

ICAO JOURNAL

NEWS AND DEVELOPMENTS FROM THE INTERNATIONAL CIVIL AVIATION ORGANIZATION - VOL.71 - NO.1

ENCOURAGING POSITIVE SAFETY PERFORMANCE

**NEW ICAO COUNCIL PRESIDENT CERTIFICATES
TO RECOGNIZE STATE SAFETY OVERSIGHT
AUDIT SCORE IMPROVEMENTS**

ALSO IN THIS ISSUE:

REVIEWING ICAO'S INAUGURAL WORLD AVIATION FORUM
ICAO CAEP RECOMMENDS NEW EMISSIONS STANDARDS
SOLAR IMPULSE SET TO COMPLETE RTW SOLAR FLIGHT
AVIATION LEADER INTERVIEW: ANGELA GITTENS
EUROCONTROL PERSPECTIVE ON PBN AIRSPACE
SAFETY MANAGEMENT: THE UK CAA JOURNEY
24TH AVSEC WORLD RESULTS



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Dr. Olumuyiwa Benard Aliu

SHINING A SPOTLIGHT ON SAFETY COMMITMENTS AND ACHIEVEMENTS

✈ Safety is civil aviation's highest priority, and for good reason. Perhaps more than any other value-offering, air transport's remarkable and steadily improving safety record is what ultimately makes or breaks the perception of our network as a viable means to provide countless businesses, and billions of passengers each year, with the rapid global connectivity they require.

The air transport community has taken great strides in recent decades in terms of our network's overall safety performance, as well as to address priority accident risks while rapidly responding to emerging issues. In conjunction with

these efforts, ICAO's Universal Safety Oversight Audit Programme (USOAP) has been instrumental in providing important monitoring results regarding applicable State capacities.

These monitoring activities have also led to the development of various publicized categorizations designed to highlight safety under-performance – for instance the red flags we publish on the ICAO website next to states who haven't resolved Significant Safety Concerns in a timely manner.

While transparent risk information of this nature is relevant to the public and our global community, ICAO's core mission is to help States cooperate to the betterment of our network, in conjunction with industry operators and other stakeholders.

On this basis it was apparent that what was missing from this framework, especially with respect to ICAO Member States, was a complementary and positive instrument of recognition to help encourage greater political will towards new aviation safety commitments and achievements.

This type of positive recognition suitably supports our mandate to work with and assist needful States, directly where possible or via external assistance and partnerships, all in aid of the more effective implementation of ICAO's provisions and policies.

This is the guiding principle behind *No Country Left Behind*, a campaign which we have undertaken to ensure that all ICAO States have the ability to realize the full benefits of safe and efficient air services. It was also a driving force behind our inaugural World Aviation Forum held in November last year.

In light of these combined principles, priorities and objectives, the Council determined that it was a suitable time to begin drawing greater attention to those governments and civil aviation authorities taking positive steps to improve their safety performance ratings.

In seeking out a suitable instrument of recognition for positive safety performance, it was established first and foremost that any criteria to be considered had to meet the most stringent standards of transparency and objectivity possible. On this basis the ICAO USOAP audit results quickly emerged as the most objective criteria to work from, and as you will discover in more detail in the article on page 5 we have set out transparent USOAP metrics to be pursued in order for a State to establish its eligibility.

IMPORTANT ENVIRONMENTAL PROGRESS

Besides this important new recognition tool to encourage enhanced safety performance network-wide, *Journal* readers will also find in this issue some recent updates on the new Aeroplane CO₂ emissions Standard recently recommended by the ICAO Committee on Aviation Environmental Protection at its 10th Meeting this past February, as well as the non-volatile

“In seeking out a suitable instrument of recognition for positive safety performance, it was established first and foremost that any criteria to be considered had to meet the most stringent standards of transparency and objectivity possible.”

Particulate Matter (nvPM) Standard recommended during the same session. Additional details on the new Environmental Trends from the CAEP are also provided.

With States needing to decide on the proposed global Market-based Measure (MBM) scheme for international aviation at our 39th Assembly this autumn, these CAEP trends are perhaps more important than ever before in providing all concerned with an objective perspective on the environmental snapshot of where our sector stands today and how realistic it will be to meet our current aspirational goals for 2020 and 2050.

Post-COP21, the eyes of the world are now focused very intently on ICAO and its Member States, and they are looking to us for concrete progress on our environmental priorities. International aviation emissions were left out of the Paris Agreement in part as a vote of confidence that States would achieve consensus on meaningful next steps for our sector at the 39th Assembly, and we must not disappoint them. ■

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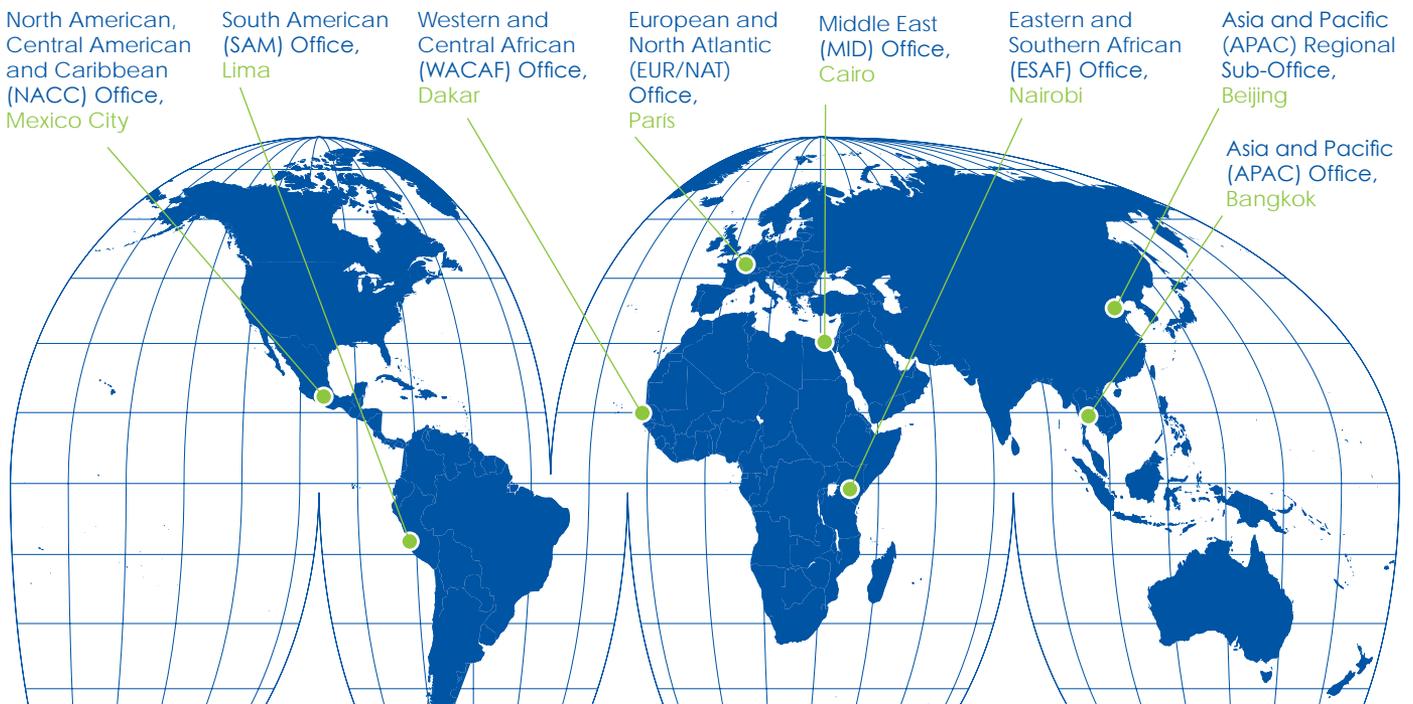
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ICAO's Global Presence



ENCOURAGING POSITIVE SAFETY ACHIEVEMENTS

NEW USOAP-RELATED ‘COUNCIL PRESIDENT CERTIFICATES’ TO RECOGNIZE STATES’ COMMITMENTS AND PROGRESS TOWARD EFFECTIVE IMPLEMENTATION OF ICAO SARPs



 To more publicly acknowledge global activities and commitments geared toward the Effective Implementation (EI) of ICAO Standards and Recommended Practices (SARPs), the ICAO Council has approved a new ‘*Council President Certificate*’ recognition programme. Employing a transparent and objective assessment mechanism, the certificates are to be conferred annually upon those States demonstrating 15% or higher EI progress in their most recent Universal Safety Oversight Audit Programme (USOAP) activity, and which have also attained the ICAO *Global Aviation Safety Plan (GASP)* target 60% minimum EI rating for all Member States.

Consistent with its current objectives and priorities under the ICAO *No Country Left Behind* initiative, the ICAO Council recently established new *Council President Certificates* of

recognition. The purpose of these certificates is to highlight the achievements of States which have made significant progress in effectively implementing ICAO’s SARPs.

The goal of the *Council President Certificates* from an overall standpoint is to provide further encouragement to States to meet or exceed ICAO’s minimum targets, and ultimately to make aviation’s global network safer and more secure for the passengers and businesses it serves.

“It is imperative that States and industry establish clear commitments and achieve concrete results with respect to the effective implementation of ICAO SARPs and the significant modernization investments now needed in our network, whether for new air navigation or airport infrastructure,” stressed Dr. Olumuyiwa Benard Aliu, ICAO Council President. “The goal of these instruments of recognition will be to encourage that process.”

CRITERIA CONSIDERATIONS

Council President Certificates recipients will be determined through a transparent, objective analysis process utilizing ICAO USOAP results.

States selected via the process will be identified once the previous calendar year’s USOAP CMA audit, ICAO Coordinated Validation Mission (ICVM), and off-site validation activity reports are analyzed by ICAO Headquarters in the spring of each year.

In general, eligible States will need to have achieved a minimum 15% positive change in their overall EI rating since their last USOAP CMA audit activity to be eligible for a certificate, in addition to an overall minimum EI score of 60%.

The 60% USOAP EI baseline requirement reflects what is currently targeted as a global minimum in ICAO’s *GASP*, and any States with an unresolved USOAP CMA Significant Safety Concern (SSC) will not be eligible.

CRITERIA EXCEPTIONS

In light of the fact that this selection methodology may not always result in the selection of an eligible State from every ICAO region, the ICAO Council agreed that the process should be sufficiently flexible to permit the Office of the President some latitude in designating additional recipients.

Therefore, States that have achieved 15% or higher positive change in their EI, but which have not yet attained the 60% target, may still be considered for recognition by the Council to ensure complete regional representation in this process.

PROGRAMME ROLL-OUT

ICAO sent an Electronic Bulletin to all States on 21 March of this year, and will identify the inaugural Council President Certificate recipient States in the coming weeks.

To commemorate the launch of the certificates in 2016, the Organization will hold a special ceremony during the 39th Session of the Assembly this September/October. ■

PRIMER ON THE UNIVERSAL OVERSIGHT AUDIT PROGRAMME (USOAP)

The ICAO USOAP was launched in January 1999 with the objective of promoting global aviation safety through the auditing of ICAO Member States. It specifically determines the status of States' establishment of safety oversight measures and resources, as well as relevant ICAO Standards and Recommended Practices (SARPs), associated procedures, guidance material, and safety-related practices.

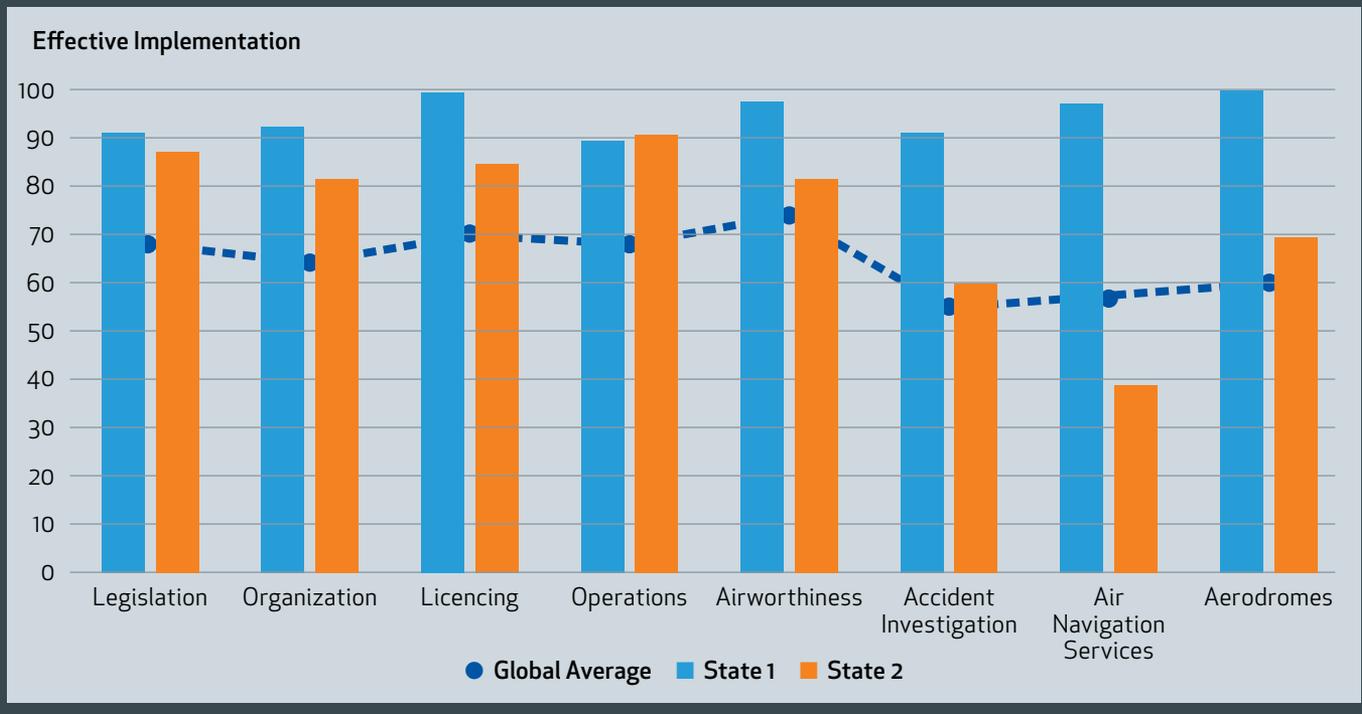
Core areas audited by the USOAP are:

- Primary aviation legislation and civil aviation regulations
- Civil aviation organization
- Personnel licencing and training
- Aircraft operations
- Airworthiness of aircraft
- Aircraft accident and incident investigation

- Air navigation services
- Aerodromes and ground aids

In 2011, the USOAP evolved from a programme performing periodic audits to a new Continuous Monitoring Approach (CMA). This systematic and more proactive risk-based approach to the conduct of monitoring activities provides ICAO with the ability to continue to perform additional activities such as ICAO Coordinated Validation Missions (ICVMs). ICVMs help to validate progress made by States in resolving safety deficiencies identified during USOAP audits.

An interactive display of ICAO's States and Regions and their respective USOAP results, an example of which is shown in the graph below, may be reviewed interactively on ICAO's website at www.icao.int/safety/Pages/USOAP-Results.aspx





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Above and beyond

An aerial night view of a city, likely Tokyo, seen through the oval-shaped windows of an airplane. The city lights are illuminated against a dark sky, with a bridge and a body of water visible in the foreground. The text "FROM TOKYO TO TOMORROW" is written in white, and "A BETTER WAY TO FLY." is written in yellow below it.

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IWAF CHARTS COURSE FOR FUTURE GENERATIONS

 **“With the air transport sector poised to double in flight and passenger volumes over the next 15 years, significant investment commitments will be required towards new airport and air navigation infrastructure and other air transport capacities,” Council President Dr. Olumuyiwa Benard Aliu told more than 800 delegates at the first ICAO World Aviation Forum (IWAF) in Montréal, Canada, in November 2015.**

Represented at the IWAF were Ministers and senior officials from ICAO Member States, United Nations and other international organizations, financial institutions, and the industry sector. “It was critical for ICAO to bring together these players now in order to anticipate these challenges in greater detail, and to raise awareness on the critical importance of aviation and global connectivity to the future prosperity of societies and economies all over the world,” Dr. Aliu noted.

“Latest projections point to no less than a doubling of flight and passenger volumes over the next 15 years,” he said in his keynote address. “This means that the 100,000 daily flights today will grow to 200,000 by 2030, with the 3.3 billion passengers we now move around the world each year surpassing 6 billion over the same period.”

ICAO has already begun highlighting a number of these issues under the *No Country Left Behind* campaign it launched at the end of 2014. In every case the Organization is seeking to make clear that the continued safety and efficiency of global aviation, critical to a wide range of citizens and economic sectors, requires coordinated assistance for States in need and determined commitment on behalf of governments, industry, and the development community in the years ahead.

“In light of its cross-cutting nature and multiple links to other economic sectors, the total economic impact of aviation reaches some 3.5% of world GDP, equivalent to 2.4 trillion dollars, while supporting some 58.1 million jobs,” added ICAO Secretary General Dr. Fang Liu. “As States all over the world are now working together to realize the social, economic, and environmental priorities reflected in the recently adopted UN Agenda 2030 and its Sustainable Development Goals (SDGs), ICAO recognized that the fundamental role of safe and reliable aviation as an engine for socio-economic prosperity needed to be re-emphasized so that its benefits can contribute to that process.”

Over 1.1 billion tourists cross international borders, over half of whom travel by air to their destinations and up to 80% of visitors to certain small island states. Air freight constitutes 34.6% of world trade by value despite only 0.5% by volume.

Newly appointed Canadian Transport Minister, the Honourable Marc Garneau, was also on hand to welcome and address the international dignitaries.



In his IWAF2015 keynote address, ICAO Council President Aliu stressed the connections between effective SARP implementation and achieving the sustainable socio-economic benefits of aviation connectivity.



An important priority for Secretary General Liu at IWAF2015 was to highlight the significant economic impacts to be derived from well-supported and ICAO-compliant national air transport systems.

CONCLUDING COMMUNIQUE: ICAO WORLD AVIATION FORUM

At the first ICAO World Aviation Forum (IWAF), participants came together to help maximize opportunities for enhancing global aviation. They strongly supported the Organization's *No Country Left Behind (NCLB)* campaign to assist States in implementing ICAO Standards and Recommended Practices (SARPs).

IWAF participants indicated their strong belief that *NCLB* will help to better identify and coordinate assistance to States in need so that they may foster sustainable local and regional prosperity and fully benefit from improved global connectivity. A safe, secure, and sustainable global aviation system, based on the effective implementation of global standards and policies, provides the nations of the world with efficient access to global markets.

IWAF participants emphasized that the aviation system has a significant impact on economic development and growth; it affects tourism and trade, and generates other economic benefits which help eradicate poverty, create jobs, and mobilize resources. They highlighted, however, that despite its economic significance, the aviation system receives limited funds to support its development.

IWAF participants acknowledged that in order to provide more effective support to aviation development, substantial financial and partnership assistance is required.

Mindful of these points, IWAF participants:

1 Recognized that all States should effectively implement ICAO global aviation standards and policies so that all States have safe, secure, and reliable aviation systems which support sustainable development and socio-economic prosperity, and which ultimately help to create and preserve friendship and understanding among the nations and peoples of the world.

2 Acknowledged the need to increase the level of funding and investment for the implementation of global aviation standards and policies.

3 Promoted the important role of aviation to stimulate employment, trade, tourism, and other areas of economic development at the national, regional, and international levels.

4 Highlighted the important role that aviation plays in disaster response and public health emergencies.

5 Acknowledged the need to identify areas of coordinated assistance to improve air connectivity.

6 Welcomed the commitment by:

- States to include aviation in their national development plans and to position aviation as a strategic priority for the development of the country
- International and regional organizations to work closely with ICAO to ensure that a safe, secure, and sustainable global aviation system is part of the global development framework
- Financial institutions to support ICAO's role as a facilitator of aviation development for mobilizing resources for infrastructure, capacity development, and essential service needs
- Industry to incentivize the implementation of global aviation standards and policies.

7 Encouraged ICAO Member States, international, and regional organizations, and financial institutions to apply ICAO tools and services to assist in identifying the deficiencies in aviation, implementing *NCLB* projects and programmes, mapping solutions, developing business cases, and finding potential donors and investors.

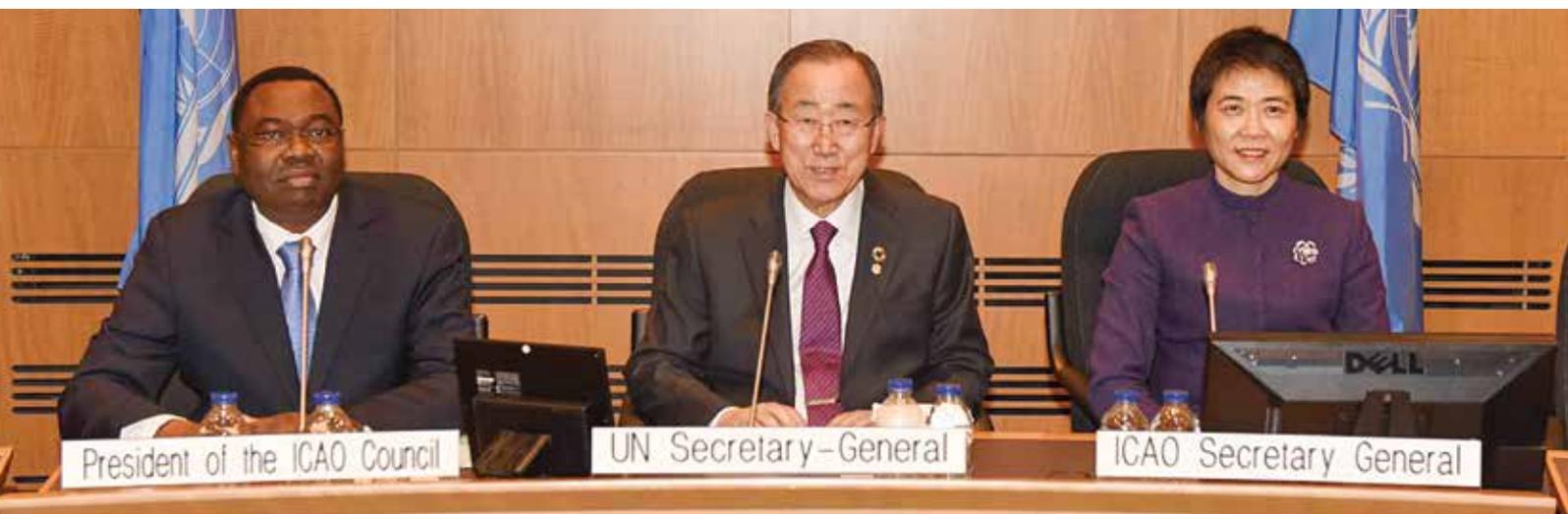
8 Welcomed the adoption of the *2030 Agenda for Sustainable Development* and emphasized that ICAO's current Strategic Objectives are strongly linked to 13 of the 17 United Nations Sustainable Development Goals (SDGs).

9 Recognized the services provided by aviation's regional structure that are related to aviation development.

10 Encouraged ICAO to establish an aviation development network in support of meeting all ICAO Strategic Objectives.

11 Supported the commitment by States, international, and regional organizations, and financial institutions to include aviation in the agenda of relevant meetings of the international development community.

12 Recommended maintaining the focus of the community on the global contribution and value of aviation through support of *NCLB* efforts and future ICAO World Aviation Forums.



During his visit to ICAO while CAEP/10 was in session, UN Secretary General Ban Ki-moon stressed that "The eyes of the world are on ICAO to drive substantial, concrete progress on reducing emissions."

HISTORIC CAEP/10 AND UNSG VISIT IN FEBRUARY PLACE STRONG FOCUS ON ENVIRONMENTAL ACTION

CAEP/10 AND UNSG VISIT PLACE FOCUS SQUARELY ON THE ENVIRONMENT

✈ At its historic 10th Meeting, the ICAO Committee on Aviation Environmental Protection (CAEP) recorded significant progress in a number of critical areas, including recommendations for a global aircraft CO₂ design standard and for an aircraft engine non-volatile particulate matter (nvPM) standard. It was the first time in its history that the CAEP recommended two standards in one meeting, paving the way for cleaner aircraft that have less impact on the environment.

EXPERTS DELIVER CO₂ AND nvPM STANDARDS

The CO₂ standard unanimously recommended by CAEP members is especially stringent where it will have the greatest impact: for aircraft weighing more than 60 tonnes, which account for more than 90% of international aviation emissions. But great care was also taken by the CAEP to ensure that the proposed standard covers the full range of sizes and types of aircraft used in international aviation today. Its solution comprehensively

encompasses all technological feasibility, emissions reduction potential, interdependencies with noise and other emissions, and cost considerations.

The goal is ultimately to ensure that when the next generation of aircraft types enters service, there will be guaranteed reductions in international CO₂ emissions. Aviation presently accounts for less than 2% of the world's annual CO₂ emissions, but the projected doubling of global passengers and flights by 2030 must be managed responsibly and sustainably.

The aircraft CO₂ and nvPM standards will be subject to final review and adoption by the 36 State ICAO Council during one of its upcoming sessions.

The CAEP/10 meeting also reviewed a vast amount of technical work related to a proposed global MBM for international aviation

emissions. This will provide a basis for discussions and expected adoption of the aviation global MBM design scheme at the 39th ICAO Assembly this fall (27 September – 7 October in Montréal).

Additional topics discussed at CAEP/10 included a proposed Life Cycle Assessment methodology for sustainable alternative fuels, noise technical issues such as future supersonic aircraft, as well as updated trends on noise, emissions that affect local air quality, fuel burn, and CO₂. ICAO's Member States have been implementing a comprehensive basket of measures to address international aviation emissions, which include aircraft technology, operational improvements, alternative fuels, and market-based measures. CAEP's efforts remain invaluable to the environmental progress being achieved on all aspects of this programme.

BUILDING ON PARIS

Two months previous, in December, Dr. Aliu delivered a message on behalf of ICAO Member States to the Plenary of the United Nations Framework Convention on Climate Change (UNFCCC) Subsidiary Body for Scientific and Technological Advice (SBSTA) during the 2015 Paris Climate Conference (COP21). The COP21 invited ICAO to continue to report progress on its wide-ranging environmental work programme to future sessions of the UNFCCC SBSTA. The fact that international aviation was not covered under the historic Paris Agreement is considered a vote of confidence in the progress that ICAO and its Member States have achieved thus far.

"COP21 was a great success for our planet and for civil society, but of course its process did not end with the concluding of its agreement," stressed Dr. Aliu. "Every State and every global industrial sector must now redouble their efforts toward achieving substantial progress on emissions reduction if the COP21 legacy is to be achieved, and the civil aviation community is no exception."

A few days prior to COP21, ICAO Secretary General Dr. Fang Liu announced the adoption of the first aviation-related Clean Development Mechanism (CDM) methodology under the UNFCCC. The new CDM methodology relates to forward-looking projects that will incentivize innovation and significantly reduce

emissions from aircraft while they maneuver at airports, quantifying CO₂ reductions from the use of electric aircraft taxiing systems. ICAO and the UNFCCC are also cooperating in development of an additional CDM methodology covering the supply and use of solar power for aircraft operations at airport arrival and departure gates.

United Nations Secretary General Ban Ki-moon paid a special visit to ICAO during CAEP/10, congratulating the UN aviation agency for its core role in helping to establish global civil aviation standards and policies. SG Ban especially praised ICAO for the recently agreed CAEP recommendation on the global CO₂ standard for aircraft and called for continued ICAO leadership on achieving agreement on a global market-based measure (MBM) for international aviation at its next Assembly. He invited ICAO to further build on its achievements to deliver a safe, secure, and sustainable global aviation system.

"I commend the strong links between the ICAO's five Strategic Objectives and the 17 Sustainable Development Goals," Mr. Ban noted. "Your campaign, *No Country Left Behind*, is helping to reduce inequality by ensuring that all countries have access to safe, reliable, and environmentally friendly air transport."

"We need more sustainable energy alternatives for fossil fuels. Airlines must increase their use of energy-efficient technology. Airport buildings and transport infrastructure must be sustainable and climate-friendly. ICAO is showing the way," he said.

Dr. Olumuyiwa Benard Aliu, President of the ICAO Council, said, "Mr. Ban's visit, coming on the heels of a very successful COP21 in Paris, adds further impetus to the important environmental progress now being forged through ICAO."

"Under the leadership of Ban Ki-moon, the United Nations has embarked on some of its most ambitious and historic challenges," commented Secretary General Liu. "Mr. Ban's visit to ICAO was an opportunity for us to reiterate our engagement to work in unison with our colleagues throughout the UN system, towards *Agenda 2030* and its historic Sustainable Development Goals."



CAEP/10 leadership group, which helps ICAO fulfill its mandate on aviation environmental protection. In all, the CAEP/10 meeting hosted over 270 international experts.

CAEP/10 RESULTS

TECHNICAL DISCUSSIONS, TRENDS AND GUIDANCE

GLOBAL MARKET-BASED MEASURE (MBM) SCHEME

CAEP reviewed the significant technical work completed so far, and agreed on recommendations related to monitoring, reporting and verification (MRV) of CO₂ emissions, eligibility criteria for emissions units, and registries.

SUSTAINABLE ALTERNATIVE FUELS

A life-cycle analysis methodology for sustainable alternative fuels for use in a global MBM scheme showed that in 2020 a reduction of 1.3% of international aviation CO₂ emissions could be possible. By 2050, 100% of international aviation jet fuel demand could be met with alternative fuels. Such a scenario, of course, is highly dependent on policy decisions.

AIR CARGO CO₂ EMISSIONS

CAEP recommended a methodology to quantify air cargo CO₂ emissions which complements the ICAO Carbon Calculator for passenger air travel emissions.

AIRCRAFT NOISE

It was recognized that, for the first time, States may be able to consider the possibility of “noise neutral growth” from 2030 – under the most optimistic advanced technology and operational improvements scenario.

SUPERSONIC AIRCRAFT NOISE

CAEP continued its work on the development of a new supersonic noise standard for future aircraft, and understanding the current state of sonic boom knowledge, research and supersonic aeroplane projects.

COMMUNITY ENGAGEMENT

CAEP recommended a new circular on “Community Engagement on Aviation Environmental Management,” which identifies key principles for stakeholders communication.

AIRPORT PLANNING MANUAL

CAEP recommended an update to the Airport Planning Manual, Part 2, to include climate change considerations.

AIR TRAFFIC MANAGEMENT

CAEP analysis showed that full implementation of the Aviation System Block Upgrade (ASBU) Block 0 could achieve 0.7 to 1.4% of fuel savings in 2018 compared to 2013.

NEXT STEPS IN THE STANDARDS PROCESS

SPRING 2016

Air Navigation Commission (ANC) preliminary review

SUMMER 2016

State Letter and consultation with States

FALL 2016

ANC final review

WINTER 2017

ICAO Council consideration, adoption

SPRING/SUMMER 2017

State Letter and States’ responses

WINTER 2017-18

Applicability date of the Annex amendment

FUTURE WORK, CAEP

TOP PRIORITIES

1. nvPM Standard – collection of data and further consideration of stringency levels
2. Global MBM scheme – completion of remaining technical work
3. CO₂ emissions Standard – implementation support

EMERGING ISSUES

1. Guidance for adaptation to Climate Change
2. Guidance on Aircraft Recycling
3. Placing international aviation into context with a 1.5°C / 2.0°C temperature increase scenario

FUTURE CAEP MEETINGS

2016

Steering Group, United States

2018

Steering Group, Singapore

2017

Steering Group, Spain

2019

CAEP/11, ICAO HQ, Montréal, Canada

ENVIRONMENTAL ISSUES TAKE CENTRE STAGE

A CONVERSATION WITH JANE HUPE, ICAO DEPUTY DIRECTOR FOR ENVIRONMENTAL PROTECTION

Following the CAEP/10 meeting, *ICAO Journal* spoke with Jane Hupe. Ms. Hupe is the Deputy Director, Environment in ICAO's Air Transport Bureau (ATB) and the Secretary of ICAO's Committee on Aviation Environmental Protection (CAEP). Her responsibilities include management of the ICAO Environmental Programme and CAEP, plus coordination of work in the field of aviation and the environment with other international organizations such as the United Nations Framework Convention on Climate Change (UNFCCC), the International Maritime Organization (IMO), the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), and other stakeholders such as aviation industry and environmental non-governmental organizations (NGOs). She is also responsible for the capacity-building and support programme for the States' Action Plans on CO₂ emissions reductions activities in international aviation.

What do you consider the most significant outcomes of CAEP/10?

By far, the biggest accomplishment of the meeting was the CO₂ standard. It's the result of six years' intensive work by the best experts in the world. The first three years were dedicated to prepare the certification procedures and the last three to the definition and analysis of the technological feasibility, environmental benefits, cost effectiveness, and interdependencies of a range of options for new types and in-production aircraft. The final recommendation is a balance of these four features. The applicability date (when compliance with the standard would be mandatory) was also an important element considered. The level of stringency that was agreed displayed the significant ambition by CAEP members to deliver a robust standard.

It's important to underscore that the CO₂ standard is the very first global design standard for CO₂ emissions for any sector, not just aviation. The standard that has been recommended is robust with any new aircraft model launched after 2020 being required to comply. The standard guarantees up to a 10% fuel efficiency gain for each new type developed after 2020, relative to the average of current production aircraft types. It also addresses those aircraft that are already in-production. If they have not complied with the standard by 2028, they cannot be produced anymore. That's really comprehensive. In my view, that is the most significant achievement of CAEP/10. For context, approximately 40% of current production aeroplane type designs will need to be improved to meet the Standard or they will go out of production by 2028.



The non-volatile particulate matter (nvPM) standard is also ground breaking and reflects the evolution of our understanding of nvPM and ability to measure the amount emitted by engines.

The fact that CAEP agreed on two new proposed ICAO Standards in the same meeting was a first for us.

The CAEP/10 successes were the result of years of hard and intensive work and of a very interactive and exceptionally well-attended meeting. The members considered the views of all major stakeholders, including manufacturers, airlines, airports, environmental NGOs, the business jet community, pilots, air navigation service providers, and of course the regulators. Each of them comes from a completely different viewpoint. They all had the possibility in the process to express their challenges, including the level of technology currently available from manufacturers in the different categories of aircraft. But all had the objective of having a very ambitious, realistic, and robust standard.

How does the CO₂ Standard fit with ICAO's carbon-neutral growth goal?

We have a basket of measures: technology, operations, alternative fuels, and market-based measures to address the CO₂ emissions from international aviation.

On the technology side, the CO₂ standard is a major step, because it is binding. We are ensuring the best technology will be incorporated into existing and new aircraft types in the future.

Market forces to deliver fuel efficient aircraft are strong, since fuel is one of the largest single costs that operators face. The CO₂ standard will deliver an additional impact, since it will guarantee that technology that does not meet the minimum certification level will not be produced after 2028.

The CO₂ standard will ensure that the best technology will be incorporated into aircraft designs. Our experience has been that, once you set the bar, the manufacturers want to go beyond it for better acceptance by the market. So, we expect to see new aircraft designs that exceed the recommended standard.

The milestone COP21 Paris Agreement did not include international aviation, deferring to climate change efforts led by ICAO.

The Paris Agreement is an important first step with all parties on board in addressing climate change. To quote UN Secretary General Ban Ki-moon during his special address to ICAO in February, "it is the triumph of multilateralism." However, there

is always the need to clarify the framework for addressing international aviation emissions and the Paris Agreement.

The Paris Agreement addresses all *domestic* emissions sources, including domestic aviation emissions. It gives every State that are parties to the UNFCCC the opportunity of setting their own emissions objectives related to their own capabilities – their "Intended National Domestic Contributions (INDCs)." Once they put forward their INDCs, they are bound by that submission.

No State can include *international* aviation emissions in its INDC as, by definition, these are not part of "emission categories" to be accounted for under their national total.

Overall, aviation accounts for 2% of CO₂ emissions, of which domestic aviation is 0.7% and international aviation is 1.3 %.

ICAO's remit is international aviation. Our Assembly challenged us in 2013 to achieve carbon neutrality from 2020 and requested that we come with global measures to reach this aspirational goal. This is exactly what we are doing. The UNFCCC process is following up the developments in ICAO and these developments were recognized in Paris. This comes with a huge responsibility and the Organization needs to live up to it.

A second source of confusion is funding. Some advocate for funding actions on the environment with money from international aviation. But it's very complicated to understand why something

"An ambitious climate policy is an integral part of the Commission's plan to create an Energy Union, and a priority of the new EU Aviation Strategy."

- Violeta Bulc, Transport Commissioner,
European Union

"We are encouraged by this success and believe it puts us on a promising path to secure a robust market-based measure later this year."

- Michael Huerta, Administrator,
United States Federal Aviation Administration (FAA)

"The CO₂ Standard does not solve aviation's climate challenge on its own, but it is an important element in our comprehensive strategy for tackling carbon emissions."

- Tony Tyler, Director General and CEO,
International Air Transport
Association (IATA)

"It is no exaggeration to say that the future of aviation depends on our dedication to the cause of environmental stewardship."

- Angela Gittens, Director General,
Airports Council International (ACI)

“The CAEP agreement on a new aircraft CO₂ standard is an historic achievement that demonstrates ICAO’s leadership in setting environmental standards for global aviation.”

– Jane Hupe, ICAO Deputy Director, Environment

that is contributing 1.3% of the problem can be targeted for 10% of the funding solution. It’s completely disproportional and you end up hurting the countries that need international aviation to survive and to develop their economy, such as the Small Island Developing States (SIDS). This is not in line with the principles of sustainable development and not coherent with the UN Sustainable Development Goals. That is why the Assembly and subsequently the ICAO Council vehemently oppose such an approach. Our goal is to enable States to realize the socio-economic benefits of international aviation while limiting or reducing its environmental impacts.

CAEP/10 also reported some very encouraging trends with regard to noise and alternative fuels.

We are seeing a big effect from the implementation of ICAO aircraft noise Standards, the first of which was applicable in 1972. For the first time, in one of the scenarios explored (the more optimum scenario), we can foresee a flattening of the noise trend from 2030

onward. In other words, this means that we may get to a “noise neutral future” with aviation activities growing but stable noise contours around airports.

Looking into the potential for biofuels in international aviation, we have identified scenarios in which the industry could fly on 100% sustainable alternative fuels in the future. But again, it would all highly depend on the policies put in place for the development and deployment of such fuels. Initiatives such as the one implemented at Oslo airport, where sustainable fuels are made available to airlines, are without doubt game changers.

Switching from conventional fuels to low-carbon alternatives is the next challenge faced by all businesses. Aviation is no different, and sustainable alternative fuels can be deployed in the air and on the ground. A bright future lies ahead of international aviation if we put the right policies in place now. ■

CAEP/10 KEY OUTCOMES

TWO NEW ICAO STANDARDS

PROPOSED ICAO AEROPLANE CO₂ EMISSIONS STANDARD

- The first global Standard for CO₂ emissions of any sector
- Will apply to new aeroplane type designs from 2020
- Will apply to in-production aeroplane type designs in 2023
- Production cut-off in 2028 of aeroplanes that do not meet the standard
- Especially stringent for larger aircraft, maximum

take-off mass greater than 60 tonnes, where it will have the greatest impact.

- Recommended as an entirely new Volume to Annex 16, Volume III

PROPOSED ICAO NON-VOLATILE PARTICULATE MATTER (nvPM) STANDARD

- The first Standard of its kind
- Will apply to engines manufactured from 1 January 2020
- For aircraft engines with rated thrust greater than 26.7kN
- Recommended as an amendment to Annex 16, Volume II

POWERING

SOLAR IMPULSE 2 SEEKS TO COMPLETE ITS HISTORIC ROUND-THE-WORLD, ZERO-FUEL FLIGHT.



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Swiss aviators Bertrand Piccard (left) and André Borschberg eager to resume their inspiring journey: Hawaii to the US West Coast to New York, retracing Lindbergh's path across the Atlantic Ocean to Europe, then back to the starting point in Abu Dhabi.

✈ In March 2015, after more than a decade of development, the sun-powered Solar Impulse 2 set out from Abu Dhabi on an easterly course with the intent of circumnavigating the globe in a solar-powered aircraft. 35,000 kilometres. 500 flight hours. At a leisurely maximum cruising speed of 90 km/hour.

They made it halfway by July – to Hawaii – when the aircraft was grounded by damaged batteries. As this issue went to press, SI2 planned to resume its mission in the spring of 2016. *ICAO Journal* Editor Rick Adams spoke with André Borschberg, the CEO, co-founder, and pilot of Solar Impulse 2, at the project's home base in Payerne, Switzerland, about the emotions of the journey's challenges and what the mission can demonstrate to the world.

Borschberg had intended to fly from Nanjing, China to Hawaii in the middle of the Pacific Ocean on a six-day / six-night leg, but dangerous weather forced Solar Impulse 2 to land in Nagoya, Japan, where wind gusts damaged the wing and required a week to repair.



UP

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The International Civil Aviation Organization (ICAO) is an Institutional and Aeronautical Partner for the Solar Impulse 2 flight. ICAO's partnership is in line with its Strategic Objective to reduce emissions from international civil aviation activity using a multi-faceted approach.

After identifying a favorable weather pattern, Borschberg took off for Hawaii, only to discover after a few hours that the "virtual co-pilot" equipment was not functional. The system supervises the aircraft when the pilot is resting.

"The engineers advised me strongly to go back to Japan to fix the problem," Borschberg recalled.

"I decided to continue. I decided to keep going to Hawaii, which created quite an emotional reaction within the team. The engineers did not understand why I was taking so much risk."

Borschberg said he considered the overall situation "with the understanding for the first time the weather window was improving, and I sensed I could manage the risk of this missing equipment."

"The reason why there was such emotion is that the engineers are extremely involved in the project. They have been so much empowered in what they are doing they became in some ways co-owners of this aircraft, co-owners of the project, and feeling responsible for a positive outcome for this flight. We

have a fantastic loyalty, a fantastic commitment, and I think this is a result of making everyone understand that a key part in the success of the project is that everybody feels this way, that he is the best person for the role."

The SI2 pilot himself was at a high emotional level. "I knew my family was watching, listening, that they knew what the situation was. I asked myself if it was right for me to impose so much pressure and create so much anxiety, and for me that was quite difficult at that moment. It was tense and it was something I was really feeling inside my stomach, inside my body. It took me the remaining part of the day and the entire following night to digest this, to overcome this. The following morning I threw overboard this pack of emotions."

"Of course I had discussions with (SI2 partner) Bertrand (Piccard). He was on the same opinion and gave me tremendous support from the Mission Control Centre (MCC). I had discussions with the mission director (Raymond Clerc). He is an old friend of mine for 40 years from the time of flying in the squadron. This kind of relationship creates a common understanding."

“ICAO is providing tremendous support to open the doors by inviting all the countries and the airports to host our airplane; we are very thankful for the help and the assistance we have received.”

– André Borschberg, CEO, co-founder, and pilot of SI2

“We had a conference call with all the engineers. I was in the air at 20,000 feet telling everyone this was my responsibility, my decision, that I was convinced I had ways to mitigate the risk of this missing equipment, that I needed their support for the entire flight because without their support watching what the airplane was doing I could not make it safely.”

“They all committed with a positive response so I decided, despite the initial reaction, to continue the flight.”

Borschberg was able to modify the position in which he rested so he could react faster to any potential situation. When he awoke from a nap, he would first focus attention on the artificial horizon. The team also developed a remote observation capability so the MCC could supervise what he was doing and trigger an alarm if necessary via satellite, albeit with a 5-6 second delay.

“We didn’t know if the pilot would be able to sustain himself physically and mentally because the longest time we had trained alone in the cockpit was three days, three nights in a simulator on the ground. We knew we had to get at least five days, so we were almost doubling this time. I was able to keep my concentration, so that’s a big question mark which is not here anymore,” he stated.

The mid-mission downtime has been used to re-create the spirit and trust of the 60-person team, “bringing people together, discussing the different issues, discuss what happened, the reasons that led to the choice, going through all the situations so that we can better define and understand the roles of each other, better communicate between ourselves when we are in crisis situations, how we get the appropriate and correct and safe decisions.”

The Solar Impulse team has also taken a new look at the future, and are now planning to develop an unmanned version of their aircraft which could fly at very high altitudes and stay aloft for up to six months, either replacing or complementing communications satellites.

“It was important that SI2 was manned to create the symbol about clean technologies. People identify themselves with this if there is a pilot onboard. A robot doesn’t have the same appeal.”

Borschberg added, “ICAO is providing tremendous support to open the doors by inviting all the countries and the airports to host our airplane; we are very thankful for the help and the assistance we have received.” ■



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RISK MANAGEMENT: COLLABORATE, COORDINATE, COMMUNICATE

✈ Cybersecurity of aircraft and air traffic management systems. The safety of commercial flights over conflict zones. Surface-to-air missiles. Potential threats – and positive uses – of remotely piloted aircraft systems. Passenger information systems for tracking foreign fighters. Behavioural analysis. Insider threats and baggage security. New technologies for streamlined airport security systems. The range of topics discussed at the 24th AVSEC World Conference was both broad and detailed, high level and in-depth.

Nearly 500 global leaders and security experts gathered at the 24th AVSEC World Conference in Dublin last fall under the sponsorship of the Airports Council International (ACI), the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO) to address current and emerging threats to aviation security. Attendees included personnel from 51 airlines, 21 airports, and 31 regulatory agencies – 47 countries were represented. Their objective was to work together to better understand vulnerabilities in the aviation system and to tackle risk management in a holistic fashion.

“The cooperation by ICAO, IATA, and ACI on this year’s AVSEC World shines a timely spotlight on the importance of strong commitments and active partnerships for global air transport progress,” said Dr. Fang Liu, ICAO Secretary General, in her welcoming remarks to conference attendees. “ICAO’s steadfast commitment to aviation security and facilitation has enabled the global policy and regulatory framework to become much more responsive to today’s very dynamic risk context. It has also permitted ICAO Member States to realize greater benefit from our capacity-building and targeted technical assistance.”

SG Liu stated: “There is significant work ahead for States and ICAO in the implementation of coordinated activities aimed at rectifying aviation security and facilitation deficiencies in a sustainable manner. But if we continue to agree on common goals, and pursue them together through ICAO, I am confident we will build on our impressive record in strengthening and enhancing the security and facilitation of international civil aviation.”

IATA Director General and CEO Tony Tyler said, “Security is vital for our industry but is ultimately a government responsibility. Governments have infinitely more resources than airlines do. We rely on governments as partners to provide the guidance and information to help manage risks and keep our passengers, crew, and cargo secure. The industry is eager to engage with governments to share the operational requirements that are critical to the successful implementation of security measures.”

“There is a lot to think about when it comes to ensuring aviation remains the safest, most secure form of travel in the world,” said ACI Director General Angela Gittens. “The question we’re here to answer is, how can we effectively manage risk while at the same ensuring that air travel remains an efficient, affordable option for the world’s travelers?”

Jim Marriott, ICAO’s Deputy Director, Aviation Security and Facilitation, was part of a panel on cybersecurity. “Cybersecurity is a challenge that belongs to all of us. Security Management Systems (SeMS) offer an opportunity to address risks such as cybersecurity in a manner that enables flexible and adaptive risk management,” he told AVSEC World delegates.



Left to right: Angela Gittens, Director General, ACI; Dr. Fang Liu, Secretary General, ICAO; Tony Tyler, Director General and CEO, IATA; Jim Marriott, Deputy Director, Aviation Security and Facilitation, ICAO (centre).

“The cooperation by ICAO, IATA, and ACI on this year’s AVSEC World shines a timely spotlight on the importance of strong commitments and active partnerships for global air transport progress,”

– Dr. Fang Liu, ICAO Secretary General

As part of initiatives to shore up the industry's defenses, a team has been put together by aviation industry associations to work on a declaration on cybersecurity to be put to the 39th ICAO Assembly this year. Marriott said agreeing to high-level principles in the form of a declaration could be a statement from Member States that they are taking the issue seriously and in a concerted manner. States are also free to take action at a national level before then.

"Protecting our industry from cyber threats is hard, probably one of the hardest things we are facing because we do not know what we are facing or for what we have to prepare," said Jeff Poole, Director General of the Civil Air Navigation Services Organization (CANSO), highlighting the swiftness with which the threat is evolving.

Boeing's Director for Aviation Security, James Vasatka, said the aircraft manufacturer hires hackers to test the systems and software it puts on its airplanes. "They are absolutely stunned at the quality we put in our software and products. It would be very difficult in today's environment to disrupt that for the flight-critical systems."

Another major panel focused on the urgent need to share timely information on the risk to aviation arising from conflict zones. Stephen Creamer, Director, Air Navigation Bureau (ANB), ICAO, was one of the panelists. Last year in the wake of the loss of MH17, ICAO established a Conflict Zone Information Repository (www.icao.int/czir). At the time of the Conference, six States had actively published advisories on 14 countries, for a total of 41 postings, Creamer told the participants.

Any information issued by States about potential hazards in other countries takes up to 72 hours to appear on the website because the established procedures of the Repository grant to affected States this amount of time to submit their feedback. Creamer said that ICAO is looking at ways for information to be published in a more timely fashion and what other adjustments can be made once the site's first year has been evaluated. ■

“Over 100 countries have made efforts to stop the movement of foreign fighters.”

– Hassan O. Baage, Chief of Branch Assessment and Technical Assistance Office, UN Counter-Terrorism Committee Executive Directorate (CTED)



Left to right: Peter Neffenger, Administration, US Transportation Security Administration (TSA); Stephen Creamer, Director, Air Navigation Bureau, ICAO; Henrik Hololei, Director General, DGMOVE, European Commission; dancers from the gala event by the host Irish Aviation Authority.

TRAINING, TRAINING, AND MORE TRAINING

ICAO/EUROCONTROL COLLABORATION AND THE EVOLUTION OF PBN AIRSPACE CONCEPT IMPLEMENTATION



FRANCA PAVLIČEVIĆ
Head of the Navigation and CNS Research Unit (DSR/CMN/NAV). She manages EUROCONTROL's Communication, Navigation, and Surveillance contribution to the Single European Sky ATM Research Programme (SESAR) as well as the Navigation Unit, which provides navigation expertise across the agency.

 A training journey which began in 2007 with the introduction of the Performance-Based Navigation (PBN) concept by the ICAO 36th Assembly culminated at the end of 2015 with the last of a dozen workshops in European cities from Lisbon, Portugal to Malmo, Sweden to Vilnius, Lithuania. In the intervening years, teams from Europe and North America criss-crossed the globe to offer expert assistance on how to systematically design airspace and flight procedures to implement the new, more efficient PBN concept.

Looking back, it still seems as if ICAO's PBN concept is new, though it was first published in 2008 in the revamped PBN Manual (ICAO Doc 9613 Edition 3). In order to secure global acceptance of the new concept, the European Organisation for the Safety of Air Navigation (EUROCONTROL) and the US Federal Aviation

Administration (FAA) undertook, under the stewardship of ICAO Montréal, a set of PBN Introductory Seminars which were held in each of the seven ICAO regions.

Over a three-year span, ICAO's Erwin Lassooy (now PBN Programme Manager) led joint EUROCONTROL-FAA seminar delegations, headed by Lex Hendriks and Jeff Williams, to far-flung places which included Abuja, Bangkok, Beijing, Cairo, Lima, New Delhi, Paris, and Saint Petersburg. These seminars proved to be vital learning platforms, for the presenters as well as the participants. Enthusiastic attendees provided excellent feedback and posed difficult questions, which were collected, analysed, and eventually provided input to the update of the PBN Manual in 2013. It was through these seminars that it became obvious that training, training, and more training was needed, particularly in the areas of airspace design, flight procedure design, and operational approvals.

A major issue identified during the global PBN seminars was the starting point for the PBN implementation processes: the requirement to "Formulate an Airspace Concept." It became increasingly obvious there was a general lack of understanding of what was meant by the Airspace Concept, of how PBN and Airspace Design fit together. In fact, there seemed to be no "function" such as airspace design in most places outside Europe and North America.



Tunis workshop, ready to implement.



The final EUROCONTROL-ICAO European Airspace Concept Workshop for PBN Implementation at Baku, Azerbaijan.

EUROCONTROL and the FAA developed the first set of Airspace Concept Workshops for PBN Implementation. A large part of the PBN implementation methodology was based on the EUROCONTROL *Terminal Airspace Design Guidelines* (published in 2005). The first course was compiled by EUROCONTROL's Franca Pavličević, Charlie Eliot, Roland Rawlings, and Mike Lissone together with the FAA's Barbara Cassidy, Joe McCarthy, and Nic Tallman. To support the

workshops, EUROCONTROL produced the *Airspace Concept Handbook for PBN Implementation, Edition 2*. After a pilot course in Luxembourg, a EUROCONTROL-FAA team of instructors set off to Damascus, Johannesburg, Kiev, Mexico City, Santiago, and Singapore. These workshops were the testing ground of PBN for air traffic management (ATM) operations: here theory met practical reality in the form of air traffic control officers, pilots, flight dispatchers, procedure designers, and aeronautical information management personnel.



Almaty workshop, starting an airspace case study.

The *Handbook* became the basis for revising the implementation processes in the updated *PBN Manual (ICAO Doc 9992)*, published in 2013. EUROCONTROL also upgraded its handbook to address European peculiarities. The *European Airspace Concept Handbook for PBN Implementation, Edition 3* was substantially larger and became more "PBN-ized" to include technical explanations of navigation functions, links to the navaid infrastructure, free route, and cost-benefit analysis.



Kiev workshop certificate presentation.

As part of an increased cooperation agreement, EUROCONTROL offered to lead the four-day European Airspace Concept Workshops under the auspices of the ICAO European office in Paris. Workshops were held in Almaty, Baku, Bucharest, Istanbul, Lisbon, Malmo, Nicosia, Podgorica, Swanwick, Tbilisi, Tunis, and Vilnius. Franca Pavličević, EUROCONTROL ATM/RDS Head of the Navigation and CNS (Communication, Navigation, and Surveillance) Research Unit; Charlie Eliot, EUROCONTROL navigation instructor at the Institute of Air Navigation Services (IANS); and Mike Lissone, EUROCONTROL ATM/STR (now Remotely Piloted Aircraft Systems ATM Integration Programme Manager) ran the workshops. Elkhan Nahmadov and his team from ICAO Paris handled administrative and coordination tasks. ICAO combined the workshops with PBN Go-Teams, where experts such as Frank Lumnitzer (aviaCONSult) and Sorin Ontiu (Jeppesen) provided procedure design support and data integrity awareness.

The final workshop was presented in December 2015 in Baku, Azerbaijan. Although the European workshop cycle is now complete, this vital training package has been added to EUROCONTROL's IANS training portfolio on an on-demand basis. ■

GROWTH DRIVING AIRPORT INVESTMENT

 “Financing airport infrastructure is challenging for many States. Developing States in particular face difficulties due to borrowing cost factors which may likely worsen in the near future,” said Dr. Fang Liu, ICAO Secretary General. “ICAO’s ongoing *No Country Left Behind* programme emphasizes that States be duly assisted and financed in the coming years so that the socio-economic benefits of aviation growth may be shared by all nations and all economies.”

Dr. Liu was addressing delegates at the Investing in Airports – Economic Oversight and Regulation conference in New Delhi, India, in December. The conference was hosted by Airports Council International (ACI) in cooperation with ICAO.

Angela Gittens, Director General of ACI World, said, “We want to ensure that we have economic oversight and regulation that provide the resources to operate, invest, and produce an equitable rate of return to airports.”

She stated, “Many airports are still subject to haphazard and heavy-handed regulation – regulation that is administratively burdensome and unnecessarily costly. The reason for the reticence heretofore is that much of today’s airport economic regulation is premised on the outdated view of airports as ‘natural monopolies.’”

ACI data tells a different story, Gittens explained. “Consider: competition among airports, both locally and internationally, has increased considerably. Legal frameworks have changed, with privatization and a range of public-private partnership (PPP) models emerging. The commercialization (or corporatization) of not-for-profit airports has also evolved, requiring new sets of roles and responsibilities for management teams, airlines, other tenants and contractors. In the midst of these changes, ICAO and innovative state regulators have understood that their roles need to change as well.”



Boubacar Djibo, Director of ICAO's Air Transport Bureau (ATB), set the scene, predicting a near doubling of worldwide flights to 60 million a year by 2030. “Investing in airports is a must to accommodate this forecasted traffic growth.”

ICAO's Dr. Liu told attendees, "As with any successful investment paradigm, you have to have some skin in the game. This means working with ICAO to ensure effective implementation in States of our civil aviation standards and policies. It requires States to establish concrete business plans for their civil aviation sectors, and to back these up with clear indications of political will. ICAO is also developing new tools and resources to aid you in these efforts."

The Secretary General reminded, "States remain ultimately responsible for the safety, efficiency, security, and economic oversight of these entities. Privatization does not in any way diminish a State's requirement to fulfill its international obligations under the Chicago Convention and its Annexes."



ICAO Secretary General Dr. Fang Liu (left) and ACI Director General Angela Gittens light a ceremonial candle to encourage positive outcomes for the event.

“Privatization does not in any way diminish a State’s requirement to fulfill its international obligations under the Chicago Convention.”

– ICAO SG Dr. Fang Liu

The aviation sector, Dr. Liu noted, “has made great progress and contributed significantly to global prosperity throughout its long history, always as a result of our ability to cooperate across borders and cultures, forge consensus, and achieve practical and sustainable global solutions.”

ACI’s Gittens added, “The needs are broad but the top priorities are safety and security, customer service, and economic and environmental sustainability.

“There could be no better venue to engage in these conversations than India, an aviation market that is fast-growing and dynamic, and one in which the government has developed a range of methods to manage, govern, and regulate its airport sector.”

Jérôme Simon, ICAO Senior Officer, Infrastructure Manager, presented at three pre-conference sessions on airport charges, economic oversight, and PPPs. On airport charges, which are addressed in ICAO *Doc 9082*, Simon reiterated four key principles: non-discrimination, cost-relatedness, transparency, and consultation of users. He told the economic oversight delegates, “The interests of all stakeholders could be best served if users are sufficiently well-informed through a constructive engagement of airports and users.” ICAO guidance is available in the *Airport Economics Manual, Doc 9562*.

In the PPP session, Simon outlined the prerequisites for a successful partnership:

- Macro factors include political stability, governmental expertise, a favourable policy environment, strong sponsor units, and an effective framework.
- Project-specific factors are an adequate scope, adequate competition, and output indicators, together with social and economic factors.

ICAO guidance material on privatization of airports and air navigation services is found in *Doc 9980*. ■

“THE SAME CHALLENGES TO MEET”

AN INTERVIEW WITH ANGELA GITTENS, DIRECTOR GENERAL, AIRPORTS COUNCIL INTERNATIONAL (ACI)

Fifth in a series of interviews with world aviation leaders

 **Airports Council International (ACI) was established in 1991 and calls itself “the voice of the world’s airports.” ACI is a non-profit organization whose prime purpose is to advance the interests of airports and to promote professional excellence in airport management and operations. As of January 2016, ACI accounts for 592 members operating 1,853 airports in 173 countries. ACI World is based in Montréal, Canada and there are five Regional Offices located in Brussels, Hong Kong, Casablanca, Panama City, and Washington, D.C.**

Angela Gittens joined ACI as Director General of ACI World in 2008 from a background in airport management. She was director of the Miami-Dade Aviation Department, Florida, US, which operates Miami International Airport. Prior to that she was at Atlanta Hartsfield International Airport, Georgia, US, where she prepared the airport to accommodate the 1996 Olympic Games. Gittens also served as Vice President, Airport Business Services, for engineering consultants HNTB, where she led the firm’s practice in airport business and strategic planning. As Vice President at TBI Airport Management, she oversaw the transition from public to private ownership of London Luton Airport and managed operations contracts at several airports in the US and Canada.

ICAO Journal Editor Rick Adams spoke with Director General Gittens at her Montréal office.

You arrived at ACI in 2008, just in time for the recession. What did you need to deal with as the new leader?

We were just noticing we were moving into a recession. Freight traffic was dropping precipitously. We had come off a very heavy growth period in 2007, although by the end of 2007 freight had stagnated, and then dropped like a stone in January and February. Later in the year passenger traffic started to drop. So now, after a pretty good year for passenger traffic in 2015, we’re seeing freight stagnate again. Freight never did fully recover but was starting to come back. But now it’s starting to drop again. It makes me wonder if we’re not headed for another recession, possibly not as big or deep but another one to the extent that air freight is still a leading indicator.

We were also starting to feel the challenges of the changes in our membership’s profile – the proliferation of corporatization beyond just Europe. It was going on in Asia, in the Latin America-Caribbean region, a little bit in Africa and continuing in Europe. The emerging markets were really starting to grow in terms of air traffic – countries like Brazil, Colombia, and Argentina with greater middle class populations. India, China, and several other countries in Asia Pacific were really growing. You had the Middle East really taking off around then.

So we had emerging markets that were growing fast, we had corporatization that was going on in both emerging and mature markets, and the combination of the two was saying to ACI, “We need more from you.” We need more guidance and intervention. We want more data because airports were becoming more businesslike, and data is critical when it comes to business. Benchmarking is also very much desired by more business-minded enterprises. ACI was being challenged to provide more of these services.

During your tenure at ACI, what major changes stand out?

One was the move to Montréal, which we did in 2011. The desire to come to Montréal was really spurred by the desire to be closer to ICAO. The then-Secretary General of ICAO (Raymond Benjamin) helped to convince our Board that we needed to be closer so we could have more frequent contact. We would come for meetings and panels but it’s really been much more valuable to have almost day-to-day contact. We can have our subject matter experts at the disposal of ICAO at the very beginning of discussions on items, to provide information, to gather industry best practices and put them at the disposal of ICAO as ICAO is deliberating on policy questions or guidance for the industry.

Number two is our Airport Excellence (APEX) in Safety Programme, which we started shortly before we moved to Montréal. It’s a peer-review programme where we assemble a team of experts to go to an airport, upon request, and review their safety vulnerabilities based on ICAO Annex 14 and ACI best practices. We call the team that goes on the peer review the Safety Partners. We go over everything the airport’s doing or not doing in the realm of safety. ICAO has supported this from the very beginning, often sending an inspector with the team on a friendly basis.



Angela Gittens, Director General, Airports Council International (ACI)

We send the Host (the requesting airport) a questionnaire about their main issues so we can make sure that on this team we have at least one expert in the specific areas of greatest concern to them. They may or may not involve their civil aviation authority. They may or may not involve other parts of the airport. It's up to them. The report belongs to them. It's a peer review, not an audit. In this way we find that the airports are very open and frank with us in terms of their issues because this is for their use to improve their situation.

On our end, and on ICAO's end, we have been able to use the information we gather, all on a confidential basis, to see where the issues are more generally in the industry or in a region. So it informs us as ACI what kind of guidance, what kind of training we need to focus on. Sometimes the issues come from elements that are external to the airport, particularly what kind of authority the airport has, who regulates certain things, what that regulator does, and what kind of impact their regulation has with respect to safety, especially when it comes to ground handling or the airlines, or some other component that the airport may not have control over.

We do these peer reviews in all kinds of markets. We've done them in every region at airports of every size, from very large airports to very small airports. It's for any airport that wants continuous improvement in safety.

At the request of regulators and our members, we have now extended APEX to security, and have recently signed a memorandum of understanding with ICAO for cooperation on the project. We'll have two or three pilots this year, the first being in March, and then we'll see where we go from there. We've also had requests by members to do the same thing in airport economics. Ultimately, we'd like to extend it to all the major disciplines of the airport, including the environment, economics, and customer service.

What are some of the safety issues that APEX has surfaced?

One is the lack of authority by quite a few airports on airside safety compliance. There are airports that do not have the authority, for example, to revoke the airside driving licence of violators of airfield regulations, and that can create a dangerous situation. It depends on some external regulator; it could be in civil aviation, it could be the local police jurisdiction, or some other authority – the airport just doesn't have it. So the airport has to go elsewhere to convince a regulator that this action must be taken. And this is the kind of thing where you need direct and immediate intervention or safety hazards are created.

One of the other things we've seen in developing economies is that they receive equipment, quite sophisticated equipment, but they may not have the maintenance capabilities or inventory of spare parts to keep the equipment in working order. They may not get continuous training how to operate the equipment safely and efficiently. If you don't have the kind of support that's needed, sometimes simpler solutions are better.

By the way, our safety partners often find the resourcefulness of some of the airports that have these problems is something we can all learn from. They figure out simpler ways to get the job done, maybe much more cost effectively than is done perhaps in an airport that has more resources.

We have found a desperate need for training in a variety of areas. Safety management systems is one of the areas. And this goes across the board, not just in developing markets.

How does ACI fit into the global aviation community and with ICAO?

ACI's twin missions are to support airport interests and to promote airport excellence. And we think those go hand in hand.

The role of ICAO, I think, has become more important in the last several years, and I applaud the leadership both at the Council and the Secretariat levels that they've taken up the cudgel. Just as we saw in our membership, they're seeing that more and more States recognize not just the value of aviation, but that they cannot survive without it. They're looking to someone for the kind of guidance and support they need to safely, efficiently, economically, and sustainably develop and grow their aviation sectors.

So we're all in this together. We all have the same challenges to meet, we've all found that collaboration is a key approach, and we're all taking that approach.

We are working very closely with the International Air Transport Association (IATA) on a variety of projects, including Smart Security, which is trying to get more sustainability in the security schemes that we have around the world. We cannot continue this way when air traffic is projected to double in the next 15 to 25 years. We can't just keep doubling what we're doing. We're not only looking at current-day efficiencies we can get out of the system, but also longer-term changes in the approach, to become more risk-based so we don't have a one-size-fits-all system, but rather one that can be adaptable to the level of risk and threat that exists either in a particular time period, a particular place, or with particular people.

We're also working on a series of projects to improve passenger facilitation, and promoting automated border controls. For the governments around the world, it's the same problem; they can't keep doing things the way they've been doing them as traffic grows. We have found quite a bit of receptivity in the last two or three years to better ways of both securing the border and making the system more resilient and efficient.

With the Paris Agreement and the recent ICAO Committee on Aviation Environmental Protection (CAEP) meeting, CO₂ emissions are a major discussion. What's a hot button for airports?

Globally, climate change is the key focus of attention. But for individual airports and their communities it's noise, local air quality, and local water quality. Those are the big issues for the governments and the communities in which the airports reside.

The most important thing to realize about an airport – what drives airport management – is that every airport is located in a specific place. You may be a global player but your fate is

“Airlines got deregulated and airports really need to get deregulated as well.”

– Angela Gittens, Director General, ACI



determined by what the folks right around you think and do. You need local permission to exist and to grow. You need the support and understanding of the local players so they refrain from placing noise-sensitive uses near you because that's going to throttle your ability to operate. You need to work with all those parties to get the proper kinds of access to the airport because without people being able to get to the airport on the ground, the airport can't exist or can't function properly. So the airport may have to keep one eye on its global place in the sun, but the other eye – and both arms and legs – have to be firmly planted where they specifically are.

I was very pleased to see in this latest CAEP output that community engagement is now on the agenda. It's something we have pushed for; you can't ignore it. We think because of the billions that we've all spent – airports, airlines, manufacturers, governments – on reducing noise impacts of aircraft, that the problem's been solved because planes are so much quieter. The noise problem is still there because it's not just a kind of technical noise measurement problem. There's a very human, emotional component to it that doesn't always get calibrated in the machinery we use. So community engagement is extremely important.

Hacking and cyber security are increasingly in the news. How concerned are airports?

Big concern. We're working with ICAO, IATA, and CANSO (Civil Aviation Navigation Services Organisation) on a cyber security task force to try to identify the risk and come up with guidance on mitigating and managing that risk.

At ACI we have developed an IT security benchmark programme. It allows airports to look at and test their own systems in order to mitigate cyber security threats. We are just in the beginning stages; it's being piloted at several airports. Next year we should be ready to make it available to all airports.

Cyber is one of those issues that's going to continue to evolve and mutate, and it's something that's going to have to be kept up with. As we increasingly move into data sharing, where we're trying to go to get the efficiencies that we all seek, we as an overall industry become more vulnerable. We all have to be at the same level, a very high level, of cyber security protection; otherwise we endanger each other. ■

IMPLEMENTING A REGULATORY SAFETY MANAGEMENT SYSTEM TO ENABLE PERFORMANCE-BASED REGULATION

The UK CAA journey so far...

 The concept of the Safety Management System (SMS) in aviation has gathered pace in recent years. Organisations across the industry have developed and implemented effective systems to help them proactively and systematically identify their hazards and risks and put in place measures to mitigate them.

As part of its transformation to a performance- and risk-based approach to regulation, the UK Civil Aviation Authority (UK CAA) has decided to follow suit and develop its own Regulatory SMS (RSMS), one that is internal to the CAA but looks both outwardly and inwardly. There are many benefits to the Regulator following a more holistic, structured and systematic approach to safety regulation.

The UK CAA's RSMS sits at the heart of its approach to Performance-Based Regulation (PBR). ICAO Annex 19, combined with the EASA Authority Requirements (ARs) for EU Member States, requires national authorities to implement their own management systems for safety regulation.

Early on in the transformation to PBR, the UK CAA recognised the need to go beyond the requirements and take a customised approach. Before embarking on the design and development of a RSMS, the UK CAA first conducted a thorough analysis of the ARs and the ICAO SMS framework. This led to the development of a bespoke framework that took the best learning from industry SMS implementation whilst also ensuring compliance with EASA requirements.

The UK CAA's RSMS consists of all the main components that you'd expect to see in an industry SMS, such as a safety policy, risk management process, safety assurance processes and tailored training programmes.

The main difference between a Regulatory SMS and the SMS of an aviation service provider is that the Regulator doesn't own the safety risk; the risk is owned by the airlines, airports and other organisations. The Regulator's task is to identify where safety

The UK CAA's RSMS consists of the all of the main components and elements that you'd expect to see in an industry SMS...

challenges exist and work with the industry to help them manage their risks. This is an important distinction to make. The UK CAA's ability to act as an information and intelligence conduit allows it to develop unique perspectives on the management of safety and identify safety issues that run across different organisations and industry sectors.

One of the keys to success, for both public and private organisations, is a common understanding of what must be achieved and how. The RSMS is the common system that provides the UK CAA with a unified approach. It ensures that everybody understands their own individual roles and can communicate safety intelligence in a standardised way across professional boundaries. It brings all safety management aspects under a single system and gives everybody the opportunity and tools to influence safety outcomes. The Regulatory SMS works in much the same way as its industry cousin. Data is gathered from a multitude of sources – including audit findings, Mandatory Occurrence Reports (MORs) and expert knowledge of staff. It is then analysed by a dedicated team who work with technical specialists to identify aviation safety risks from the analysed data. These risks are then assessed

Implementing a Regulatory Safety Management System to enable Performance-Based Regulation



The Regulatory SMS works in much the same way as its industry cousin. Data is gathered from a multitude of sources – including audit findings, Mandatory Occurrence Reports (MORs) and expert knowledge of staff – and is then analysed by a dedicated team who work with technical specialists to identify aviation safety risks from the analysed data.

and prioritised using a similar methodology to that used in many industry safety management systems. The risks can be escalated to an appropriate UK CAA safety management forum, where decisions can be made about how the Regulator can best influence the management of the risks.

There are various options for the UK CAA to influence safety, such as:

- Altering the focus of oversight for a whole sector of industry towards known risks,
- A safety improvement project could be commissioned, or
- New policies and guidance could be published.

Regardless of the chosen option, the RSMS ensures that activities undertaken by the Regulator are clearly defined, scoped and launched under pan-CAA governance and knowledge, with the focus being on the highest priority risks.

The greatest benefit of the UK CAA's RSMS comes from building 'pictures' of risk at various levels of the aviation system. Industry sector risk pictures and a total aviation system risk picture allows the Regulator to share safety intelligence internally and also across the industry, enabling a cross-pollination of safety risk knowledge, sharing the best ways that the Regulator has come across to mitigate the risks.

A successful transition to Performance-Based Regulation will require both the industry and the Regulator to adapt to new challenges and be novel and collaborative in their joint approach to safety management. A Regulatory SMS has given the UK CAA the best opportunity to positively influence safety outcomes for UK consumers and the travelling public worldwide by systemically prioritising its resources towards the most significant safety risks. ■

For more information on Performance-Based Regulation and U.K. CAA PBR training, please visit:

www.caainternational.com/pbr

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“DEDICATED TO AVIATION”

AN INTERVIEW WITH IVAN GALÁN, DIRECTOR, ICAO TECHNICAL COOPERATION BUREAU (TCB)

Fifth in a series of interviews with ICAO leaders

 Ivan Galán's family lived near an air force base. “Every day I saw the airplanes taking off, landing, flying in patterns above the airfield. Then I was invited a couple of times to airshows,” he recalled. At age 16, he joined the Chilean Air Force, accumulating more than 4,000 flying hours in jets across 30 years and retiring as a colonel. He then served in Chile's *Dirección General de Aeronáutica Civil* – for eight years leading the planning directorate and two years as Director of Accident Prevention and Investigation. “My whole life is dedicated to aviation.”

In 2010, Ivan Galán became Director of ICAO's Technical Cooperation Bureau (TCB).

The TCB provides advice and assistance to ICAO Member States in the development and implementation of projects across the full spectrum of civil aviation infrastructure and services: master planning; human resource planning, development, and training; administration and legislation; communication, navigation, and surveillance; aviation security; aviation meteorology; airworthiness and flight operations; safety management systems; aviation medicine; airport feasibility studies, environmental aspects of airports; construction and management; air traffic services. Further information about the TCB can be found on the ICAO website at www.icao.int/secretariat/TechnicalCooperation

ICAO Journal Editor Rick Adams spoke with Director Galán at his Montréal office.

What is the scope of the TCB's mission and how do you engage with States for technical assistance projects?

Our aim is to assist States and organizations, institutions, private entities like airports and air navigation services providers, in anything they might need in terms of developing their capacity, developing infrastructure, developing their air navigation plan, etc.

At any given time, we have around 120 or 130 ongoing projects all over the world.

Normally the States approach ICAO for assistance. Sometimes they have a pretty good idea of what they need, and sometimes they may have some doubts. We send a preliminary fact-finding mission to the State to discuss with the authorities what is really needed to set up the scope of the project. And then we start developing the project document that has to be agreed by the

State and the Secretary General of ICAO. The project document contains the scope of the project, objectives, deliverables, timeframe, number of people who are going to be involved in the project with a job description of each of the specialities, duration, etc.

We have very short-term projects, assisting a State for one month or two, and we have long-term projects for one year or more.

For example, earlier this year I received a message from the civil aviation authority in a State in Asia. They have problems with implementation of ICAO Standards and Recommended Practices (SARPs). And they need a restructuring of civil aviation. We had a teleconference to see exactly what they need. Now we are in the phase of developing our proposal to them. I will send an Officer to the State to discuss the detail. This will be a long-term, three-year project with four or five ICAO experts.

What is the scale of the TCB organization and the experts you recruit to support these hundreds of ongoing projects?

In ICAO Headquarters in Montréal, we have 66 people in the Bureau, including Officers in different disciplines of civil aviation. These Officers and the Staff develop and monitor the implementation of projects, look after the experts in the field, procurement, etc.

Whenever we develop a project, especially related to capacity-building, we consult with the other Bureaus (Air Navigation Bureau and Air Transport Bureau) and with the Regional Office in order to have one ICAO approach to the problem and offer the State the best possible solution.

We have about 3,000 experts in different disciplines of civil aviation from lawyers to flight operations to licencing, infrastructure, airports, you name it. We hire them to implement our projects whenever we need them. At any given time we have about 1,200 experts in the field looking after all of our projects.

Most of our experts are from the civil aviation authorities in many countries. We have agreements so they can release their staff for a project. We also have experts from the industry, so it's a mixture of people working in governments and industry.

We are always looking for new experts to join our roster to work in civil aviation. We qualify them and certify their experience.

To inquire, visit the ICAO Employment Site:

<https://careers.icao.int/home.html>



Ivan Galán, Director, ICAO Technical Cooperation Bureau (TCB)

Why would a State come to ICAO for assistance rather than just go to industry and hire experts directly?

There are many advantages. First, ICAO is the only UN agency in charge of civil aviation and air transport in the world. We have more than 70 years' experience in developing the tasks and assisting the States, so whatever we do is according to our SARPs, regulations, and policies.

Since we are a non-profit organization, the cost of the project is normally very low as compared to a private company.

We are very good at procurement of services and goods. For example, a State in the Caribbean wanted to procure two radars for a Class 1 approach control centre. Before coming to us, they had a quotation from one of the suppliers for US\$22 million. Instead, they did the procurement through ICAO TCB and ended up paying \$11 million.

Why? Normally when suppliers quote a price directly they apply all the risks to the State and that's included in the price of the goods or services. With ICAO, there is almost no risk because we have the money up front, and we pay the supplier as long as the supplier complies with the contract.

For an e-Passport project in a Latin American country, the designated price was \$41 million. When we did it they ended up paying \$31 million. So they saved 10 million dollars.

When the States rely on us for a turnkey project where we develop the plans, terms of reference, select the supplier according to our criteria, etc., and then manage the contract and we pay the supplier, it is much cheaper and more convenient for the State. They save all the administrative and logistic work which we do for them.

We do have to recover our costs. We cannot make profit, so the amount we charge is very low compared with the benefit the State receives from the project.

What are a couple of major projects TCB is currently implementing?

Two years ago we were asked to participate in the studies for the development of the new international airport for Mexico City. This is an airport that is urgently needed. We also had to consider the relationship with the air force because one of their bases will be affected. (NOTE: The new \$13 billion airport will have three runways to start, able to serve up to 50 million passengers per year. In the future, with six runways, the new airport will handle up to 120 million passengers annually in an environmentally sustainable manner.)

We are also working in Paraguay where they need to develop a new terminal building for the international airport in Asunción, as well as a package of improvements such as the runway and adjacent areas to comply with ICAO SARPs. We have opened a TCB office in Asunción with a permanent staff. We developed feasibility studies, the terms of reference, and all the documentation for the tenders. This is a public-private partnership (PPP) operation within a new law published two years ago in Paraguay, so this will be the first project under the new law. We will evaluate the bids, assist with the negotiations of the contract and assist civil aviation during the whole period of the construction of the new terminal building and then the operation of the new airport. Negotiation is expected this summer and contract signing in the fall.

Earlier this year, ICAO announced a new volunteer programme as part of the No Country Left Behind initiative. What is the objective of this programme and how will it function?

The ICAO Programme for Aviation Volunteers (IPAV) emanated from the ICAO Council and was approved last year. TCB is starting to implement this under NCLB. The intention is to have a roster of volunteers from industry, from the States, and so forth, who can volunteer for a short-term project for a State that needs assistance. The volunteers will be paid only \$1 plus travel expenses.

The States will have the possibility to solve a particular problem that can be resolved in a short period of time, no more than one month. We have already received many applications from experts who want to join this programme and we expect to receive more.



NEW ICAO VOLUNTEER PROGRAMME LAUNCHED

In a State Letter early this year, Secretary General Dr. Fang Liu announced the new ICAO Programme for Aviation Volunteers (IPAV). "The programme provides a framework for the deployment of aviation professionals, working as volunteers to, among others, respond to emergencies affecting the aviation system in a State, develop capabilities in the implementation of ICAO Standards and Recommended Practices (SARPs), resolve deficiencies in the State's fulfilment of its civil aviation oversight responsibilities, and foster self-reliance and growth."

Dr. Liu explained that, in support of ICAO's *No Country Left Behind* initiative, the IPAV has been designed to provide short-term assistance to States in addressing shortcomings identified during audits. Assistance could also be provided in non-audit areas in response to requests from States, subject to availability of experts with the required skill sets.

Volunteerism in the aviation sector seeks to bring benefits to both the client States and the volunteers. The client States will benefit from the wealth of experience of the volunteer at a minimal cost or at no cost. The volunteer will have the opportunity to maintain and possibly update his / her skills and make valuable contributions to the development of civil aviation.

Participation in the IPAV is open to all aviation professionals from ICAO, the aviation industry, States, and the private sector, subject to review of credentials. A minimum seven years' experience in the field of specialization will be required.

Interested persons should submit their resume / CV to the Technical Cooperation Bureau by email at OfficeTCB@icao.int.

States may submit a request for assistance under the IPAV programme to the same address.

Let's say a State has a new director general of civil aviation, and he wants to restructure the civil aviation system. He's not sure how to do it, how to approach it. The State can request an IPAV project where we can hire two or three experts, send them to the State for a week or so, and they can develop a proposal.

Or, for example, a State needs to ensure that regulations they are developing are according to ICAO Standards. If they have already developed some regulations they want to review, we can make use of a couple of experts and send our comments to them. In that case, there is no need for the expert to travel to the State.

There is also a voluntary fund created under this programme to receive donations from donors: States, industry, whomever. The intention is that the States hopefully don't pay for the project, that we use the voluntary fund to run this programme. A donor can also donate money earmarked for a certain project in a certain country. What is important is that ICAO is always independent from any industry or State in implementing the project and the donor has to agree to those terms and conditions.

For more information on the IPAV, see "ICAO Launches Volunteer Programme" (above). ■

NEWS IN BRIEF

DR. ALIU LEADS MISSION TO SINGAPORE



ICAO Council President Dr. Alimujiang Alimujiang conducted a mission to Singapore in February, accompanied by ICAO's Asia-Pacific (APAC) Regional Director, Arun Mishra.

President Aliu

delivered the keynote address at the Singapore Airshow Aviation Leadership Summit and conducted a series of high-level meetings and dialogues on ICAO's current work in support of an international aviation market-based measure (MBM) and the UN agency's ongoing capacity-building for States under its *No Country Left Behind* initiative. Dr. Aliu focused on the need for major State commitments toward modernized air transport infrastructure, while stressing the need for near-term action on aviation emissions.

"The eyes of the world are now clearly focused on the air transport sector post COP/21 (Paris), and we must respond by delivering concrete progress on reducing emissions," he highlighted to his audience of government and corporate leaders, stressing with respect to local concerns that "with a number of Pacific Island States already experiencing dramatic revenue loss due to climate change, the especially urgent need for environmental action cannot be ignored."

GLOBAL MBM HIGH ON AGENDA AS ICAO SG CONDUCTS MISSION TO GERMANY

ICAO Secretary General Dr. Fang Liu conducted a mission to Germany, 21-22 March, accompanied by Luis Fonseca De Almeida, ICAO's Regional Director for Europe and the North Atlantic. Dr. Liu met during her stay with Klaus-Peter Sieglösch, President of German aviation association *Bundesverband der Deutschen Luftverkehrswirtschaft* (BDL). High on the list of topics discussed was the proposed global market-based measure (MBM) for international aviation.

"ICAO has been working with great determination in recent years to support its Member States for the carbon-neutral growth of international civil aviation from 2020, and has recently reached an important milestone by recommending the first-ever CO₂ proposed standard for aircraft emissions," commented Dr. Liu. "We are also seeking global support for the adoption of a global MBM scheme at the 39th Session of the ICAO Assembly in September, which will be one of the essential measures to our sector's carbon-neutral objectives. Germany has been a very important voice in these discussions and we look forward to their continued support."

"Climate protection is best undertaken internationally, as patchwork efforts tend mainly to distort air transport markets and individual airline competitiveness," added Sieglösch. "What is needed is a solution that is applicable and fair to all nations and operators, and ICAO is the most appropriate organization to forge that consensus."



High Level *No Country Left Behind (NCLB)* visit by Antigua and Barbuda to the ICAO North American, Central American and Caribbean (NACC) Regional Office in Mexico City, Mexico. Melvin Cintron, ICAO NACC Regional Director, and the ICAO NACC Regional Officers presented the *NCLB* Strategy and agreed on achievements, activities, and challenges for the short- and mid-term for Antigua and Barbuda, in close coordination with the Eastern Caribbean Civil Aviation Authority (ECCAA).



Seated (left to right): Cosmore Barnes, Deputy Oversight Officer, Ministry of Public Utilities, Civil Aviation and Transportation of Antigua and Barbuda; Melvin Cintron, ICAO NACC Regional Director; Edson Joseph, Permanent Secretary, Ministry of Public Utilities, Civil Aviation and Transportation of Antigua and Barbuda

Standing (left to right): Julio Siu, ICAO NACC Regional Officer, Communications, Navigation and Surveillance; Raúl Martínez, ICAO NACC Regional Officer, Aeronautical Information Management; Jaime Calderón, ICAO NACC Regional Officer, Aerodromes and Ground Aids; Víctor Hernández, ICAO NACC Regional Officer, Air Traffic Management and Search and Rescue; Romy Gallegos, ICAO NACC Regional Officer Technical Assistance; Sybil Gómez, ICAO NACC CNS and *NCLB* Strategy Assistant; Ricardo Delgado, ICAO NACC Regional Officer, Aviation Security; Luis R. Sánchez, ICAO NACC Regional Officer Aeronautical Meteorology / Environment; Eduardo Chacin, ICAO NACC Regional Officer, Flight Safety.

Directors of Civil Aviation of the Eastern Caribbean, 26th Meeting (E/CAR/DCA/26), New Orleans, United States, hosted by the United States Federal Aviation Administration, with 35 delegates from Antigua and Barbuda, Barbados, the Eastern Caribbean Civil Aviation Authority (ECCAA), France, Trinidad and Tobago, United Kingdom, United States, ICAO,

ACI-LAC (Airports Council International - Latin America and Caribbean), ALTA (Latin American and Caribbean Air Transport Association), CANSO (Civil Air Navigation Services Organisation), IATA (International Air Transport Association), and RTCA (Radio Technical Commission for Aeronautics). The event was opened by FAA Administrator Michael Huerta (*seated, centre, wearing blue tie*).



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TRIENNIAL ASSEMBLY

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