



# The future of air transport, operations & sustainability

A core theme of the 17<sup>th</sup> World Conference on Transport Research

# Aviation at a crossroads

In the short run, international conflicts have constrained the supply of jet fuel, driving up prices and creating capacity shortages. These shortages have led some airlines to scale back their operations, while pushing others to the brink of bankruptcy.

In the longer run, airlines face growing pressure to reduce their carbon footprint. However, decarbonizing aviation remains extremely costly and highly challenging. New low-carbon aviation technologies face significant regulatory hurdles, while the rollout of sustainable aviation fuels has been slow and expensive.

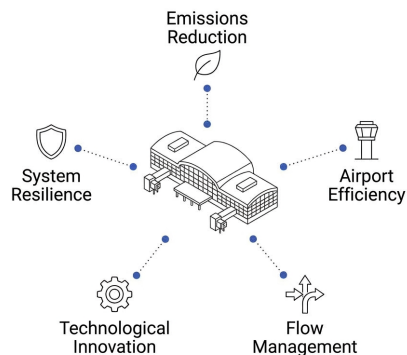
Finally, aviation's success brings operational and traffic management challenges, as airport operators cope with overcrowding and air traffic controllers manage increasingly congested skies.

# The Conference approach : Addressing aviation's key challenges

A conference program showcasing cutting-edge research addressing the key transformations of the air transport industry

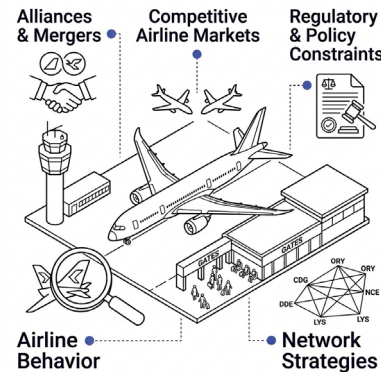
## Sustainable aviation, Infrastructure & System Efficiency

Insight on the environmental transition of aviation and the capacity of infrastructure to support it, including emissions reduction, airport efficiency, congestion management, infrastructure planning, system resilience, and technological innovation in operations and airside systems.



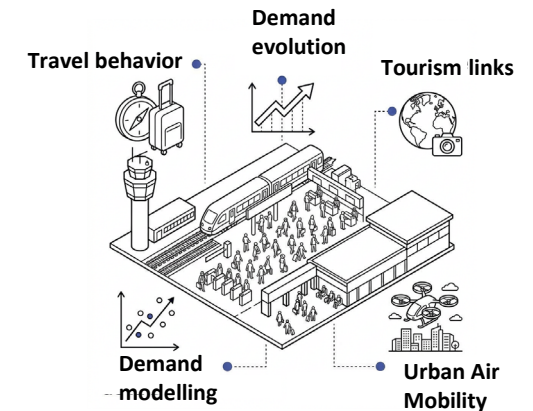
## Airline Markets, Competition & Strategic performance

Insight into airline behavior in competitive markets, including pricing strategies, alliances, mergers, regulatory frameworks, firm performance, operational efficiency, network strategies, and business models in response to market and policy constraints.



## Demand, connectivity & Emerging Mobility Systems

Insight into passenger behavior, demand evolution, and the broader air transport ecosystem, including tourism links, demand modelling, airline networks, global connectivity, and emerging mobility solutions such as urban air mobility and intermodal competition



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# Evidence-based insights & advanced methodologies

Participants will gain actionable perspectives on airline operations, airport performance, passenger demand, and environmental challenges.



***This is a unique opportunity to engage with the latest scientific methods applied to real-world airline challenges.***

**Lóránt Tavasszy**

WCTR Scientific Committee Chair

Professor in Freight Transport & Logistics at the Delft University of Technology



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# Conference sessions at a glance

Research contributions related to air transport can be grouped into 6 major thematic tracks :

-  **Aviation Emissions & Environmental Sustainability**  
Decarbonisation, climate policies, sustainable fuels, noise and environmental impact
-  **Airport Economics, Operations & Infrastructure**  
Airport efficiency, congestion management, infrastructure planning and pricing
-  **Passenger Behavior & Demand**  
Travel behavior, demand modelling, tourism dynamics and post-pandemic trends
-  **Airline Networks & Urban Mobility**  
Connectivity, global networks, intermodality and emerging urban air mobility
-  **Airline Operations, Performance & Strategy**  
Operational efficiency, airline business models, scheduling and performance
-  **Airline Competition & Policy**  
Market dynamics, regulation, alliances, and public policy impacts



*Whether you work in the aviation industry, supply products or services to the aviation industry, regulate aviation operators, or are a frequent flier, there will be topics of interest for you at the WCTR in Toulouse.*

**Martin E. Dresner**

Chair of the WCTR Air Transport and Airport Special Interest Group  
Professor in the Logistics, Business and Public Policy Department at  
R.H. Smith School of Business, University of Maryland

**[www.wctr2026.fr](http://www.wctr2026.fr)**

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# ANNEX – DETAILED PROGRAM

Selection of presentation sessions  
focusing on air transport

See our [website](#) for plenary sessions and keynote speeches

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# Aviation emissions, Environmental & Sustainability issues

## Aviation emissions

- Short-haul ban or zero-emission aircraft?  
Balancing social welfare and emissions control
- Comparing air transport decarbonisation policies using a sectoral assessment model
- Prolonged Russia-Ukraine War Amplifies Social Welfare Losses and Aviation Carbon Emissions
- Balancing emission reduction and network resilience in aviation: a machine learning analysis of short-haul flight bans
- Evaluating Emission-Reduction Policies at Schiphol Airport Using a Predictive Digital Twin Approach

## Environmental & Sustainability issues

- The Asymmetric Impact of Sustainable Aviation Fuel Adoption on Airline Industry
- Modeling and calibration of aggregate aviation demand for climate mitigation scenarios
- Walking the walk or talking the talk? Using NLP methods to analyse airport sustainability discourse
- Exploring The Best Strategy for the Air Cargo Industry Under Different Net-Zero Scenarios
- A Machine Learning Framework for Predicting and Spatially Mapping Aircraft Noise

# Airport Economics, operation and Infrastructures

## Airport Economics

- Scale or management? Disentangling financial and environmental inefficiencies in regional airports through DEA
- Entry and Exit of Airports in Europe
- Integrated Social Efficiency Assessment in Concessioned Airports: A Two-Stage DEA Network Approach
- Optimizing per-passenger and per-flight airport charges and fuel tax considering the marginal cost of public funds

## Airport operation

- Understanding Congestion in Airport Surface Operations using 3D Fundamental Diagrams
- Applying Kano model, Taguchi methods, and FMEA to evaluate airport service quality risk: A case of Taoyuan International Airport
- Strategic and socio-material practices in Brazilian airports: lessons learned from a global crisis
- External and internal accessibility as drivers of regional airports development

## Infrastructures

- Enabling multi-party collaboration in airside baggage transport with distributed scheduling by intelligent agents
- Infrastructure Requirements for Short- and Medium-Haul Plug-In Hybrid-Electric Aircraft at Medium-Sized Airports
- Augmenting airline networks using airside-to-airside buses to strengthen system resilience under disruptions
- Probabilistic and Sensitivity Analysis in Airfield Pavement Design

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# Passenger Behavior & Demand

## Passenger Behavior

- Comparative Analysis of Airline Choice Models Based on One-Way and Round Trips
- Empirical analysis of the change in shopping behaviours of airport passengers during the COVID-19 pandemic
- From Cabin to TikToks: Air Rage, Digital Passengers, and the Fragile Balance of Aviation
- Modeling airline choice in emerging economies: The role of gender and consumer's preferences

## Passenger Demand

- The impact of Shinkansen opening and COVID-19 on air passenger volumes using a causal inference framework
- Air Passenger Willingness to Pay for Carbon Offsets: An Incentivized Experiment
- Pseudo-panel analysis of Japanese overseas travel rates
- Relationship between air transport, Inbound tourism, trade and economic growth: evidence from Africa based on cointegration and causality analysis
- Untangle Air Connectivity and Tourism Development in China's Domestic Market

# Airline Networks & Urban Mobility

## Urban Mobility

- A review of current urban air mobility development and future directions (working paper)
- The Future of Short-Haul Air Travel: Modeling Passenger Preferences Between Regional Flights and Autonomous On-Demand Mobility
- Urban Geometry as Constraint: Optimizing Vertiport Placement with GIS for Urban Air Mobility

## Airline Network

- Hub Competition for Transfer Passengers on Asia-North America and Asia-Europe Routes: A Pre- and Post-Pandemic Analysis
- Rebalancing the Pacific: Asia-Pacific hub efficiency in Southeast Asia-North America transfers, 2004-2025
- Mapping Demand and Drivers in India's Regional Aviation System: Evidence from Multi Year Panel Data
- Detecting Early Warning Signs of COVID-19-Like Disruptions in Air Transportation
- Africa's Air Connectivity Gap: A Stakeholder-Based Structural Path Analysis

# Airline Operations, performance and Strategy

## Airline Operations

- How Does Air Connectivity Affect Bilateral Service Trade Before and During the Pandemic? A Double Machine Learning Approach based on the US Case
- Prediction of airport on-time performance
- Studying air travel technological scenarios with a multinomial aircraft assignment model.
- Agent-based modeling of delay propagation in Japan's domestic aviation network
- Buffer choices among US carriers: a Southwest effect?

## Airline Performance

- Route mode, spatial economic discontinuity, and high-speed rail competition: Evidence on air-route performance in China, 1989-2021
- Measuring pairwise airline competition intensity with the asymmetric index based on optimal transport theory
- The Price of Punctuality: Schedule Padding and Its Effect on Domestic Airfares in the U.S. Airline Industry
- Too big to stay? The downsizing of Italy's flag carrier and its consequences on airline pricing

## Airline Strategy

- Brazilian Air Transport Research in Global Perspective: A Systematic Review and Research Agenda
- Penalties as prices? Evaluating airline strategic responses to tarmac delay penalties in the US
- Mapping the Future of Business Models: Lessons from Global Airlines - Emphasizes visualization, trend insights, and cross-sector learning.
- The Impact of Airline Strategic Conduct on Firm's Performance for Operational Efficiency and Shareholder Value in Major Airlines: A Resource-Based Perspective
- Strategies for Operators in Assisting Neurodiverse Passengers on Air Travel

# Airline Competition & Policy

## Airline Competition & Policy

- Merger waves in retrospective: evidence from the U.S. airline industry
- Analyzing Airline Alliances through Multi-Attribute Graph Partitioning to Maximize Competition and Market Penetration Capability
- Antitrust enforcement in the airline industry: a critical assessment of two recent cases
- Assessing the effects of public mobility policies on air traffic in the French Outermost Regions: Evidence from Reunion Island

