

Climate Change And Aviation Issues Challenges And Solutions Earthscan Climate

This volume brings together some of the leading names in global aviation policy research to provide a unique and ground breaking synthesis of current debates on sustainable aviation.

Although the contribution of international civil aviation to climate change seems small (with a global share of just 3.5 percent of emissions of CO₂), the projected growth in air traffic means that it is highly significant. There is thus an urgent need to explore legal regulations for limiting and/or reducing the adverse impacts of aircraft emissions on the environment. This thesis examines the progress which has been made on international aviation emissions abatement and provides an analysis of the reasons for delay. It concludes that the contribution of aviation to climate change is a multi-scalar problem and as such neither conventional top-down international legal regimes, nor any single regulatory instrument can solve it. The research question for this thesis is how to break the deadlock of conventional legal approaches and overcome the barriers to international aviation greenhouse gas emissions abatement. New governance theory provides the theory within which the future of aviation emissions regulation has been explored. Drawing on the scholarly literature on new governance, this thesis argues for a multi-scalar regulatory architecture which simultaneously engages multi-level governance, and a multi-party and multi-instrument approach to the problem. First, multi-level governance includes an international sectoral target on reducing aviation emissions, national efforts in allocating and implementing reduction targets on aircraft operators, and regional cooperation in between, as well as sub-state level governance although this is not a feature of this thesis. Second, a multi-party approach requires efforts from both public and private actors (international organisations such as the UNFCCC and ICAO, nation states, the airline industry and IATA). Finally, a combined use of multiple regulatory instruments (conventional command and control type mechanisms and multiple market-based instruments) should be included. The failure of the UNFCCC to regulate international aviation emissions means that the problem has remained largely unaddressed. Recognizing

climate change as a multi-scalar problem that needs multi-scalar regulatory approaches would allow the international aviation emission problem to move beyond the deadlock of conventional inter-state approaches.

This Intergovernmental Panel on Climate Change Special Report is the most comprehensive assessment available on the effects of aviation on the global atmosphere. The report considers all the gases and particles emitted by aircraft that modify the chemical properties of the atmosphere, leading to changes in radiative properties and climate change, and modification of the ozone layer, leading to changes in ultraviolet radiation reaching the Earth. This volume provides accurate, unbiased, policy-relevant information and is designed to serve the aviation industry and the expert and policymaking communities.

Seminar paper from the year 2009 in the subject Transportation Science & Technology, grade: 1,0, University of Applied Sciences Wildau (Wildau Institute of Technology (WIT)), course: Master Studies in Aviation Management, language: English, abstract: This paper tries to concentrate on the main influences of aviation on the environment such as noise pollution and its effects on humans as well as the growing impact of aviation on the atmosphere and on climate change itself. Aviation has a number of environmental impacts that are experienced by local residents in the vicinity of airports and under flight paths. Noise has been the focus of concern over all the years of growth in aviation and more recently air pollution and the health effects of air pollution from aircraft have begun to cause concern. The following chapter will inform about these issues: Glossary Introduction Noise pollution Effects of noise on humans Influence on the atmosphere Impact of aviation on climate change Sources

Carbon Offsetting in International Aviation in Asia and the Pacific

Toward Governing Emissions from Aviation that Contribute to Climate Change and Global Warming

Processes, Detection, Prediction

The Most Comprehensive Plan Ever Proposed to Reverse Global Warming

Emmissions [sic] : Hearing Before the Subcommittee on Aviation of the Committee on Transportation and

Infrastructure, House of Representatives, One Hundred Tenth

Congress, Second Session, May 6, 2008

Aviation and the Global Atmosphere

"Reconciling the challenges of climate change and local pollution with those of economic growth and mobility, have become increasingly pressing and urgent. By 2050, carbon dioxide emissions from international and domestic aviation are anticipated to double their ~2.4% contribution to global warming; a figure that does not consider the radiative forcing effect of other emissions at cruise altitude. This doctoral dissertation investigated the role for alternative jet fuels (AJF) in mitigating the climate impacts of aviation in decades to come. This socio-environmental research was overarched by a Post-Normal Science (PNS) theoretical framework, where a mixed methodological approach to aeronautics and the application of out-of-field methods, were instrumental for the development of both the descriptive and the normative components of PNS. The descriptive component of PNS centered on the implications for environmental governance, of defining post-normal issues in terms of what is and what can be known. Its normative component focused on identifying mechanisms for informing and improving decision-making in the air transport sector, based on reflexive, inclusive and transparent scientific inquiry. The analysis of the discursive foundations of aviation climate policy, including the International Civil Aviation Organization's (ICAO) alternative jet fuel strategy, revealed abiding instances of data obliquity, information gaps and asymmetries underlying unquestioned forms of problem representations apropos the environmental impacts of air transport. Some of the options identified in this thesis for addressing these issues encompass: a) an enhanced transparency and access to data collected by governments, industry, academia and other third-parties on aviation emissions from and beyond fuel combustion, b) the harmonization of epistemologies for measuring, allocating, assessing, verifying and reporting environmental data so as to render it comparable, c) a reassessment of the sectoral approach to the Sustainable Development Goals (SDGs) for aligning aviation policies and actions with the aims of the UN 2030 Agenda for Sustainable Development, d) greater engagement of stakeholders in the qualitative production, appraisal and use of knowledge, and e) a broad outreach to end-users for getting them involved, individually, in climate action. Problem (mis)representations within the aviation sector have historically bolstered a weak sustainability approach to its sectoral growth that, unless unsettled and replaced by strong sustainability narratives, will continue to effect long-term micro and macroscale risks and repercussions on people and the environment. These discursive and non-discursive practices may also hinder future deployment of sustainable AJF - particularly in countries rich in fossil resources such as Canada - by encouraging the production of fossil-derived fuels, known as lower carbon aviation fuels (LCAF), and when more economical, by favoring carbon offsetting over direct emissions abatement. Weak sustainability narratives in the aviation sector can be challenged by participatory decision-making, where the understanding of what matters, why does it and who says so is as

relevant to the future of AJF as their economies of scale. Multi-stakeholder partnerships are promising mechanisms for bringing oftentimes overlooked strong sustainability perspectives and expertise, into the formulation of policies and regulations on AJF beyond the work of the ICAO. To illustrate this, the Canadian case study offered a comprehensive overview of the status, obstacles, opportunities and next steps for strategically addressing commercialization barriers for AJF, by means of a national roadmap - SAFI Canada. This roadmap was the result of the active and pluralistic involvement of stakeholders within a community of interest on AJF that was partly gathered for this purpose"--

Aviation is inherently linked to meteorology as severe weather is often responsible for flight delays, cancellations and sometimes accidents. Climate change is expected to change the Arctic environment and the warming rate in this region is greater than most locations on Earth. With a changing climate, the risks of flying will also be changing. In Canada, many Arctic communities in Hudson Bay, Nunavik in northern Quebec and western Labrador rely heavily on aviation to transport passengers, mail and groceries because they lack road networks or railway to access larger settlements and shipping is limited to brief periods in summer. Using historical hourly and daily climate data, this thesis examines four topics related to flying: 1) wind pattern changes (1971 to 2010) at seven locations around Hudson Bay, northern Quebec and western Labrador; 2) fog and visibility trends at 16 Hudson Bay communities (1953-2014); 3) historic long-term soil temperature trends at 5 to 150 cm depths and future projections under three greenhouse gas concentration trajectories at Kuujuaq, Quebec; 4) appearance and climate conditions for frostquakes. The results of these topics are: 1) an increase in hourly average and daily maximum wind speed around Hudson Bay region and declining trends in western Labrador, plus prevailing wind direction changed at two communities; 2) fog and ice fog frequencies declined but reduced and low visibility trends varied spatially within the Hudson Bay region; 3) soil warming at approximately 1oC per decade from 1967 to 1995 and future soil temperature will be above 0oC under all projected trajectories at Kuujuaq; 4) identified that water-saturated soil, minimal snow cover and rapid temperature drop to below freezing causes frostquakes and that observations were somewhat dependent on the density of the observational network. Passengers travelling to and from Hudson Bay will benefit from the results of this research to better understand the risks associated with flying to these communities. Pilots, airport operators and airlines will improve their awareness of this issue and increase their understandings of the risks caused by climate change in this area. Improved safety will be achieved by anticipating, adapting to and mitigating these changes.

Climate Change and Aviation Issues, Challenges and Solutions Routledge

The international community has succeeded in developing rules to limit greenhouse gas emissions in the atmosphere from international civil aviation. This book examines the development of international law and policy in an area that has remained largely outside the general

framework of international environmental law.

ICAO Journal

Challenges and Opportunities

Aviation Turbulence

Environmental Impact of Aviation and Sustainable Solutions

Sustainable Development, International Aviation, and Treaty

Implementation

Carbon Dioxide Capture and Storage

"ABSTRACT International aviation grows at a rate of roughly 5 percent per year. Its greenhouse gas (GHG) emissions are forecasted to increase annually by 3-4 percent. Currently, international aviation's contribution to global GHG emissions is approximately 2 percent and is expected to increase considerably as more people utilize air travel. While the aviation sector has introduced a number of technological and operational measures to curb emissions, these measures will not offset the emissions expected from its projected growth. For instance, there is no indication that alternative fuels will be available in sufficient quantities and at reasonable prices to engender meaningful reductions in GHG emissions. This thesis examines aspects of the legal framework underlying the international aviation and climate change discourse with a view to providing some recommendations that may facilitate the adoption, implementation and, ultimately, compliance with the International Civil Aviation Organization's (ICAO) global market-based measure (MBM) scheme to limit GHG emissions from international aviation. In other words, it seeks to analyze certain issues that have directly or indirectly influenced discussions on aviation and climate change and that have played or will play a significant role in ICAO's global MBM scheme. I deal with five broad areas. First, the thesis examines ICAO's relationship with the climate change regime, the implicit mandate provided by the Kyoto Protocol and the interplay between the core principles of the United Nations Framework Convention on Climate Change (UNFCCC) regime and those of the international aviation regime. I utilize the theory of fragmentation of international law as an analytical framework for the resolution of normative conflict. Second, the thesis explores ICAO's institutional setting and its suitability for addressing climate change. Third, the thesis comprehensively analyzes the European Union Emission Trading Scheme (EU ETS), its influence on the climate change discourse, as well as the legal issues associated with it. Fourth, by applying the theory of norm entrepreneurship, the thesis assesses the role of the major players involved in climate change discourse. Fifth, the thesis highlights some issues that should be carefully considered during the design of ICAO's global MBM. This should not necessarily be construed as an attempt to develop a comprehensive global MBM scheme for international aviation. Such an endeavor would require substantial qualitative and quantitative data that fall outside the scope and reach of

this exercise. I end by identifying necessary factors to consider in proposals that seek to regulate GHG emissions from international aviation." --

Each new generation of commercial aircraft produces less noise and fewer emissions per passenger-kilometer (or ton-kilometer of cargo) than the previous generation. However, the demand for air transportation services grows so quickly that total aircraft noise and emissions continue to increase. Meanwhile, federal, state, and local noise and air quality standards in the United States and overseas have become more stringent. It is becoming more difficult to reconcile public demand for inexpensive, easily accessible air transportation services with concurrent desires to reduce noise, improve local air quality, and protect the global environment against climate change and depletion of stratospheric ozone. This situation calls for federal leadership and strong action from industry and government. U.S. government, industry, and universities conduct research and develop technology that could help reduce aircraft noise and emissions-but only if the results are used to improve operational systems or standards. For example, the (now terminated) Advanced Subsonic Technology Program of the National Aeronautics and Space Administration (NASA) generally brought new technology only to the point where a system, subsystem model, or prototype was demonstrated or could be validated in a relevant environment. Completing the maturation process-by fielding affordable, proven, commercially available systems for installation on new or modified aircraft-was left to industry and generally took place only if industry had an economic or regulatory incentive to make the necessary investment. In response to this situation, the Federal Aviation Administration, NASA, and the Environmental Protection Agency, asked the Aeronautics and Space Engineering Board of the National Research Council to recommend research strategies and approaches that would further efforts to mitigate the environmental effects (i.e., noise and emissions) of aviation. The statement of task required the Committee on Aeronautics Research and Technology for Environmental Compatibility to assess whether existing research policies and programs are likely to foster the technological improvements needed to ensure that environmental constraints do not become a significant barrier to growth of the aviation sector.

A significant volume of literature already exists concerning the inclusion of aviation in the EU-ETS. Most of the research laid its focus on specific industry levels such as the individual airline, the aviation industry in general or macroeconomic aspects. In this context, these studies tried to anticipate market reactions triggered by the EU-ETS by analyzing specific issues such as the financial impact on airlines, changes in competitive behavior or implications for the overall industry development. As a

consequence, the existing studies took only a limited market view and made assumptions about expected developments in specific fields of the aviation industry. However, at the time of writing this thesis, conclusions about the scope of impact could hardly be drawn from existing impact assessments because of the wide range of issues that exceeded the scope of most impact studies. Hence, a broader research approach is needed which takes different analytical perspectives to describe the scope of impact of the EU-ETS and depict potential effects for the aviation industry. Trends such as the massive growth in availability of air travel and air freight are among those which have led to aviation becoming one of the fastest growing emitters of greenhouse gases. These trends have also caused a shift in expectations of how we do business where we go on holiday and what food and goods we can buy. For these reasons aviation is (and is set to stay) high up on global political organizational and media agendas. This textbook is the first to attempt a comprehensive review of the topic bringing together an international team of leading scientists. Starting with the science.

Air Transport System

Legal, Economic and Technical Aspects

Climate Change and Tourism

Special Issue: Aviation, Emissions and the Climate Change Debate

Special Report of the Intergovernmental Panel on Climate Change

Towards Sustainable Aviation

Bachelor Thesis from the year 2020 in the subject Tourism - Miscellaneous, grade: 1,5, Cologne Business School Köln, language: English, abstract: This bachelor thesis will firstly define the term sustainability and explain what it consists of according to the Triple Bottom Line Model by John Elkington by doing a systematic literature review. Furthermore, a closer look into the airline industry will be taken to analyse which challenges and possible opportunities carriers have to face during this significant transformation. While focusing on the research question 'to what extent is the Lufthansa Group adapting to the sustainable change?', the Lufthansa Group will serve as the case study of this thesis to gain a deeper understanding of not only the theoretical elaboration but also the practical implementation of the Paris Agreement of Climate Change. This analysis will firstly work out existing definitions of sustainability and sustainable development, which will be presented in the first chapter. Moreover, a small digression into sustainable tourism as a whole will be made, which serves as a transition to the main topic of

this bachelor thesis: sustainability in the airline industry. The theoretical framework of this paper will be the Triple Bottom Line Model by John Elkington. This model defines sustainability depending on three main pillars, which form the components of the term. Moreover, based on different political statements and reports, such as the Paris Agreement of Climate Change, as well as on statistics that prove not only the existence of global warming but also its consequences, the importance of this elaboration will be once more underlined. In the end, balance and annual reports, which are placed at the disposal of the Lufthansa Group, will serve as the relevant data for analysing the application of the theory to the case study with the focus on the economic and social components. Air Transport and the Environment provides an overview of the main issues relating to aviation environmental impacts. It explains the challenge facing policymakers in terms of sustainable development, focusing on the importance of balancing the industry's economic, social and environmental costs and benefits, both for people living now and for future generations. Individual chapters review the current scientific understanding of the main aviation environmental impacts: climate change, local air pollution and aircraft noise. Various responses to those issues are also considered, including a range of policy options based on regulatory, market-based and voluntary approaches. Key concepts such as environmental capacity, radiative forcing and carbon offsetting are explained. In addition, the book emphasises the main implications of aviation environmental issues for policymakers and for the management of the air transport industry. Debates about the environmental impacts of flying often generate strongly polarised reactions, yet this book adopts a constructive approach to the subject and attempts to present the environmental issues in a clear, straightforward manner. It aims to provide a policy-relevant synthesis of a wide range of perspectives rather than advocating one particular viewpoint. Yet the central purpose of this book is to bring the sustainable development challenge facing the air transport industry to the fore, and so to inform effective policy responses. Air transport plays a critical role in supporting economies and societies that are increasingly interconnected by globalisation; this book presents the view that the vital

economic and social benefits of the air transport industry should not be lost - and in fact could be distributed far more widely and equitably - but that the environmental impacts of air transport nevertheless require urgent and effective management. Air Transport and the Environment has been written primarily for professionals in the air transport industry, policymakers and regulators. It is also intended for use by academic researchers, students and others who are interested in the complex relationship between air transport and the environment.

Aviation is integral to the global economy but it is also one of the main obstacles to environmentally sustainable development. It is one of the world's fastest growing - and most polluting - industries. What can be done to retain the economic and other benefits it brings, without the associated pollution, noise, congestion and loss of countryside? In this volume, industry, policy and research experts examine how to address the problems, and what it would take to achieve genuinely sustainable aviation - looking at technological, policy and demand-management options. Without far-reaching changes the problems caused by aviation can only multiply and worsen. This work seeks to take an important step in diagnosing the problems and in pointing towards their solutions.

There are broadly four strategic issues in aviation: safety; security; environmental protection; and sustainability in air transport. These issues will remain for a long time as key considerations in the safe, regular, efficient and economic development of air transport. Within these four broad categories come numerous subjects that require attention of the aviation industry as well as the States. In six chapters, this book engages in detailed discussions on these subjects as they unravelled in events of recent years. The issue of safety is addressed first, following an introduction of the regulatory regime covering the four issues. Within the area of safety, the book covers such areas as safety management systems, safety and aeromedicine, safety and meteorology, the use of airspace, unmanned aircraft systems and safety oversight audits. In the security area, subjects covered include cyber terrorism, the integrity of travel documents, full body scanners, civil unrest and aviation, the suppression of unlawful acts on board aircraft and the financing of

terrorism. The chapter on the environment focuses mainly on climate change - particularly on carbon credits, market based measures, the carbon market and emissions trading schemes and their effect on air transport. Finally, the chapter on sustainability discusses in detail market access along with such issues as slot allocation, open skies, the use of alternative fuels as an economic measure and corporate foresight. The concluding chapter wraps up with a discussion on where air transport is headed.

Aviation and Climate Change

Plane Trading

A Socio-environmental Perspective for Mitigating the Climate Impact of Aviation

Lessons for European Policy

A Special Report of the Intergovernmental Panel on Climate Change

Issues, Challenges and Solutions

This book provides readers with a basic understanding of the concepts and methodologies of sustainable aviation. The book is divided into three sections : basic principles the airport side, and the aircraft side. In-depth chapters discuss the key elements of sustainable aviation and provide complete coverage of essential topics including airport, energy, and noise management along with novel technologies, standards and a review of the current literature on green airports, sustainable aircraft design, biodiversity management, and alternative fuels. Engineers, researchers and students will find the fundamental approach useful and will benefit from the many engineering examples and solutions provided.

While trade exacerbates climate change, it is also a central part of the solution because it has the potential to enhance mitigation and adaptation. This timely report explores the different ways in which trade and climate change intersect. Trade contributes to the emissions that cause global warming and is itself also affected by climate change through changing comparative advantages. The report also confronts several myths concerning trade and climate change. The Trade and Climate Change Nexus: The Urgency and Opportunities for Developing Countries focuses on the impacts of, and adjustments to, climate change in developing countries and on how future trade opportunities will be affected by both the changing climate and the policy responses to address it. The report discusses how trade can provide the goods and services that drive mitigation and adaptation. It also addresses how climate change creates immense challenges for developing countries, but also new opportunities to promote trade diversification in the transition to a low-carbon world. Suitable trade and environmental policies can offer effective economic incentives to attain both sustainable growth and poverty reduction.

While international negotiations to reduce greenhouse gas (GHG)

emissions have been less than satisfactory, there is a presumption that a significant level of multi-lateral commitment will be realized at some point. International air and marine travel have been left to one side in past talks because the pursuit of agreement proceeds on the basis of commitment by sovereign nations and the effects of these specific commercial activities are, by their nature, difficult to corral and assign to specific national jurisdictions. However, air travel is increasing and, unless something is done, emissions from this segment of our world economy will form a progressively larger percentage of the total, especially as emissions fall in other activities. This book focuses on fuel. The aim is to provide background in technical and policy terms, from the broadest reliable sources of information available, for the necessary discourse on society's reaction to the evolving aviation emissions profile. It considers what policy has been, why and how commercial air travel is committed to its current liquid fuel, how that fuel can be made without using fossil-source materials, and the barriers to change. It also advances some elements of policy remedies that make sense in providing an environmentally and economically sound way forward in a context that comprehends a more complete vision of sustainability than 'renewable fuels' traditionally have. The goal of *Will Sustainability Fly?* is to broaden and contextualize the knowledge resource available to academics, policy makers, air industry leaders and stakeholders, and interested members of the public.

This publication contains the key proceedings and technical report of the Second International Conference on Climate Change and Tourism, held in Davos, Switzerland, 1-3 October 2007. The Davos Declaration and the summary of the conference debates demonstrate a clear commitment of the tourism sector to address climate change issues, and provide concrete recommendations for actions. The extensive technical report included in this publication was commissioned to an international team of experts by the World Tourism Organization (UNWTO), the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO). It provides a synthesis of the state of knowledge about current and future likely impacts of climate change on tourism destinations around the world, possible implications for tourist demand, current levels and trends in GHG emissions from the tourism sector, and an overview of policy and management responses adopted by the key stakeholder groups (international organizations, public administrations, the tourism industry) with respect to adaptation to and mitigation of climate change. This publication is principally aimed at the tourism industry and government organizations at the different levels, who will have the primary responsibility of developing mitigation and adaptation strategies to respond to the challenges that global climate change will bring to the tourism sector. It also constitutes an important tool for international agencies, nongovernmental organizations (NGOs) and financial institutions.

*Greenhouse Gas Emissions from International Aviation
Aviation Fuel Options in a Low-Carbon World*

For Greener Skies

The Urgency and Opportunities for Developing Countries

Policies for Reducing the Climate Change Effects of International Aviation

The Trade and Climate Change Nexus

• New York Times bestseller • The 100 most substantive solutions to reverse global warming, based on meticulous research by leading scientists and policymakers around the world "At this point in time, the Drawdown book is exactly what is needed; a credible, conservative solution-by-solution narrative that we can do it. Reading it is an effective inoculation against the widespread perception of doom that humanity cannot and will not solve the climate crisis. Reported by-effects include increased determination and a sense of grounded hope." –Per Espen Stoknes, Author, What We Think About When We Try Not To Think About Global Warming "There's been no real way for ordinary people to get an understanding of what they can do and what impact it can have. There remains no single, comprehensive, reliable compendium of carbon-reduction solutions across sectors. At least until now. . . . The public is hungry for this kind of practical wisdom." –David Roberts, Vox "This is the ideal environmental sciences textbook–only it is too interesting and inspiring to be called a textbook." –Peter Kareiva, Director of the Institute of the Environment and Sustainability, UCLA In the face of widespread fear and apathy, an international coalition of researchers, professionals, and scientists have come together to offer a set of realistic and bold solutions to climate change. One hundred techniques and practices are described here–some are well known; some you may have never heard of. They range from clean energy to educating girls in lower-income countries to land use practices that pull carbon out of the air. The solutions exist, are economically viable, and communities throughout the world are currently enacting them with skill and determination. If deployed collectively on a global scale over the next thirty years, they represent a credible path forward, not just to slow the earth's warming but to reach drawdown, that point in time when greenhouse gases in the atmosphere peak and begin to decline. These measures promise cascading benefits to human health, security, prosperity, and well-being–giving us every reason to see this planetary crisis as an opportunity to create a just and livable world.

The book addresses the most critical issue faced by aviation and climate change: namely the development of a market based measure to control aircraft engine emissions. It discusses the current market economic trends as they impact to aviation and suggests steps and measures to be taken in the development of a workable

MBM. ICAO has three years to come up with such an MBM on a global scale and this book will spur discussions on how to achieve this objective.

"Climate change and global warming are happening and have become a global challenge. These environmental issues have developed into a key item on the global political agenda; they have moved into mainstream political and economic policy discussions at all levels of governance. Efforts to govern anthropogenic emissions that contribute to these environmental issues commenced in the 1980s at local, national, regional, and global levels. Such efforts from various global sectors, e.g., aviation sector, can also be observed. However, successful climate change governance in international civil aviation has yet to be achieved. No multilateral environmental treaties sufficiently addresses emissions from international civil aviation. The Chicago Convention, which is the primary source of public international air law, does not explicitly provide for aviation environmental issues. In this respect, Annex I developed State Parties to the Kyoto Protocol have an obligation to work through the International Civil Aviation Organization [ICAO] to pursue limitation or reduction of greenhouse gas [GHG] emissions from aviation. Hence, the Protocol provides a mandate for ICAO to govern GHG emissions from international civil aviation. Furthermore, the Chicago Convention tacitly confers an obligation on ICAO to govern such emissions. Yet, the Organization has not succeeded in its governance initiatives. A basket of measures, which include one economic instrument, namely market-based measures, and three technical measures, namely technology improvements, operational improvements, and sustainable alternative fuels, is under consideration by ICAO and its Contracting States. Nevertheless, the basket cannot sufficiently govern aircraft engine emissions at its present condition. Most importantly, States have so far failed to adopt a global market-based measure for international civil aviation, which can provide a near-term solution. Globally, airlines have taken some voluntary initiatives to decrease their carbon footprints. Unilaterally, the European Union and few European States have launched economic measures, e.g., emissions trading and tax, to reduce aircraft engine emissions. Nevertheless, their effectiveness in governing such emissions will be limited. Like the global climate change negotiation process, States are divided on certain issues in the ICAO process. Differences between developed and developing economies are delaying the entire process. Capitalism is much responsible for this division. Since it is very difficult to reject capitalism altogether, several solutions, which do not discard but provide

a new method of practicing capitalism, need to be employed. In the absence of a single global order, global governance in climate change - i.e. climate change governance - needs to be established to facilitate the deployment of those solutions. Market-based measures form part of those solutions. This thesis argues that, to successfully govern emissions from international civil aviation of relevance to climate change and global warming, binding legal measures, whether de facto or de jure, and a mandatory but temporary global market-based measure or unilateral market-based measures of the same model adopted by economically powerful States for international civil aviation are immediately required. This thesis demonstrates how de jure soft law instruments, e.g., Annexes to the Chicago Convention, international environmental law principles, a new understanding and way of exercising the doctrine of State sovereignty, and both multilateral and unilateral economic instruments can be utilized to reduce aviation's environmental impacts. The thesis explores the existing capacities of the governance actors in aviation, and shows how they can play a significant role in climate change governance from within their limited capacities."

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The book addresses all major aspects to be considered for the design and operation of aircrafts within the entire transportation chain. It provides the basic information about the legal environment, which defines the basic requirements for aircraft design and aircraft operation. The interactions between airport, air traffic management and the airlines are described. The market forecast methods and the aircraft development process are explained to understand the very complex and risky business of an aircraft manufacturer. The principles of flight physics as basis for aircraft design are presented and linked to the operational and legal aspects of air transport including all environmental impacts. The book is written for graduate students as well as for engineers and experts, who are working in aerospace industry, at airports or in the domain of transport and logistics.

Principles of Civil Aviation

The Impacts of Climate and Climate Change on Aviation in the Canadian North

Legal Regulation of Aircraft Engine Emissions in the Age of Climate Change

Responding to Global Challenges

Air Transport and the Environment

Climate Change and Aviation

Seminar paper from the year 2010 in the subject Politics - International Politics - Environmental Policy, grade: 1,3, University of Munster, language: English, abstract: Within the scope of this

course the presentation results from the commissioned group works, divided into thematic clusters - supplemented by active discussions - have acuminated the view on contents and concepts of this issued EU Policy. In doing so, it was a major aim to analyse political instruments within the EU, used to accesses various fields of environmental problems. Congruously in this Policy Paper, a specific instrument of EU Environmental Policy is chosen to be analysed and finally evaluated by its performances and capabilities as operational policy instrument. In the course of the seminar, the preservative subject area of Climate Policy has crystallised as an emerged and large-scaled subject to EU Environmental Policy. EU Climate Policy contacts nearly every field in European environmental adoption. Facing the latest scientific prognoses and reviewing European as well as common global environmental activity - the abatement of Climate Change appears to be one of the most superordinated aims. Hence, this policy topic especially defies an exemplary investigation on how EU policy-making proceeds, to protect environment in anent to a current issue. At present, the EU Emissions Trade System / -Scheme (EU ETS) as one of the most expansive pillars to the Union's Climate Policy and concurrently the most comprehensive global ETS, is ought to be completed within its second (of three) phases of development. The integration of EU-wide aviation into the system of EU ET proceeding since 2003 is a main part to the future enterprise in expanding EU Climate Policy. Within this step of integration the EU has declared its ambition to take a pioneering task in combating global Climate Change until 2020. During the current decade, critical scientists appraise the realisation of those aims as an impossible sce"

This book analyses the political, economic and managerial challenges for policy makers and the air transport industry as they face climate change. Based on an overview of the scientific background and technological options for emissions reduction, Aviation and Climate Change provides an in-depth assessment of environmental regulation and management. It provides an up-to-the-minute analysis of the effects of aviation on climate change, and an economic analysis of policies to reduce or eliminate greenhouse gas emissions. The main emphasis of the book is on the economic mechanisms used to lessen emissions - carbon taxes, emissions trading schemes and offset schemes. It pays particular attention to the ways these policies work, and to the interaction between them - for instance, the interaction between taxes and emissions trading schemes. One feature of the book is that it analyses the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) which has been developed by ICAO for international aviation, and which is due to commence operation shortly. The advantages and disadvantages of this controversial scheme are discussed. This book will be of interest to researchers in diverse areas (economics, political science, engineering, natural sciences), to air transport policy makers, and to managers in the aviation industry.

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Sustainability factors should be considered by managers like any other business risk issue; these factors are expected to have a substantial impact on corporate management. Air transport corporations need a strong sustainability management framework to effectively manage economic, environmental and social risks to achieve their corporate sustainability objectives, and to meet their stakeholders' demands. This book offers a new Enterprise Sustainability Risk Management (ESRM) model to fulfill these requirements. In the model presented, the triple bottom line (TBL) agenda is incorporated into the companies' sustainability management. ESRM deals with the environmental, social, and ecological risks as well as the strategic, economic, operational, and threat risks of companies. The best corporate sustainability strategies and management approaches require the consideration of all corporate risks in both a holistic and systematic way. Flouris and Kucuk Yilmaz present an effective way to manage sustainability risks via a new, well-designed, integrated, dynamic and flexible framework. It introduces an opportunity for turning risks into potential corporate advantages. Risk Management and Corporate Sustainability in Aviation is addressed to professionals, students and researchers within air transportation business management and risk management.

Impact of Aviation on the Environment

The Incorporation of Aviation Into the EU's Emissions Trading System

Sustainable Aviation Futures

In Search of a Global Market Based Measure

Reducing Environmental Impacts of Aviation

How Sustainable Development Affects the Aviation Industry. A Case Study of the Lufthansa Group

The Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) has an important role to play in the aviation industry's efforts to meet its emission reduction targets. The scheme could also benefit developing countries in Asia and the Pacific as a source of these carbon offsets. This report provides climate policy makers and carbon offset suppliers in the region with detailed information about the CORSA scheme, including the aviation offset demand outlook in the context of the coronavirus pandemic. It aims to contribute to policy development in the region that supports the supply of carbon offsets to international aviation.

Anyone who has experienced turbulence in flight knows that it is usually not pleasant, and may wonder why this is so difficult to avoid. The book includes papers by various aviation turbulence researchers and provides background into the nature and causes of atmospheric turbulence that affect aircraft motion, and contains surveys of the latest techniques for remote and in situ sensing and forecasting of the turbulence phenomenon. It provides updates on the state-of-the-art research since earlier studies in the 1960s on clear-air turbulence, explains recent new understanding into turbulence generation by thunderstorms, and summarizes future challenges in turbulence prediction and avoidance.

While the aviation sector has introduced a number of technological and operational measures to curb its greenhouse gas emissions, these will not offset the emissions expected from its projected growth. This book examines the legal framework underlying the international aviation and climate change discourse. It analyzes the suitability of the International Civil Aviation Organization's (ICAO) institutional setting to address climate change and provides a critical assessment of the European Union Emission Trading Scheme. Finally, the book

makes several recommendations to facilitate the adoption, implementation, and, ultimately, compliance with the ICAO's global market-based measure scheme to limit greenhouse gas emissions from international aviation. (Series: Essential Air and Space Law [EASL] - Vol. 14) [Subject: International Law, Air and Space Law, Environmental Law, EU Law, Climate Change]

IPCC Report on sources, capture, transport, and storage of CO₂, for researchers, policy-makers and engineers.

Strategic Issues in Air Transport

Will Sustainability Fly?

Risk Management and Corporate Sustainability in Aviation

The Inclusion of Aviation in the European Emission Trading Scheme: Analyzing the Scope of Impact on the Aviation Industry

Sustainable Aviation

Environmental Impact of Aviation and Sustainable Solutions is a compilation of review and research articles in the broad field of aviation and the environment. Over three sections and thirteen chapters, this book covers topics such as aircraft design and materials, combustor modeling, atomization, airport pollution, sonic boom and street noise pollution, emission mitigation strategies, and environmentally friendly contributions from a Russian aviation pioneer. This volume is a useful reference for both researchers and students interested in learning about various aspects of aviation and the environment

Official magazine of international civil aviation.

'This is a timely, challenging and fascinating book on a topic of central importance to the success or otherwise of our climate change policies. It sets down a clear marker for what has to be done in the aviation sector.' Professor John Whitelegg, Stockholm Environment Institute, University of York, UK 'Climate Change and Aviation presents a clear picture of the transport sector's greatest challenge: how to reconcile aviation's immense popularity with its considerable environmental damage and its dependence on liquid hydrocarbon energy sources. This book avoids wishful thinking and takes the much harder, but more productive, path of considering difficult solutions that clash with short-term and short-sighted expectations about the unlimited growth potential for flying.' Professor Anthony Perl, Urban Studies Program, Simon Fraser University, Canada 'A convincing and timely collection that brings together an impressive range of expertise. The book integrates various perspectives into a powerful core argument - we must do something, and quickly, to tackle the impact of aviation on our environment. The authors recognise the political difficulties associated with promoting change but present constructive options for policy makers. Required reading, especially for transport ministers set on promoting the growth of air travel.' Professor Jon Shaw, Director of the Centre for Sustainable Transport, University of Plymouth, UK Trends such as the massive growth in availability of air travel and air freight are among those which have led to aviation becoming one of the fastest growing emitters of greenhouse gases. These trends have also caused a shift in expectations of how we do business, where we go on holiday, and what food and goods we can buy. For these reasons aviation is (and is set to stay) high up on global political, organizational and media agendas. This textbook is the first to attempt a comprehensive review of the topic,

bringing together an international team of leading scientists. Starting with the science of the environmental issues, it moves on to cover drivers and trends of growth, socio-economics and politics, as well as mitigation options, the result being a broad yet detailed examination of the field. This is essential reading for undergraduate and postgraduate courses in transport, tourism, the environment, geography and beyond, while also being a valuable resource for professionals and policymakers seeking a clear understanding of this complex yet urgently pressing issue.

It is generally accepted – the US administration excepted – that the emissions reduction targets agreed in the Kyoto Protocol are only the beginning of what needs to be achieved in international climate negotiations. While studies suggest that major emission reductions by industrialized countries can be achieved at low economic cost, both these and early reductions by developing countries are inevitably a major political challenge. This book focuses on European policy toward climate change, specifically its ramifications for the aviation industry. With air travel predicted to grow enormously in the coming years, the issue of climate change is hugely topical for this important industry. Accessible to students, academics and practitioners, this book is useful reading for all those with an interest in climate change, the aviation industry, or both.

Economic Perspectives on Greenhouse Gas Reduction Policies

Legal and Policy Challenges

Drawdown

Aviation's Effects on the Global Atmosphere are Potentially Significant and Expected to Grow : Report to the Honorable James L. Oberstar, Ranking Democratic Member, Committee on Transportation and Infrastructure, House of Representatives

Aviation and the Environment

Alternative Jet Fuels and the Business of Freedom