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The Role of Stakeholder Engagement in Advancing Environmental Sustainability at U.S. Airports

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As the aviation industry faces intensifying environmental, regulatory, and societal pressures, airports are increasingly expected to implement sustainability initiatives aligned with national and international frameworks such as NEPA, VALE, and CORSIA. However, progress across U.S. airports remains uneven, often constrained not only by technical or financial limitations but also by the quality of stakeholder engagement. This study applies Stakeholder Theory and the Stakeholder Salience Model to examine how stakeholder power, legitimacy, and urgency influence sustainability implementation in diverse airport contexts. Using a qualitative multiple-case study design, the research investigates the roles of federal regulators, airport operators, airlines, and local communities in shaping environmental outcomes. Preliminary findings suggest that stakeholder alignment is a critical determinant of success, with implications for policy design, infrastructure planning, and participatory governance. The study contributes a stakeholder-centered framework to better understand and improve sustainability performance in the U.S. airport sector.

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Introduction

The aviation industry is under growing regulatory, economic, and social pressure to reduce its environmental footprint and demonstrate tangible progress toward sustainability. Despite the presence of frameworks such as the National Environmental Policy Act (NEPA), the FAA's Voluntary Airport Low Emissions (VALE) program, and the international Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), many U.S. airports continue to face challenges in implementation. These challenges stem from limited resources, uneven institutional capacities, and inconsistent stakeholder engagement (Dimitriou & Karagkouni, 2022). This study applies Stakeholder Theory (Freeman, 1984) to examine how variation in stakeholder power, legitimacy, and urgency influences sustainability outcomes across airport contexts.

U.S. airports operate under different conditions in terms of size, funding, infrastructure, governance, and local political and community expectations. These structural and institutional differences significantly shape how environmental policies are interpreted and implemented on the ground, often resulting in uneven sustainability outcomes (Marete & Johnson, 2021; Rawson, 2012). While large hub airports have implemented initiatives such as solar energy deployment, electrified ground-support equipment, and pilot projects involving Sustainable Aviation Fuel (SAF), (Mizrak et al., 2025), many smaller regional airports continue to struggle with basic compliance due to financial and technical limitations. Beyond these constraints, an underexplored contributor to these disparities is the structure and quality of stakeholder engagement, namely, how well key actors are included, aligned, and empowered

The ability of stakeholders to shape sustainability outcomes depends not only on their commitment to environmental goals, but also on their position within the airport system and broader policymaking environment. Stakeholders' capacity to influence outcomes is mediated by their power to act, the perceived legitimacy of their claims, and the urgency of the issues they raise. To conceptualize this dynamic, the study draws on Stakeholder Theory (Freeman, 1984) and the Stakeholder Salience Model (Mitchell et al., 1997), which highlights how these three attributes interact to determine which stakeholders command organizational attention. This framework is especially relevant in sustainability contexts, where decision-making requires balancing environmental imperatives with economic, operational, and political considerations (Amaeshi & Crane, 2006).

Background and Theoretical Framework

Airports occupy a critical position in advancing environmental sustainability within the aviation sector, operating at the intersection of regulatory compliance, infrastructure investment, and public accountability. In the United States, a layered governance system shapes airport sustainability policy. At the federal level, the National Environmental Policy Act (NEPA) provides the foundational framework, requiring Environmental Assessments (EA) and Environmental Impact Statements (EIS) for federally supported airport projects (FAA, 2015). Complementing this, the FAA's Voluntary Airport Low Emissions (VALE) program incentivizes the adoption of cleaner technologies, having funded over 140 projects at 58 airports and reduced ozone emissions by more than 1,700 tons annually as of 2023 (FAA, 2020).

State-level programs often reinforce or extend these mandates. California's Global Warming Solutions Act (AB 32 and SB 32), for instance, requires airports to report greenhouse gas emissions and implement low-emission strategies (CARB, 2022). Florida's Environmental Resource Permit (ERP) program mandates stormwater management and wetland protections for airport development (FDEP, 2023). These national and state efforts operate alongside international measures such as ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which establishes emission baselines and offset requirements for international air travel (ICAO, 2022). These overlapping policy layers heighten the importance of effective stakeholder coordination at multiple governance levels.

Despite this multi-level framework, sustainability implementation remains uneven across U.S. airports. Large hubs like San Francisco International and Dallas Fort Worth International have reached advanced levels of Airport Carbon Accreditation (ACA), while many smaller airports struggle to meet baseline compliance due to financial and technical constraints (ACI World, 2023; Rawson, 2012). These disparities suggest that formal policy structures, while necessary, are insufficient to ensure consistent progress. Increasingly, the ability to align and activate key stakeholders appears to influence whether sustainability initiatives move forward in practice.

To examine this dynamic, the study draws on Stakeholder Theory (Freeman, 1984), which holds that organizations succeed by managing relationships with those who can affect or are affected by their actions. In the airport context, this includes a diverse set of actors including airport authorities, regulators, airlines, environmental agencies, and local communities each with differing capacities, interests, and degrees of influence. Stakeholder engagement serves not only to build legitimacy and consensus but also to bridge technical, political, and procedural gaps in policy implementation (Amaeshi & Crane, 2006; Zizka et al., 2019).

Building on this foundation, the study incorporates the Stakeholder Salience Model developed by Mitchell, Agle, and Wood (1997), which categorizes stakeholders based on three key attributes: power (ability to influence), legitimacy (perceived appropriateness), and urgency (time-sensitivity of claims). Stakeholders who possess all three are likely to command attention and shape decisions, while others may need to rely on alliances, public pressure, or institutional leverage. This model is particularly suited to analyzing sustainability efforts in the airport sector, where decision-making authority is often fragmented and where environmental action depends on the alignment of multiple actors.

Stakeholder Salience and Influence in U.S Airport Sustainability

Building on the stakeholder salience framework introduced earlier, this section applies the model to the U.S. airport context by assessing the relative power, legitimacy, and urgency of key stakeholder groups involved in sustainability planning and implementation. These attributes are not fixed but vary by project type, regulatory context, and institutional arrangement.

Federal Regulators (FAA)

The Federal Aviation Administration (FAA) holds high power and legitimacy through its statutory authority under the National Environmental Policy Act (NEPA) and administration of programs like the Voluntary Airport Low Emissions (VALE) initiative. Urgency is often situational—for example, when environmental assessments delay critical infrastructure projects or when sustainability measures are tied to discretionary grants. The FAA's Community Involvement Plan (CIP) formalizes public engagement practices, enhancing legitimacy by integrating local concerns into decision-making (FAA, 2016).

Airport Operators

Airport operators serve as pivotal intermediaries between national policy and local implementation. They possess considerable power over infrastructure, procurement, and planning, and derive legitimacy from their public or quasi-public status. Their urgency tends to rise during capital project cycles, funding windows, or periods of community or political pressure. Operators often act as coordinating hubs convening airlines, regulators, and contractors to ensure project alignment.

Airlines and Fixed Base Operators (FBOs)

Airlines and FBOs hold significant operational power, particularly in areas such as fuel use, turnaround efficiency, and infrastructure access. Their urgency increases when sustainability initiatives affect operating costs or access to alternative fuels or electric charging infrastructure. However, their legitimacy in environmental or land-use decisions is often weaker, as they are typically perceived as commercial actors. They occupy the 'dominant' stakeholder category, able to influence outcomes, though often requiring alignment with other actors to lead effectively.

Communities and NGOs

Local communities and environmental organizations often bring high legitimacy and urgency, particularly when projects involve flight path changes, noise impacts, or equity concerns. Although these groups frequently lack formal power, their influence can be exerted through litigation, public advocacy, or political mobilization. FAA guidance now encourages early and transparent engagement with community actors, recognizing their ability to affect project timelines and regulatory outcomes (FAA, 2016; Amaeshi & Crane, 2006).

Table 1

Stakeholder Salience Attributes and Classification in U.S. Airport Sustainability

Stakeholder Group	Power	Legitimacy	Urgency	Salience Category
Federal Aviation Administration	High	High	Variable	Definitive
Airport Operators	High	High	Variable	Definitive
Airlines / FBOs	High	Medium	High	Dominant
Communities / NGOs	Low	High	High	Dependent
Passengers (indirect)	Low	Medium	Low	Latent

Note. Salience categories are based on Mitchell et al.'s (1997) stakeholder attributes of power, legitimacy, and urgency.

Methodology

This study employs a qualitative multiple-case study design to explore how differences in stakeholder salience affect the implementation of environmental sustainability initiatives at U.S. airports. Given the institutional diversity across the airport sector, this design enables comparative analysis of stakeholder dynamics across varied airport contexts.

Case Selection Criteria

This study employs a qualitative multiple-case study design to explore how differences in stakeholder salience affect the implementation of environmental sustainability initiatives at U.S. airports. Given the institutional diversity across the airport sector, this approach allows for comparative analysis of stakeholder dynamics across varied operational and governance contexts.

Cases are selected using purposeful sampling to reflect variation across three dimensions:

1. Airport size and operational complexity (e.g., large hubs, medium-sized commercial airports, general aviation facilities);
2. Ownership and governance structure (e.g., city-owned, independent authority, or regional port-managed); and
3. Geographic and regulatory context, to capture variation in state-level environmental policy and political climate.

Proposed cases for initial analysis include large hubs such as San Francisco International Airport (SFO), Denver International Airport (DEN), and Dallas Fort Worth International Airport (DFW). These airports were selected based on the visibility of their sustainability programs and stakeholder engagement practices. Additional cases may include smaller or under-resourced airports to explore contrasting implementation pathways and stakeholder dynamics.

Data Collection

The study draws on three primary data sources:

- Semi-structured interviews with airport operators, regulatory officials, airline representatives, and community or environmental stakeholders;
- Document analysis, including sustainability master plans, Environmental Impact Statements (EIS), greenhouse gas inventories, and stakeholder engagement materials; and
- Public reports from relevant agencies (e.g., FAA, ICAO), industry groups (e.g., ACI-NA), and third-party programs (e.g., Airport Carbon Accreditation).

Interview protocols follow Seidman's (2019) three-phase interview three-phase interview model, which includes contextual background, focused event exploration, and participant reflection.

Analytical Strategy

Data will be analyzed using a reflexive thematic approach (Braun & Clarke, 2022), with coding informed by both the Stakeholder Salience Model (Mitchell et al., 1997) and inductive insights from interview and document data. Initial coding categories include stakeholder power, legitimacy, urgency, and perceived barriers to alignment. At this stage, analysis is exploratory. The goal is to identify patterns in how different actors influence policy implementation, and to examine how salience attributes shift across project types and governance contexts.

Discussion and Implications

This study offers a structured framework for examining how stakeholder relationships influence the adoption and implementation of sustainability initiatives at U.S. airports. By applying Stakeholder Theory and the Stakeholder Salience Model, the research reframes implementation challenges not only as technical or financial issues but as governance dynamics rooted in stakeholder influence, alignment, and institutional context.

Through this approach, the study aims to contribute to a more stakeholder-centered understanding of environmental sustainability progress in the airport sector, one that accounts for varying degrees of power, legitimacy, and urgency across actors such as federal regulators, airport operators, airlines, and local communities. The proposed framework helps explain why similar policy tools such as NEPA, VALE, or CORSIA produce different outcomes depending on stakeholder groups and responsiveness.

Although findings are still in development, early insights suggest several implications for practice and future research:

- Airport operators and regulators may benefit from tools that assess stakeholder salience at the project planning stage, allowing for more anticipatory engagement and collaborative alignment;
- Sustainability policy frameworks could be designed to elevate dependent stakeholders, particularly communities and NGOs, whose legitimacy and urgency are high but whose institutional power remains limited;

- Leadership development in aviation should incorporate stakeholder management, environmental communication, and collaborative decision-making, especially for professionals tasked with implementing sustainability programs under regulatory and political constraints.

As data collection continues, the study seeks to refine its cross-case analysis and stakeholder typology, with the goal of producing both scholarly insights and applied guidance. Feedback from the conference community will be essential in improving the conceptual model, refining interview protocols, and identifying additional cases where salience-based dynamics are particularly visible. Overall, this research contributes to ongoing conversations in aviation policy, environmental governance, and public-sector implementation by positioning stakeholder alignment as a central driver of sustainability performance at U.S. airports.

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