of 2008 to 2016 was low, the number of runway incursion incidents remains high (at a rate of one report per day according to IATA STEADES data). There is a very high fatality risk associated with runway incursion accidents. The collision between two B747s at Los Rodeos Airport, Tenerife, in 1977 was the result of a runway incursion and remains the worst accident in aviation history, with the highest number of fatalities.

The GRSAP provides recommended actions for all runway safety stakeholders, including ICAO and its runway safety





## Key Recommended Actions of the *Global Runway Safety Action Plan (GRASP)*

State CAAs and Industry	Regional Organizations	Runway Safety Programme Partners	ICAO
<ul style="list-style-type: none"> <li>Collect and analyze data and develop/implement action plans</li> <li>Participate in Aerodrome Runway Safety Team activities</li> <li>Implement the elements of Safety Management</li> <li>Ensure runway safety training is part of initial and recurrent training for relevant operational staff</li> </ul>	<ul style="list-style-type: none"> <li>Collect and analyze regional safety data</li> <li>Develop and implement regional action plans</li> <li>Monitor and manage regional action plans</li> <li>Offer support to States that need it</li> </ul>	<ul style="list-style-type: none"> <li>Continue to collaborate on the monitoring of runway safety-related data, conduct analysis and identify appropriate mitigations</li> <li>Continue to support the establishment of effective Airport RSTs with RST Go-team missions</li> <li>Organize a global runway safety event at least every six years</li> </ul>	<ul style="list-style-type: none"> <li>Enhance Assembly Resolution, SARPs and existing guidance material for Runway Safety</li> <li>Develop recommended practices for prevention of runway excursions</li> <li>Develop guidance to States on State Runway Safety Programmes</li> <li>Enhance ICAO runway safety-related training</li> <li>Deploy the Global Reporting Format for assessing and reporting runway surface conditions</li> </ul>

programme partners, State Civil Aviation Authorities, Regional Aviation Safety Groups (RASGs), aircraft operators, aerodrome operators, air navigation service providers and the aerospace industry. Although the actions detailed in the GRASP are aimed at reducing

the global rate of runway excursions and runway incursions, regions, States and industry will have their own unique challenges, and should regularly conduct their own analyses to identify their own operational safety risks and appropriate mitigations. [3](#)

### RUNWAY SAFETY PROGRAMME (RSP) PARTNERS

Since the first ICAO Global Runway Safety Symposium held in Montréal, Canada in May 2011, ICAO and the Runway Safety Programme (RSP) Partners have been working together to minimize and mitigate the risks of runway incursions, runway excursions and other events linked to Runway Safety. The RSP partner organizations include:

Airports Council International (ACI)	International Air Transport Association (IATA)
Civil Air Navigation Services Organisation (CANSO)	International Council of Aircraft Owner and Pilot Associations (IAOPA)
European Aviation Safety Agency (EASA)	International Business Aviation Council (IBAC)
European Organisation for the Safety of Air Navigation (EUROCONTROL)	International Coordinating Council of Aerospace Industries Associations (ICCAIA)
United States Federal Aviation Administration (FAA)	International Federation of Airline Pilots' Associations (IFALPA)
Flight Safety Foundation (FSF)	International Federation of Air Traffic Controllers' Associations (IFATCA)

### ICAO RUNWAY SAFETY PARTNERS – THIS YEAR AND BEYOND

- Disseminate, Promote and Implement the new Global Runway Safety Action Plan (GRASP)
- Runway Safety Action Plan Working Group (RSAP-WG) continues
- Support Regional Aviation Safety Group (RASG) for regional implementation
- PANS-Aerodromes [Doc 9981] 3rd edition (new RS Chapter) – 2018
- Annex 14 Vol. I Amendment – Nov 2018
- New Universal Safety Oversight Audit Programme (USOAP) audit protocol questions on runway safety provisions based on AR 37-6, 9870, 9981) – 2018
- New ICAO Global Aviation Safety Plan (GASP) – 2019
- Revised Doc. 9870 Manual on the Prevention of Runway Incursions – 2019



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## UPCOMING GATEWAY COURSES

### ATS Kuala Lumpur, Malaysia

May 7 to 11, 2018

Hosted by Malaysia Airports Holdings Berhad

### ATS Moscow, Russia

October 29 to November 2, 2018

Hosted by Domodedovo Training

### ATS Muscat, Oman

December 2 to 6, 2018

Hosted by Oman Airports Management Company

.... and more to be confirmed

**AMPAP acronym:** The Global Airport Management Professional Accreditation Programme (AMPAP) is a strategic initiative of ACI and ICAO. The primary focus is to develop airport managers through a six-course curriculum that covers all functional areas of the airport business in key areas. AMPAP encourages participants to share best managerial practices in an interactive, cross cultural environment while establishing a global network of contacts.

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# ICAN2017 EXPANDS AIR TRANSPORT MARKET ACCESS

II AIR NAVIGATION CAPACITY &  
EFFICIENCY II

## EVENT

### ICAO AIR SERVICES NEGOTIATION EVENT 2017

4-8 December 2017

Colombo, Sri Lanka

## HOST

Sri Lanka

## HIGHLIGHTS

- 66 States and Territories
- 426 Participants
- 456 Bilateral Meetings
- More than 420 Agreements



 The ICAO Air Services Negotiation Event (ICAN) is a central meeting place to conduct multiple bilateral, regional or plurilateral air services negotiations or consultations. Negotiations between States/Regional Groups stay private.


At the 10th ICAN, held in Colombo, Sri Lanka, 66 States and territories took full advantage of the unique one-stop platform and cost-effective multi-negotiation framework to expand air transport liberalization and market access through new air services agreements and arrangements.

"More and more governments have come to recognize how fundamental air transport access is to a wide range of their socio-economic development objectives," said Mr. Boubacar Djibo, Director of ICAO's Air Transport Bureau. He noted the US\$2.7 trillion which air transport generates for the global economy each year, as well as the 63.5 million people the sector provides sustainable employment to globally, and enjoined civil aviation policy makers and regulators to "continue to expand market access opportunities so that the regulatory environment can effectively support a viable and sustainable future for air transport, as well as tourism and trade."

The Minister of Transport and Civil Aviation of Sri Lanka, the Honourable Nimal Siripala de Silva, emphasized that his small island nation must rely on aviation connectivity to grow its

economy sustainably. "We know that a strong and affordable global air transport network goes beyond continents, greatly expands local access to foreign supplies and markets, provides invaluable opportunities for cultural and social exchange and enhances emergency and humanitarian response capabilities during crises and public health emergencies," he said.

The more than 420 agreements concluded at ICAN2017 will help to improve the global operating environment for airlines and service providers and create new opportunities for them to grow their businesses. They will also help to generate an expanded selection of air carriers and destinations for global air travellers, as well as more competitive fares.

Since its inception in 2008, the ICAN negotiation model has become an important interactive platform for promoting understanding and cooperation among government policy makers, regulators, and industry. By the end of 2017, a total of 142 States, representing 74 percent of ICAO membership, have utilized this facility at least once (plus territories such as Curacao, Sint Maarten and Cayman Island). 



*ICAN – Where Air Transport Deals Get Done. The 11th ICAO Air Services Negotiation event (ICAN2018) will be held in Kenya.*

# BRAZIL CELEBRATES A DECADE OF ICAO LANGUAGE PROFICIENCY

*Symposium on pilot/air traffic controller language proficiency held at the Airspace Control Institute (ICEA), São José dos Campos (São Paulo, Brazil).*



ICAO AVIATION ENGLISH

✈ To celebrate 10 years since the implementation of the ICAO Language Proficiency Requirements (LPRs) in Brazil – implemented in 2007 – the Instituto de Controle do Espaço Aéreo (ICEA) and Agência Nacional de Aviação Civil (ANAC), the civil aviation regulation agency, teamed up last September for a symposium on pilot/air traffic controller language proficiency. The two governmental organizations are responsible for testing Brazilian air traffic controllers and civilian pilots.

The event highlighted past, present and future actions and projects related to training and testing, as well as test validity studies and various research results. Participants took part in workshops, conducted in English, on the topics: “A debate on SDEA’s test content, format and tasks,” “Are the Language Proficiency Requirements focusing on real life issues?” and “Language, culture and effective radiotelephony communications: analyzing case studies from aviation stakeholders’ perspectives.”

The Symposium was an opportunity for the 130 stakeholders from all over the country to share experiences and good practices. Participants included pilots, air traffic controllers, regulators, Aviation English teachers, language proficiency test raters, airline administrators and researchers.

According to Mr. Wagner Moraes, ANAC’s Operational Standards Superintendent, “It is very important to remember why this has all begun. At some point in the past, it was understood that being proficient at standard phraseology was not enough to reach an acceptable level of safety. The ability to communicate effectively in radiotelephony was necessary. Today the market is aware of the importance of keeping proficient in English. It is as important as maintaining technical and physical proficiency. Being proficient in English is something that pilots need to keep in mind during their professional career.”

Major Evandro Jose Alves, an Air Traffic Control Officer and the Chief of the English Training and Testing Department at ICEA, added: “After 10 years of LPR implementation, it is a great satisfaction to observe that, from north to south and from east to west of our huge country, the importance of mastering Aviation English is already a recurrent and

routine subject in the conversations of these Brazilian professionals.”

Brazil developed their own tests for testing air traffic controllers and pilots: EPLIS (Exame de Proficiência em Inglês Aeronáutico do Sistema de Controle do Espaço Aéreo Brasileiro) and SDEA (Santos Dumont English Assessment), respectively. EPLIS consists of two phases. The first phase is a listening comprehension test with 30 questions. The second phase consists of an oral proficiency interview assessed by independent raters. SDEA is solely a proficiency test. ANAC is also developing a system to test listening comprehension.

Since its implementation, more than 14,000 pilots and 5,500 air traffic controllers have gone through the language proficiency certification process. Pilot proficiency in English has been assessed over 32,000 times; 14,000 tests have been conducted by the Air Traffic Control Authority for licencing purposes. [J](#)

**ANGELA GARCIA** (ANAC - Brazil) and  
**PATRICIA TOSQUI-LUCKS** (ICEA - Brazil)





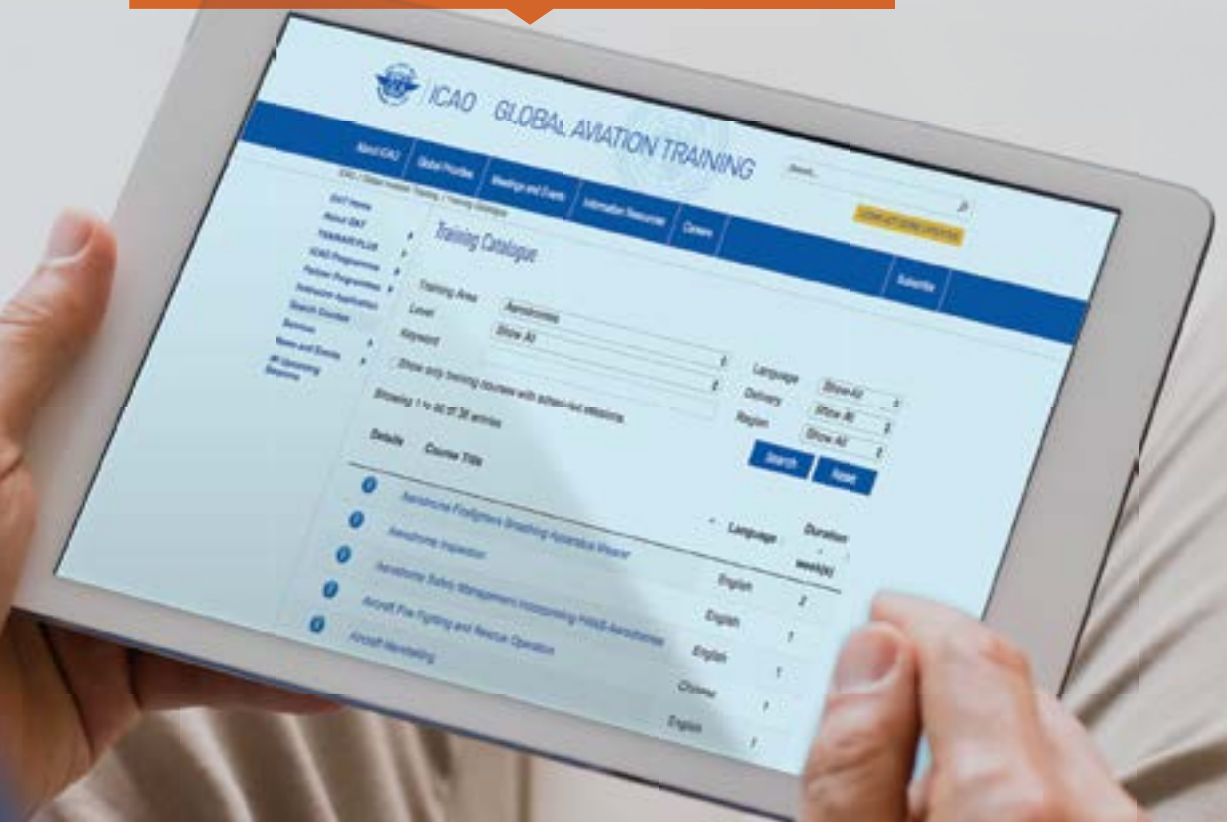
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# UAE IMPLEMENTS WORLD'S FIRST PBN-ONLY AIRSPACE

✈ With air traffic expected to more than double to over 5,000 flight movements daily in the next decade, the Emirates Flight Information Region (FIR) in December became the world's first airspace structure to be completely based on Performance-Based Navigation (PBN). PBN uses global navigation satellite systems (GNSS) and computerized onboard systems with a navigation specification of RNAV-1 (GNSS).

The United Arab Emirates Air Space Restructuring (UAE ARP) project is designed to enhance airspace capacity to meet the forecasted near-term air traffic demand for 2020 and beyond, increase access to all airports within the country, enable airlines to save fuel consumption of USD 14.6 million, driving CO<sub>2</sub> emission reductions of 90,401 metric tons, and enhance air traffic movements to accommodate continuous growth in the Controlled Airspace for Dubai and the Northern Emirates.

The successful implementation of the project should "futureproof" the UAE's airspace network for forecasted traffic growth to 2040, including major expansion

projects. Moreover, it will ensure that aviation will continue to provide a vital contribution to the UAE Gross Domestic Product and the future growth of the United Arab Emirates as a whole.

## CROSS-SECTOR COLLABORATION

The most extensive airspace changes the region has ever seen were successfully implemented without any disruptions to operations. UAE General Civil Aviation Authority (GCAA) Director General H.E Saif Al Suwaidi said: "I would like to thank all of those involved for their hard work and dedication to getting us to this historic moment in UAE Aviation history. The implementation of the ARP is not only impressive from a technical perspective,

18  
MONTHSFOR PROJECT  
IMPLEMENTATION

50

PROJECT  
DELIVERABLESOVER  
200WORKSHOPS /  
MEETINGSOVER  
120,000  
MANHOURS  
FOR  
DESIGN DEVELOPMENTOVER  
150PROJECT  
REPRESENTATIVES

to achieve collaboration on such a large-scale change required teams of project management and technical experts with dedicated representation from the six UAE ANSPs (GCAA, DANS, Abu Dhabi ANS, Fujairah, Ras Al Khaimah and Sharjah), 15 core agencies (including the UAE National Airlines, UAE Airport Authorities, UAE Military, regulatory representation, IATA and the National Center of Meteorology and Seismology) and the five surrounding International Air Traffic Service Providers" (Bahrain, Muscat, Tehran, Jeddah and Qatar).

H.E. Mohammed A. Ahli, Director General of the Dubai Civil Aviation Authority and CEO of Dubai Air Navigation Services (dans), stated: "The past three years have demonstrated the importance of cross-sector collaboration for the greater benefit. We are also proud to witness the aviation sector arrive at new and unprecedented fronts."

"The project directly involved five of the seven Emirates within the UAE and to date has required over 120,000 dedicated man

working hours to develop an airspace design network capable of managing the UAE future requirements," explained Mr. Ahmed Al Jallaf, the Chairman of the Project Steering Group. "Multiple fast-time and real-time simulations in Italy, UK and in the UAE formed critical activities for the design validation and verification of the revised airspace network. The ARP also requires over 250 Air Traffic Controllers to take simulation and theoretical training, the redesign of over 200 Instrument Flight Procedures and incorporation of 30 new airways."

The ARP evolved from a study in 2012-13 by Airbus ProSky – prepared in close cooperation with the GCAA and National Airspace Advisory Committee (NASAC) – which produced 53 specific recommendations that will prepare the UAE for the future while alleviating current-day saturation and system limitations. This was followed by a conceptual design for the UAE En Route airspace, including a Collaborative Air Traffic Flow Management (ATFM) study and operational trial.



6

UAE AIR NAVIGATION  
SERVICE PROVIDERS  
INVOLVED

26

AVIATION  
STAKEHOLDER  
ORGANIZATIONS  
COLLABORATIVELY  
INVOLVED

5

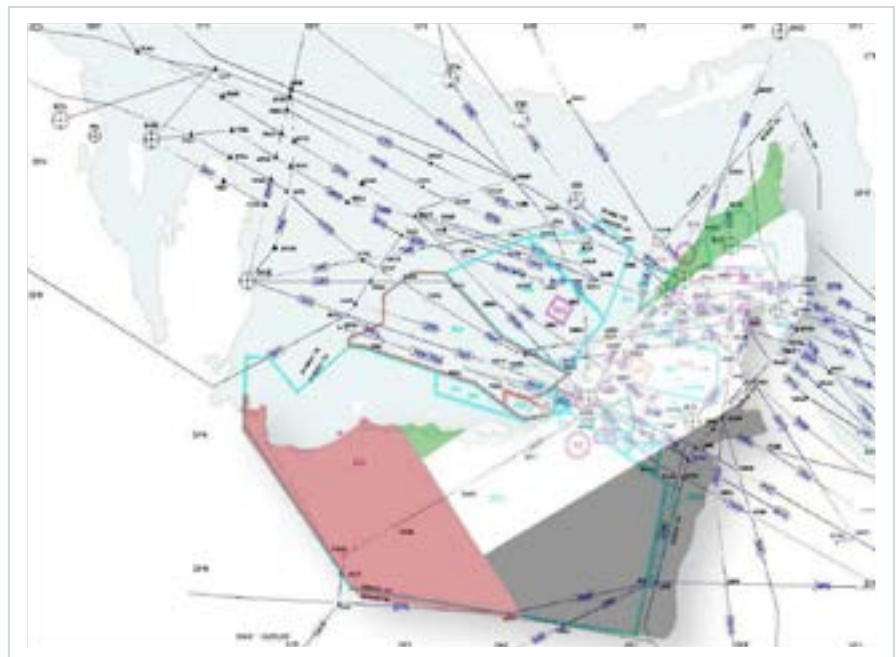
EMIRATES  
OF UAE  
INVOLVED

The UAE FIR is predominantly a complex En Route environment, with the majority of traffic spending around 85 percent of the flight distance flown in a climb or descent phase. The new design interfaces the appropriate connectivity to Control Area CTAs, which is key to ensuring integration into the overall UAE network route structure and international interfaces. Mr. Hafid El Boukfaoui, Regional Director of Airbus ProSky, noted that a comprehensive design ensures the airspace will be optimally used to support growing aviation needs and activity levels. It also leverages capabilities as they are deployed as part of ICAO Block Upgrades and will accommodate the transition to a full Performance Based Navigation (PBN) airspace environment.

## BEYOND 2020

Future proofing the UAE's airspace network for the forecasted growth to 2040 is a parallel activity within the UAE ARP. Through the UAE ARP 3 Integrated Airspace Master Plan (IAMP), a roadmap will be developed to ensure greater capacity and efficiency will be introduced to the network through incremental implementation stages in line with key forecasted aviation milestones. Milestones include the expansion plans for both Dubai World Central Al Maktoum International Airport and Abu Dhabi International Airport expansion, as well as Dubai's EXPO 2020. This allows the UAE network to proactively adapt airspace in a timely manner in order to strategically prepare for significant events, thereby providing the ability to support the strategies of National Aviation Stakeholders.

**Operators can expect significant PBN network changes for all phases of flight, i.e. ATS routes, Conditional Routes (CDR) - introduced for the first time in Emirates FIR, new sector communication frequencies, new holding facilities, SIDs, STARs and instrument approach procedures into UAE airports. Based on the predicted traffic demand, the entire Emirates FIR has been designed according to PBN RNAV 1 specification to space the route structure closer together. Both aircraft and flight crew have to be qualified against PBN RNAV 1 navigation specification requirements, which replaced PBN RNAV 5 specification. The GCAA will not be able to accommodate non-RNAV 1 aircraft into the UAE airspace after 7 December 2017. Also, within UAE airspace, PBN RNAV 1 specification can only be assured with GNSS sensor support.**





## RECOMMENDATIONS FOR A SUCCESSFUL AIRSPACE TRANSITION

- Dedicated project office to manage deliverables and time lines
- Early interaction with neighbours to establish the limits of any changes
- Engage with foreign operators well in advance of planned transition in order to ensure compliance
- Continuous quality checks on all data – more is better
- Plan training schedules well in advance to ensure readiness of controllers and aircrew
- Engage with meteorological providers early in order to obtain accurate forecasts – specifically for the transition day.
- Dedicated team to ensure ATM system interoperability and enterprise architecture
- Regulations – must be in place to facilitate PBN implementation

## KEY DESIGN ELEMENTS OF THE AIRSPACE RESTRUCTURING PROJECT

- Optimization of available airspace
- Enhancement of unidirectional route network
- Improvement of network efficiency and flexibility
- Support UAE FIR/TMA transition into RNAV 1 environment
- Introduction of Conditional Routes (CDR)
- All UAE airports are in the En Route network
- Network integration supports forecasted 2020 traffic demand
- More efficient departure and arrival network with delay reduction and shortened distance of Dubai CTA entry/exit gates
- Dubai CTA entry gates specialized for airport (DXB, DWC, SHU)
- Optimization of Abu Dhabi CTA entry/exit gates
- Additional Western entry gate to support dual downwind structure and additional Western and Eastern exit gates to support simultaneous parallel departures
- Optimization of the internal networks with the CTAs
- Incorporation of strategic vertical separation through altitude constraints [\[3\]](#)

### MR. MUAYYED AL TENEIJI

Head of Airspace Coordination, UAE  
General Civil Aviation Authority (GCAA)  
MIDANPIRG PBN SG/3 Meeting, Cairo,  
Egypt, February 2018



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# EMIS<sup>®</sup> AUTOMATIC SCREENING FOR NON-METALLIC CARGO



TSA  
QUALIFIED

MEET **ECAC**  
PERFORMANCE  
STANDARD

**EMIS 130160**  
for palletized cargo

## INSPECTION OF

- Flowers and perishable goods
- Paper products
- Textiles and Clothing
- Plastic and wooden products

## FULLY AUTOMATIC DETECTION

- Detect detonators and metal components of explosive devices
- Low-intensity electromagnetic field: no ionizing radiation
- No dedicated operator needed
- Fast, real-time analysis
- Complete data logging and traceability



[www.ceia.net/security/emis](http://www.ceia.net/security/emis)



For more information on the **EMIS series**, contact  
your CEIA representative at [infosecurity@ceia-spa.com](mailto:infosecurity@ceia-spa.com)