

CHAPTER 1



Laurent Box

He is an environmental assessment specialist at EUROCONTROL and an expert in Air Traffic Management validation. He is the co-manager of the development of the IMPACT environmental modelling web platform and as such is also deeply involved in ICAO MDG environmental assessments. Laurent is an engineer from the French École Nationale de l'Aviation Civile (ENAC).



Laurent Cavadini

He has been EUROCONTROL's principal aircraft noise and performance modelling expert since 2002. He is an active member of the ICAO and ECAC working groups that maintain environmental modelling standards for aviation. He leads the design and development of the web-based IMPACT environmental modelling platform. Laurent has an engineering degree with mechanics and acoustics specialities from the Université de Technologie de Compiègne.



Gregg G. Fleming

As Director of Environmental and Energy Systems at the U.S. DOT's Volpe Center, he has over 25 years of experience in all aspects of transportation-related acoustics, air quality, and climate issues. He has guided the work of numerous, multi-faceted teams on projects supporting all levels of Government, Industry, and Academia, including ICAO, the U.S. FAA, the National Aeronautics and Space Administration, the U.S. EPA, and the U.S. National Academy of Sciences. Along with Dr. Ziegler, Mr. Fleming is the co-Rapporteur of CAEP's Modeling and Databases Group.



Ivan de Lépinay

He has been working in the field of aviation and environment since 2001. After ten years of consultancy for various European organisations, he joined EASA's Environment Department in 2011 where he is in charge of impact assessments. Ivan holds a degree in civil engineering and applied acoustics and a master's degree in sociology.



David Marsh

He joined the forecasting team at EUROCONTROL in 2001. He was soon running the forecast service, and has since added responsibility for data warehousing, all-causes delay analysis and network business intelligence. He steered the development of the Aircraft Assignment Tool, and at ICAO is involved in CAEP FESG, North Atlantic EFGG and the Aviation Data and Analysis Panel. David has a doctorate in pure mathematics, master's degree in applied statistics and is a Chartered Statistician.



Urs René Fritz Ziegler

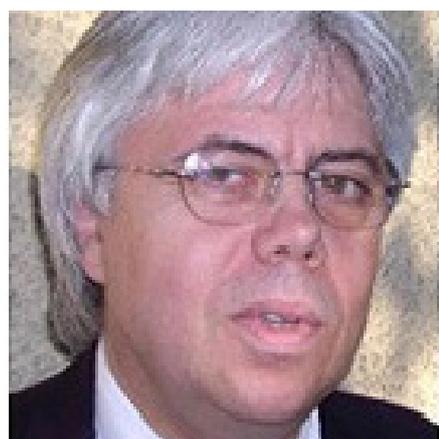
After having completed his studies in natural sciences he worked in the field of environmental protection for a civil engineering company as well as for more than 10 years for the Swiss Office for Environmental Protection. During this time, he also acquired a master's degree in public administration. In early 2005 he joined the Swiss Federal Office of Civil Aviation as Head of the Office's Environmental Protection Unit. He is the current Swiss CAEP member and is the co-Rapporteur of CAEP's Modelling and Databases Group.

CHAPTER 2



Peter Coen

Peter Coen is the manager for the Commercial Supersonic Technology Project in NASA's Aeronautics Research Mission. In this role he leads a team from four of NASA's Research Centers in the development of tools and technologies for a new generation of quiet and efficient supersonic civil transport aircraft. Peter has worked at NASA for more than 33 years. During his career he has studied technology integration in practical designs for many different types of aircraft and has made technical and management contributions to all of NASA's supersonics related programs over the past 25 years.



Dominique Collin

Dominique Collin is the Lead Noise Expert for the SAFRAN Group and the coordinator of the European aviation noise research network X-NOISE. Contributors to this article also include key participants to X-NOISE and associated research projects: Michael Bauer (Airbus) Dick Bergmans (NLR), Paul Brok (NLR), Harry Brouwer (NLR), Delia Dimitriu (Manchester Metropolitan University), Denis Gély (Onera), Nick Humphreys (Rolls-Royce), Eugene Kors (SAFRAN), Stéphane Lemaire (Dassault Aviation), Pierre Lempereur (Airbus), Uwe Mueller (DLR), Nico van Oosten (Anotec Engineering).



Charles Etter

Charles Etter is currently employed at Gulfstream Aerospace Company as a Staff Scientist, Environmental & Regulatory Affairs. Today, he is Gulfstream's lead engineering authorized representative (EAR) in Acoustics. Mr. Etter was recognized for his outstanding engineering achievements in 2012 when he was awarded the distinguished position of Technical Fellow at Gulfstream. He participates in CAEP's WG1 SSTG group, where the early phases of a new noise standard specific to civil supersonic aircraft are being developed. He also works with other industry representatives and regulators in the areas of renewable fuels and in the development of a new emissions standard recently approved at CAEP/10.



Shannon Gardiner

Shannon is currently an environmental analyst and student from the University of Waterloo. Shannon has taken a keen interest in land use planning and transportation during her undergraduate career including attending a 'Hands on Sustainable Mobility' workshop, in partnership with the Karlsruhe University of Applied Sciences in Karlsruhe, Germany. Shannon joined the Environmental Management branch at Transport Canada for her final co-op term in September 2015. Previously, Shannon has completed co-op terms with GO Transit-A division of Metrolinx, Public Works and Government Services Canada and Teledyne DALSA.



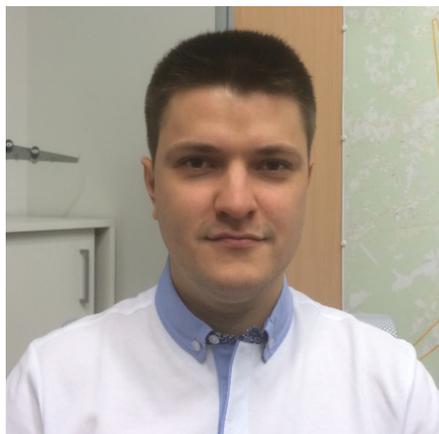
Rainer Heger

He is Aeroacoustics Expert at Airbus Helicopters and holds a Master's degree in Aerospace Engineering from the Technical University of Munich. In the past decade, he was directly involved in the development and testing of the Blue Pulse active rotor and the Bluecopter demonstrator, as well as in major European research projects on helicopter noise abatement procedures and low noise design. Furthermore, he was responsible for the successful noise certification of the latest H135 and H145 models. He serves in the ICAO CAEP Noise Working Group and was appointed ICCAIA focal point for rotorcraft noise in 2014.



Eric Jacobs

Eric Jacobs has been working for Sikorsky Aircraft since 1985. He is a technical expert in rotorcraft acoustics and noise certification, having been responsible for conducting every helicopter noise certification executed by Sikorsky Aircraft since its first in 1989. He has been a member of ICAO Working Group 1 on Aircraft Noise since 1998, having served as the Rotorcraft Industry Focal Point.



Michael O. Kartyshev

As a Ph.D. candidate at the St. Petersburg State University of Civil Aviation, Michael has carried out many experiments on the propagation of noise from aircraft sources. He supervises the organization of a noise monitoring system at the Vnukovo Airport (Moscow). He also represents the interests of aviation organizations in dealings with local governments. In the CAEP/10 cycle, he presented AcousticLab, a software model for noise mapping, which was later approved by CAEP.



Oleg A. Kartyshev

He has been the Director of the Aviation Environment Science Institute (Moscow) since 1976. He is also the author of many domestic regulatory documents and methods related to the assessment of the impact of airports on the environment. He supervises relationships between aviation industry organizations, the Federal Air Transport Agency, the Society on Aviation Impact on the Environment. Oleg leads the project aiming to organize a noise monitoring system for the Moscow air hub. During the CAEP/9 and CAEP/10 cycles, he participated in the CAEP's Modelling and Databases Group.



Rick Norman

A Master's graduate in Environmental Science and Management from Brunel University Rick has worked in aviation since 1989. Over a long career at two of the world's busiest and environmentally sensitive airports his career has focused primarily on aircraft noise but has also included a range of wider environmental management roles and responsibilities. Apart from 5 years at Gatwick, Rick has been based at Heathrow. For the past 9 years he has been Head of Noise Strategy and responsible for driving forward the airports strategic approach to noise with accountabilities including the development and implementation of Heathrow's EU Environmental Noise Directive Noise Action Plan and long term strategic approach to noise management. He is currently Noise Rapporteur for the ACI Europe Noise Task Force.



Xavier Oh

He worked as a Senior Manager Environmental Protection at Airports Council International (ACI) until 2016, led the CAEP/10 Community Engagement task and was the ACI Observer on CAEP. As secretary of ACI's World Environment Standing Committee he was in charge of developing, coordinating and implementing policy and positions on issues relating to the environment and airports, as well as supporting environmental training for airports, sharing best practice between airports and working with aviation industry organizations. In 2016, he moved to London, UK, to become the Noise Strategy Manager at Heathrow Airport and will continue to work with community engagement.



Christian Roehrer

Christian Roehrer has been working as the Head of Environmental Management Department of Vienna Airport since March 2013 and has been involved in the environmental management activities of the airport since 1978, holding progressively more responsibilities. He has experience in noise measurements, noise zone calculation, flight track monitoring, air navigation, aircraft noise and emissions and regional communication. Christian also was a noise expert in Meditation Process from 2000 to 2005. He has been a member of the Dialogue Forum Vienna since its inception.



Sheila Sankey

Sheila Sankey is a Senior Environmental Advisor at Transport Canada, she has worked in the aviation environmental field for 19 years. Sheila provided secretariat support to the Task Group for the Airport Planning Manual Part 2 updated during CAEP/10.



Alec Simpson

Alec Simpson is the Senior Director, Environmental Management, and the Executive Director, Safety and Security 2020 Transformation for Transport Canada. He brings to the department over 30 years of experience in domestic and international aviation management. Alec has been a member of ICAO/CAEP Working Group 2 – Airports and Operations since 1996, and was its co-Rapporteur from 2001 – 2011. He is the Task Group co-leader with Xavier Oh for the Airport Planning Manual Part 2 – Land Use and Environmental Control.



Oleksandr Zaporozhets

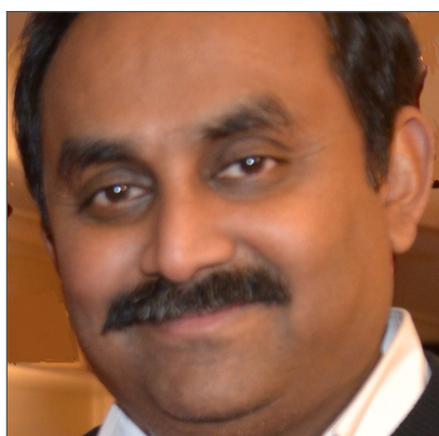
DrSc, Professor, He is a Director at the Environmental Safety Institute of the National Aviation University (NAU) in Kiev, Ukraine, a Head of the Research Center of Environmental Issues of the Airports of the NAU and a member of the ICAO Council's Committee on Aviation Environmental Protection (CAEP), Oleksandr is also a consultant to Civil Aviation Authority (CAA) of Ukraine. For over 20 years, he has served as a scientific adviser on environmental impact assessments and environmental protection related subjects for the Department of Airports of the CAA, contributing to developing policies and regulations.

CHAPTER 3



Benjamin Brem

He is a Research Associate at the Laboratory for Advanced Analytical Technologies at the Swiss Federal Laboratories for Materials Science and Technology (Empa). His work focuses on instrumentation and analytical methods for the measurement of combustion generated particles. He has a Swiss precision mechanic certificate and a Ph.D. in Civil and Environmental Engineering from the University of Illinois.



Daniel Jacob

S. Daniel Jacob is a Physical Scientist and Program Manager at the U.S. Federal Aviation Administration Office of Environment and Energy. His research was focused on understanding the physical aspects of weather and climate. In his capacity as Program Manager at the FAA, he oversees projects on non-volatile particulate matter emissions testing, air quality and climate impacts of aviation. He also manages the development of operational benefits-costs analyses tools that incorporate state-of-the-art science to inform policy and decision making. He co-led the Particulate Matter Task Group of the CAEP WG3 during the CAEP/10 cycle.



Rick Miake Lye

Rick Miake Lye is a Vice President, Principal Scientist, and director of the Center for AeroThermodynamics at Aerodyne Research, Inc. His work in this area started with NASA's Atmospheric Effects of Aviation Project and was recognized for contributions leading to the IPCC's 2007 Nobel Peace Prize. He was a member of the EPA 2007 Climate Protection Award team that quantified PM emissions from the JSF engine. He is active now and has been the Chair of SAE's E-31 committee, and currently serves ICAO on the Impacts and Science Group (ISG), and as a lead of PMTG's METRICS ad hoc group.



Theo Rindlisbacher

Theo Rindlisbacher serves as an advisor on environmental subjects and expert for aircraft environmental certification for the Swiss Federal Office of Civil Aviation (FOCA). After joining FOCA in 2002, he became CAEP WG3 member for Switzerland. In 2011 he engineered and built the prototype aircraft engine PM measurement system at the SR Technics facility in Zurich, Switzerland. He was co-leading the Particulate Matter Task Group of CAEP WG3 for the development of the first ICAO particulate matter standard.



Inger Seeberg Sturm

Inger Seeberg Sturm joined Copenhagen Airports in 2006 and has been responsible for Environmental Affairs since 2010. She is a member of the ACI Europe Environmental Strategy Committee and was nominated by ACI to represent the organization in the ICAO CAEP Working Group 3 during the CAEP/10 cycle. Among other representations, she is chairing NISA, Nordic Initiative for Sustainable Aviation. Inger has a master degree in law (LL.M.).



Kateryna Synylo

PhD, works at the National Aviation University of Kiev, Ukraine, and currently as an Assistant Professor of the Chair of Safety of Life Activities of the Institute of Environmental Safety. Kateryna is leading the Local Air Quality assessment and control in the Research Center of Environmental Issues of the Airports of the NAU, she is a member of CAEP Modelling and Database Group beginning from 2014. She has been involved in national and international studies and projects related to environment protection from civil aviation impact, focused on the assessment air pollution and organization of monitoring of aircraft engine emissions inside and around the airports.

CHAPTER 4



Steve Arrowsmith

Steve Arrowsmith is an Environmental Protection Officer at the European Aviation Safety Agency (EASA). He has 20 years of experience working in industry and aviation authorities on environmental certification requirements and regulatory impact assessments. He has led various type certification and rulemaking projects, including the aircraft engine NOx emissions standard at CAEP/8 and the aeroplane CO₂ standard during CAEP/9 and CAEP/10.



Annie Benn

Annie Benn is a Senior Associate at Carbon War Room/Rocky Mountain Institute. She works with the Sustainable Aviation team to develop industry-led strategies for reducing the climate impact of aviation, and engages stakeholders in Carbon War Room's work. Ms. Benn holds a BA from Swarthmore College and a Master of Public Administration from New York University.



Arnaud Bonnet

He is the Engine Performance Consulting Engineer for Embraer, having worked for 26 years on propulsion systems performance related matters. He is a member of CAEP WG3 since 2012 and has participated to the CO₂ Standard definition activities within ICCAIA. He holds an Electronic Engineering Degree from ENSEEIHT (Toulouse, France) and a Master of Science in Propulsion from ENSAE (Toulouse, France).



David Brain

David previously worked as an en-route Air Traffic Controller in the UK and has over 20 years extensive experience in ATC, ATM and Project Management. David currently leads EUROCONTROL's operational efforts on reducing aviation's impact on the environment, chairs the European CCO/CDO Taskforce as well as leading several other European operational projects. David is a member of the CAEP Airport and Operations Working Group and Modelling and Databases Working Group and currently leads two tasks within CAEP; to estimate the global environmental benefits of ASBU Block 1; and a further task to estimate global inefficiency levels due to ATM. David has a private pilot's license, a degree in Geography and a Master's degree in Sustainable Aviation.



Robin Deransy

Robin Deransy leads the team responsible for EUROCONTROL's environmental impact modelling and research activities at the EUROCONTROL Experimental Centre. Robin was the project leader of the SESAR 1 Environment Coordination and Support function (Project 16.06.03). He is active in ICAO's Committee on Aviation Environmental Protection (CAEP), contributing to the work of its Airports & Operations and Modelling & Database Working Groups. In this context, Robin was leading the task group responsible for collecting examples of good practice environmental assessments during CAEP/10.



Moussa Halidou

Halidou Moussa currently works as Chief Delegate of ASECNA to ICAO and Representative of Niger to ICAO. He is also an Air Navigation Commissioner and Chairman of the Steering Committee of the ICAO Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan). Since 2008, Mr. Halidou has been an elected Member of the ICAO Air Navigation Commission (ANC) and has served as 2nd Vice President of the ANC in 2011, 2014 and 2015. He is an Internal Auditor of ASECNA in Integrated Management System (SMS-QMS) as well as an ICAO USOAP-CMA Auditor in the area of ANS. Mr. Halidou also holds an ICAO SMS Train the Trainers Certificate and qualification certificates in air traffic management from ASECNA. Mr. Halidou's extensive professional experience in civil aviation spans 34 years.



Rolf Hogan

As RSB's Executive Director, Rolf is supporting the expansion of the RSB's globally renowned standard and certification scheme from liquid biofuels to cover biomaterials such as bioplastics and other products derived from biomass. With an academic background in both natural and social sciences, Rolf has 20 years' experience with the non-profit sector and global environmental policy. He led a multi-country program on protected areas for WWF International and represented the organization at the Convention on Biological Diversity. He also worked for the International Union for the Conservation of Nature (IUCN) advising the UNESCO World Heritage Committee.



P.S. Jayan

With 15 year of experience as a Journalist, Mr.P.S.Jayan joined Cochin International airport in 2014. Now he works as Manager-Corporate Communications. He is a British Chevening Scholar and Editor of two books; Nations of the World, Insignia of a Dream.



Ian Jopson

Ian has over twenty years' experience in the sphere of environmental aviation issues in Europe and beyond, working for the Civil Aviation Authority and an independent consultancy. Ian is Head of Environmental and Community Affairs at NATS, which provides air traffic services to 2.2 million flights a year and to 13 airports in the UK. Ian is Chair of the UK Sustainable Aviation coalition and he advises the UK state member of ICAO's Committee on Aviation Environmental Protection. In Europe, he is part of the environmental research transversal programme in the Single European Sky ATM Research programme, SESAR.



Adam Klauber

As the Aviation Lead for Carbon War Room/Rocky Mountain Institute, Adam Klauber heads a program to activate market based solutions for the climate. In his last position, he led ICF International's Sustainable Aviation practice supporting airports, airlines and the National Academies of Science with cost effective energy and resiliency strategies. Mr. Klauber has advanced innovative aviation sustainability, including managing high performance building design for the FAA NextGen program and developing the first United States based carbon neutral airport project for the Massachusetts State Department of Transportation.



Petra Koselka

At Carbon War Room, Ms. Koselka focused on designing and delivering innovative business solutions in the Aviation space, driving significant reductions in CO₂. She previously held various positions at Shell, ranging from Finance and New Business Development to significant P&L roles including their aviation business. She recently joined AkzoNobel as the new Corporate Director of Strategy and M&A.



Merel Laroy

Merel Laroy is head of the marketing & sales department at SkyNRG. She focuses on the development of SkyNRG's Corporate Programmes and is in charge of boosting the marketing up to a higher level. Before joining SkyNRG in 2012, Merel studied European Studies at Amsterdam University and International Relations & Philosophy in Sydney, at the University of New South Wales in 2010. Previously, Merel worked for several charities such as Pink Ribbon Netherlands, a charity organization aimed to create a community to support breast cancer patients and KIKA, a Dutch charity foundation that brings in funding for research to childhood cancers.



Jarlath Molloy

Jarlath has worked on environment and aviation topics with NATS, ICAO, a European Commission aviation project, Aer Lingus and CDSB. As Environmental Affairs Manager, he is responsible for developing NATS' Corporate Social Responsibility policy and improving environmental performance, as well as expanding NATS' external CSR reporting and supporting projects to reach NATS' airspace environmental targets. He attends ICAO's Committee on Aviation Environmental Protection WG2 on behalf of the UK CAEP member. Jarlath gained a PhD from Imperial College London, where he focused on climate change and aviation, and he is a Chartered Physicist.



Gerard Ostheimer

Dr. Ostheimer serves as the Global Lead for the SE4ALL Sustainable Bioenergy High Impact Opportunity. Working with diverse partners he promotes the development and deployment of sustainable bioenergy solutions to help achieve SE4All's goals of increasing energy access and doubling the use of renewable energy. Previously, Dr. Ostheimer served as a Science Advisor for the Foreign Agriculture Service and was the U.S. government technical lead to the Global Bioenergy Partnership (GBEP) and contributed to finalizing the GBEP Indicators of Sustainable Bioenergy Production and Use.



Sebastien Remy

Sebastien Remy has been Head of AIRBUS GROUP INNOVATIONS since 2013. He leads the Airbus Group's network of research centres with a highly skilled workforce of more than 800 employees in over 10 countries. Together with his team, Sebastien REMY operates the laboratories that guarantee Airbus Group's technical innovation potential with a focus on the long-term. He graduated from the French engineering School "Ecole Nationale Supérieure de l'Aéronautique et de l'Espace" in 1984 and after joining Airbus in 1986 later became Head of Alternative Fuels Research Programmes, initiating the activities that led to the world premiere A380 flight with alternative fuel in 2008.



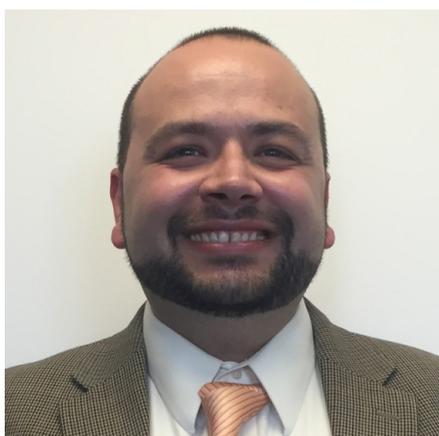
Célia Alves Rodrigues

Célia Alves Rodrigues is the Environment Officer and Release Outcome Manager at the SESAR Joint Undertaking based in Brussels, Belgium since March 2010. Célia works in the Development and Delivery Unit and is responsible for the monitoring and supporting the dissemination of the SESAR Releases results (SESAR Solutions). She is also the focal point for SESAR environmental aspects. In parallel she manages the on-going RPAS (Remotely Piloted Aircraft Systems) demonstration activities. In the past she was responsible for the programme management of the Atlantic Interoperability Initiative to Reduce Emissions (AIRE).



Thomas Roetger

Thomas Rötger joined IATA in 2008 as Assistant Director Environment Technology. His main activity is to implement IATA's strategy to reduce aviation's environmental impact through technological measures, in particular sustainable fuels. He is a member of ICAO CAEP WG3 (Emissions), Alternative Fuel Task Force and Impact Science Group; he is chairman of the end-users chamber in the Roundtable on Sustainable Biomaterials (RSB), and rapporteur of the Environment and Energy working group in the Advisory Council for Aviation Research and Innovation in Europe (ACARE). From 1988 to 2008 he worked at Airbus in Toulouse and Hamburg, with a focus on noise and emissions reduction. He studied physics and chemistry in Heidelberg, Hamburg and Grenoble and holds a doctoral degree in physics.



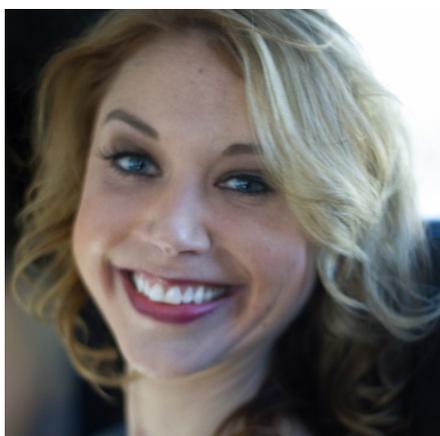
Donald J. Scata

Don is an aviation professional working in the United States Federal Aviation Administration (FAA) Office of Environment and Energy (AEE) as the Senior International Advisor. Don has been working at FAA since 2012. His work is focused on coordinating AEE's International Environmental Activities, including work in the International Civil Aviation Organization (ICAO) Committee on Aviation Environmental Protection (CAEP). In this role, he supports the Executive Director and the rest of AEE in their engagement on a number of ICAO/CAEP Technical Groups. In CAEP WG2 (airports and operations), Don co-led the analysis of the environmental benefits of global Aviation System Block Upgrade (ASBU) implementation. Don is also a National Environmental Policy Act (NEPA) expert, and co-led the update of FAA Order 1050.1E and creating a supporting Desk Reference.



Pedro Scorza

Pedro Rodrigo Scorza is a Line Captain at GOL Airlines and responsible for supporting C-level executives in long term projects like renewable fuel and sustainability. He also acted as Operations Control Director, Operations Director and Technical Operations Director. Since February 2015, he is also a Director of Renewables for Aviation at Ubrabio (União Brasileira de Biodiesel e Biokerosene). The executive began his professional career in 1989 and has been working at GOL since 2006.



Katie Sullivan

Katie serves as IETA's Director of The Americas and International Climate Finance. On behalf of IETA's global multi-sector business membership, Katie leads efforts to inform climate change policy and market design with government and non-government partners across The Americas. She also manages IETA's growing international work on innovative instruments and market mechanisms, capable of leveraging and scaling low-carbon private capital. Katie's a member of the University of Toronto's Environmental Finance Committee, Ontario Environment Commissioner's Climate Change Advisory Panel, and the Climate Advisory Group to Ontario's Minister of Environment & Climate Change.



Niclas Svenningsen

Niclas Svenningsen is the Manager for the Strategy and Relationship Management unit in the UNFCCC Secretariat. In this capacity he is responsible for developing and strengthening approaches and strategies for catalysing climate action under, and in addition to, activities mandated by UNFCCC, in particular through market based instruments such as the Clean Development Mechanism (CDM). He was previously working in the United Nations Environment Programme (UNEP) where he was in charge of the climate neutral strategy of the UN system, as well as for the implementation of UNEP's programmes for sustainable buildings, urban development, and sustainable procurement.



Laszlo Windhoffer

Laszlo Windhoffer is an aerospace engineer who works at the United States Federal Aviation Administration's (FAA) Office of Environment and Energy. Specializing in aircraft emissions, he has been involved in various research projects ranging from automatically optimizing en-route air traffic for minimal fuel consumption to assessing national aviation fuel efficiency metrics and goals. He also led the design of the FAA's state of the art environmental modeling lab. In recent years, he was the co-lead of a technical working group that designed the first global carbon emission standard for commercial aircraft. He is currently focused on implementing the international CO2 standard within the United States regulatory framework.

CHAPTER 5



Alfredo Iglesias

He is the Head of the Environmental Service at the State Aviation Safety Agency (AESAs) and works in the development and implementation of noise and emission measures which lead to achieve the sustainability of the aviation transport. He is an Aerospace Engineer, specialized in propulsion and he has worked in different areas such as aircraft/engine certification and environment. Nowadays he is the Spanish member of the CAEP and Co-rapporteur of the GMTF. From 1998 to 2004 he was member of the CAEP Noise Scenarios Group (NSG), prior to the CAEP 5.



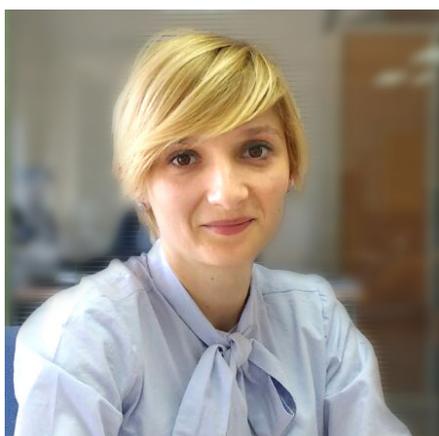
Ramesh Lutchmedial

Mr. Ramesh Lutchmedial has been the Director General of Civil Aviation and the Chief Executive Officer of the Trinidad and Tobago Civil Aviation Authority for the past 15 years with an aviation career extending to over 45 years. He is a UK Certified Aircraft Engineer and holds a Master's in Business Administration. He pioneered the development of civil aviation in Trinidad and Tobago with the establishment of the TCAA consisting of an ultra-modern civil aviation complex that includes a Control Tower and an Area Control Centre. Ramesh is a member on the Board of the Caribbean Air Navigation and Advisory Services Limited, Vice Chairman of the Caribbean Aviation Safety and Security Oversight System (CASSOS) of CARICOM.



Raúl Martín

In 2006 Raúl Martín joined SENASA, Spanish State Company linked to the Civil Aviation Authority. Since 2015 he leads the Spanish Observatory of Sustainability in Aviation (OBSA), a SENASA project that has become a reference on aviation and sustainability, facilitating policy-making in this field by interacting among the authorities and the stakeholders. Besides, the OBSA develops technical activities, training and consultancy in several areas such as Climate Change, Local Air Quality, Noise mitigation, etc. in relation with aviation.



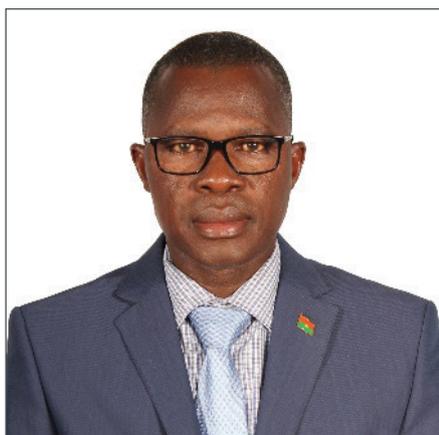
Julia Municio

Julia Municio is an environmental expert and has worked in different companies related to environmental issues until she arrived at the Observatory of Sustainability in Aviation at SENASA in 2009. She has been involved in many projects related to the sustainability of the aviation sector such as the National Inventories of Emissions from Aviation, the annual publication of the Sustainability Report of the Aviation Sector in Spain, the EU-ETS, etc. and nowadays she gives support to the AESA in the development of the Spanish Action Plan for Emissions Reduction in Spain.



Giovanni Tobar

Mr. Tobar is an industrial engineering working for the Central American Corporation for Air Navigation Services (COCESNA) on the regional programme for climate change and environment protection. He studied strategic planning, political investigation, climate change science, sustainable development and he is a Ph.D. candidate in engineering and climate change at the University of Almería in Spain. After being vice-minister for environment and undersecretary for economic planning of Guatemala, Mr. Tobar is currently a representative of the academic sector in the Guatemalan National Council on Climate Change. Since he took up his position in COCESNA, Mr. Tobar has been appointed as a focal point to update the Central American plan to reduce international aviation emissions and implement environment and civil aviation mitigation measures decided by the Latin American Civil Aviation Commission (LACAC).



Salifou Zanga

Salifou Zanga is the head of the aircraft airworthiness Department of the National Civil Aviation Agency of Burkina Faso since March 2014. In 2013, he joined the National Civil Aviation Agency at the Department of aircraft operations. From 1995 to 2003, he worked as aircraft Engineer in Dakar (Senegal) Industrial Center, where he participated in major maintenance works on Airbus and Boeing aircraft, from A-check to D-check, as well as, in Abidjan and Bordeaux. He is currently the Coordinator of the CO₂ action plan team in Burkina Faso.

CHAPTER 6



Julien Dezombre

Julien Dezombre received a Master's degree in Chemical Engineering from École Supérieure de Chimie Organique et Minérale, Cergy-Pontoise (France) in 2003. He then joined Airbus and participated in the implementation of a management system under ISO14001 and towards an important end-of-life demonstration project. He joined Bombardier Aerospace in 2009 as Design for Environment engineering specialist. Mr. Dezombre successfully managed several initiatives relating to product-based environmental improvements for both new and legacy Bombardier aircraft, which involves collaboration with outside partners and suppliers on research and development projects.



Laura Dwulet

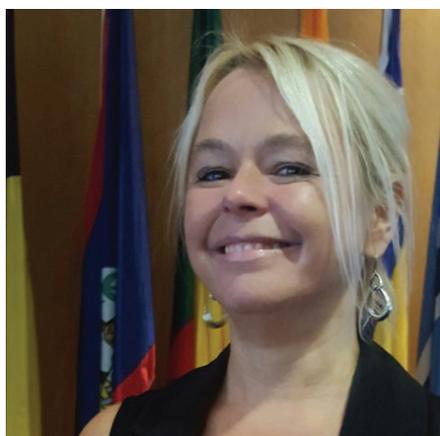
Laura Dwulet is General Manager of the Aircraft fleet Recycling Association (AFRA), which is the leading global organization for developing and promoting the safe and sustainable management of end-of-life aircraft and components. Established in 2006, AFRA is a membership-based global collaboration to elevate industry performance and increase commercial value for end-of-service aircraft. AFRA represents companies from across the globe and throughout the supply-chain – from manufacturers to materials recyclers. Through the collective experience of its members, AFRA's Best Management Practice (BMP) Guide has significantly improved the management of end-of-life aircraft in terms of environmental and sustainable performance.



Kahina Oudjehani

Kahina Oudjehani received a Master's degree (M.A.Sc.) in Chemical Engineering from École Polytechnique de Montréal (Canada) in 2001, and a Bachelor's degree in the same field in 1997. She has 17 years combined experience in different areas (Research, Soil Remediation, Telecommunication, Consulting and Aerospace). She joined Bombardier Aerospace in 2008 as an Environmental Specialist. In 2011, Ms Oudjehani was appointed of EcoDesign Lead for the entire Aerospace Group. She is responsible for integrating environmental concerns involving product design and also for producing environmental product declarations for new Bombardier aircraft. The EcoDesign team won two awards, in 2013 and 2014, for its leadership role in developing Bombardier's Corporate Social Responsibility and its innovative approach for Design for Environment.

CHAPTER 7



Rachel Burbidge

Rachel Burbidge joined EUROCONTROL in 2005. She has been leading EUROCONTROL's work on climate change adaptation since 2009. She is the Agency's policy officer for international aviation market-based measures for CO₂ reduction and a member of the ICAO Global Market Based Measures Technical Task Force, as well as being a member of the ICAO CAEP Impacts and Science Group and Airport and Operations Working Group. She also contributes to the SESAR Single European Sky ATM Research Programme, where she leads the environmental risk and regulation work. She has a degree in Environmental Studies and a Master's degree in Sustainable Development.



Kristin Fjellheim

Ms. Kristin Fjellheim has been an energy adviser in Avinor's infrastructure and ground services department since 2014 working with issues related to energy efficiency, emission reduction, renewable energies and climate adaptation in buildings. She has a master's degree in industrial ecology from the Norwegian University of Science and Technology with a thesis on using input-output methodology to model the environmental impact of world trade.



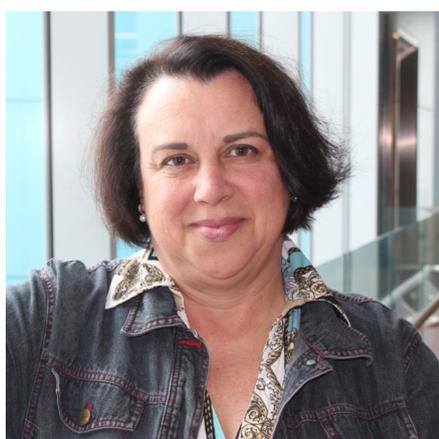
Olav Mosvold Larsen

Mr. Olav Mosvold Larsen has been a senior adviser in Avinor's Strategy department since 2007, with a special responsibility for issues related to climate change and the environment. Mr. Larsen is also chair of ACI Europe's Environmental Strategy Committee. He holds a degree in political science and has previously worked as a researcher at the University of Oslo, Centre for Development and the Environment.



Herbert Puempel

Herbert obtained a Ph.D. in Theoretical Meteorology at the University of Innsbruck in 1978. He has taken on leading roles in Expert Teams of the Commission for Aeronautical Meteorology of the World Meteorological Organization from 1990, and became Chief of the Aeronautical Met Division at the WMO Secretariat in 2006 until 2013. He has been involved in the work of CAEP since 1999, and currently is a member of its Implementation and Science Group. His focus is the study of the effects of climate change on aviation, and aspects of how this change will affect the need for improved cooperation between MET service providers, ATM and operators. Within Austrocontrol, he is currently in charge of Strategic Planning for MET and looks after a number of European SESAR and similar projects.



Karyn Rains

Karyn Rains is a Communications and Approvals Manager for the New Parallel Runway (NPR) Project at Brisbane Airport Corporation (BAC). She won the Grand Award for Best Water Management in the World at the International Water Association (IWA) Awards in 2008. In 2005, Karyn joined the NPR Project team as Assistant Project Manager. Her team obtained very quickly approvals for a new runway and won the Tourism and Transport Forum Corporate Leadership Award for Public Affairs Excellence. Since 2007 Karyn has held a senior management role. Her current focus within the NPR team is the airspace planning and implementation to the opening of the new runway.



Paul Williams

Dr Paul D. Williams is currently a Royal Society University Research Fellow in the Department of Meteorology at the University of Reading. He obtained his PhD in atmospheric, oceanic and planetary physics from the University of Oxford in 2003. His scientific research focuses on atmospheric waves and turbulence. He was the lead author of a recent study into the effects of climate change on aircraft turbulence.

CHAPTER 8



Ban Ki-Moon

Ban Ki-moon is the eighth Secretary-General of the United Nations. He has sought to be a bridge builder, to give voice to the world's poorest and most vulnerable people, and to make the Organization itself more transparent, effective and efficient. Mr. Ban took office on 1 January 2007, was unanimously re-elected by the General Assembly in 2011, and will serve until 31 December 2016. His priorities have been to mobilize world leaders to address global challenges ranging from poverty and climate change to violent conflict and intolerance. He pressed successfully for the creation of UN Women, and during his tenure the number of women in senior management positions reached the highest level in UN history. He has undertaken major efforts to strengthen UN peace efforts, promote accountability for violations of human rights, and improve humanitarian response, and has advocated for the rejuvenation of the disarmament agenda.



Christina Figueres

Christiana Figueres has been Executive Secretary of the UN Climate Change secretariat since 2010. She has worked extensively with governments, non-governmental organizations and the private sector on climate change and sustainability issues, including as a board member of the Clean Development Mechanism, Vice-President of the Climate Change Conference, as well as many non-governmental organizations. Ms Figueres has greatly contributed to literature on climate solutions and holds a Master's Degree in Anthropology from the London School of Economics, a certificate in Organizational Development from Georgetown University and honorary Doctorate degrees from the University of Massachusetts and the Georgetown University.



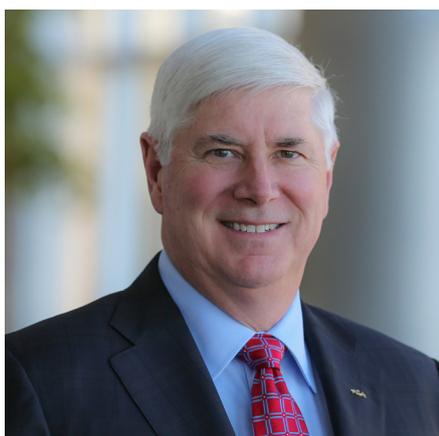
Angela Gittens

Angela Gittens began her tenure as Director General of Airports Council International (ACI World) in 2008. She was formerly airport CEO for Miami and Atlanta and Deputy at San Francisco International Airport. In previous roles, Angela served as Vice-President, Airport Business Services for HNTB Corporation. As Vice-President at TBI Airport Management, she oversaw the transition to private ownership of London Luton Airport. Angela has served on aviation industry boards and committees including the FAA Management Advisory Committee, the FAA Research, Engineering and Development Committee, the National Civil Aviation Review Commission, the Executive Committee of the Transportation Research Board, the Airport Cooperative Research Program Oversight Committee and the Board of Directors of JetBlue Airways.



Tim Johnson

Tim has worked with the Federation for over twenty years. He provides AEF's representation at ICAO as well as on the Department for Transport's External Advisory Group. On behalf of the environmental NGO coalition ICASA (the International Coalition for Sustainable Aviation), Tim plays an active role in ICAO's Committee on Aviation Environmental Protection where he chairs ICAO's carbon calculator task force and is co-lead on tasks related to the development of a global market-based measure. Tim won the 2014 Royal Aeronautical Society Green by Design award for his work to move the environmental aviation debate in a landscape of conflicting interests.



David Melcher

David F. Melcher is President and CEO of the Aerospace Industries Association. Following a 32-year career in the U.S. Army, Lieutenant General (Ret.) Melcher joined AIA from Exelis Inc., where he was CEO and President. As AIA President and CEO, Melcher chairs the International Coordinating Council of Aerospace Industries Associations, industry's representative to the International Civil Aviation Organization. Melcher was also sits on FAA's NextGen Advisory Committee, providing advice for the nation's aviation modernization efforts.



Jeff Poole

Director General of CANSO (Civil Air Navigation Services Organisation) was appointed on 1 December 2012. In addition to leading and managing CANSO, he represents its Members as the global voice of air traffic management. He is responsible for delivering the CANSO strategic plan for air traffic management, Vision 2020; further expanding CANSO's worldwide membership; and governing CANSO's relationship with its industry peers and stakeholders. Jeff previously served at the International Air Transport Association (IATA) 2004-2012. In one of his prior assignments, Jeff was responsible for the development of all business aspects of the Airbus A380 programme. His final position at Airbus was as Senior Vice President for Procurement Strategy and Services.



John Roome

As Senior Director for Climate Change at the World Bank Group, John Roome leads a team of climate finance and policy specialists and works across the institution to advance the mitigation, adaptation and resilience agenda.



Erik Solheim

Erik Solheim assumed leadership of the United Nations Environment Programme in June 2016, having served as Chair of the Development Assistance Committee of the Organization for Economic Cooperation and Development since 2013. Previously, Erik served as Norway's Minister of the Environment and International Development, as a peace negotiator in Sri Lanka, and contributed to the peace process of Sudan, Nepal, Myanmar and Burundi, as UNEP's Special Envoy for Environment, Conflict and Disaster, and as a Patron of Nature for the International Union for the Conservation of Nature.



Tony Tyler

Tony Tyler took on the role of Director General and CEO of the International Air Transport Association (IATA) in 2011. Tyler has championed IATA's commitment to addressing aviation's impact on the environment. His effort led governments to reach an agreement on a market-based measure (MBM) as a tool to manage aviation's carbon footprint and achieve the industry's carbon-neutral growth target. Tony carries with him a message that aviation delivers extensive social and economic benefits—supporting 57 million jobs and enabling over \$2.2 trillion of business annually. He has also overseen a major internal restructuring of IATA to improve the association's organizational effectiveness in delivering greater value to its members.