

CARBON OFFSET ADOPTION IN THAILAND'S AVIATION INDUSTRY: BARRIERS, DRIVERS, AND POLICY IMPLICATIONS

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Abstract

This study aims to explore policy approaches to enhance carbon offset adoption in Thailand's aviation industry, building on prior findings that indicate low passenger awareness and participation. A qualitative approach was employed using in-depth interviews with 10 experts with over 10 years of experience in aviation, environmental policy, and carbon management. Semi-structured interviews examined key issues, including barriers to adoption, awareness development, economic and policy incentives, stakeholder roles, and long-term sustainability. The findings reveal that major challenges include low awareness, lack of trust in carbon offset mechanisms, and limited economic incentives. To address these issues, several policy measures are proposed, including the use of default options in booking systems, incentive-based mechanisms such as reward programs and tax benefits, and the development of standardized and transparent certification systems. The study contributes to bridging the gap between awareness and implementation by providing practical policy implications to support sustainable aviation development in Thailand.

Keywords: Carbon Offset, Aviation Industry, Policy Implications

Introduction

The aviation industry has increasingly focused on sustainability initiatives, particularly carbon offset programs, as a mechanism to mitigate environmental impacts from air travel. As global concerns over climate change continue to intensify, airlines are under growing pressure to reduce carbon emissions and adopt environmentally responsible practices. Carbon offset programs have emerged as one of the key voluntary mechanisms that allow passengers to compensate for emissions generated by their flights.

However, several studies have shown that passenger participation in such programs remains relatively low, especially in developing countries where awareness and understanding of carbon offset concepts are limited (Gössling et al., 2021; Lu & Shon, 2012). This gap between awareness and actual behavior presents a significant challenge for the aviation industry in achieving sustainability goals.

In the context of Thailand, previous research has indicated that passenger awareness and willingness to participate in carbon offset programs are not at a high level, with studies showing moderate environmental awareness but limited behavioral engagement (Chuenchom & Sirivunnabood, 2019; Srisopaporn & Jaroenwanit, 2020; Chinchanchokchai et al., 2021). Although knowledge and attitudes were found to influence behavioral intention, the overall level of awareness remains insufficient to drive consistent participation. This suggests that increasing awareness alone may not be enough to promote behavioral change.

Despite these findings, existing studies have primarily focused on identifying influencing factors through quantitative approaches, with limited attention given to policy development and practical implementation. As a result, there is a lack of clear guidance on how to translate research findings into actionable strategies.

Therefore, this study aims to address this gap by employing a qualitative approach to explore expert perspectives and develop policy recommendations. By focusing on practical solutions and stakeholder involvement, this study seeks to provide a more comprehensive understanding of how carbon offset adoption can be effectively promoted in Thailand's aviation industry.

Research Objectives

1. To explore the key barriers to carbon offset adoption among airline passengers in Thailand.
2. To analyze factors and mechanisms that can enhance awareness and participation in carbon offset programs.
3. To propose policy recommendations for promoting carbon offset adoption in Thailand's aviation industry.

Research Questions

1. What are the key barriers to carbon offset adoption among airline passengers in Thailand?
2. What factors and mechanisms can enhance awareness and participation in carbon offset programs?
3. What policy measures can be proposed to promote carbon offset adoption in Thailand's aviation industry?

Literature Review and Theory

Carbon offset adoption in the aviation sector has been increasingly examined in ASEAN countries, particularly in relation to passenger awareness and behavioral intention. Studies in Singapore indicate relatively high awareness and participation, supported by strong policy frameworks (Han et al., 2020). In contrast, research in Malaysia shows moderate awareness but low participation due to limited incentives (Raza et al., 2020).

Similarly, studies in Indonesia suggest that awareness and willingness to participate are still developing, constrained by economic factors and trust issues (Putra & Hidayat, 2019), while in Vietnam, participation remains low due to limited information and unclear communication (Nguyen & Pham, 2021). Overall, awareness in ASEAN is generally low to moderate, and according to the study of Gössling et al., (2021), the participation depends on policy support, trust, and incentives.

This study is grounded in behavioral theory and sustainability frameworks commonly applied in aviation research. The Theory of Planned Behavior (TPB) suggests that behavior is influenced by attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991), while the Knowledge–Attitude–Behavior (KAB) model explains how knowledge shapes attitudes and influences behavioral intention (Kollmuss & Agyeman, 2002).

In aviation, these factors are associated with passengers' willingness to engage in carbon offset programs (Lu & Shon, 2012), although an intention–behavior gap often exists (Gössling et al., 2021). From a policy perspective, behavioral economics highlights the role of nudging, incentives, and default options in influencing decisions (Thaler & Sunstein, 2008). These approaches, combined with institutional support and standardized frameworks, are essential for promoting sustainable aviation practices (ICAO, 2022).

These findings highlight that while awareness is an important factor, it alone is insufficient to drive participation in carbon offset programs. The inconsistency between awareness and actual behavior suggests the presence of additional influencing factors, including trust, perceived value, and institutional support. This reinforces the need for a more integrated approach that combines behavioral insights with policy interventions, particularly in emerging markets such as Thailand.

Methodology

This study employs a qualitative research approach using in-depth interviews to explore factors influencing carbon offset participation in Thailand's aviation industry. A total of 10 experts were selected through purposive sampling, including aviation academics, environmental policy analysts, and practitioners in sustainability and carbon management, all with at least 10 years of relevant experience. Data were collected using semi-structured interviews focusing on barriers, awareness, economic incentives, stakeholder roles, and sustainability. The data were analyzed using thematic analysis, involving coding and categorization into key themes such as behavioral factors, trust issues, economic incentives, and policy mechanisms. This approach provides in-depth insights to support practical policy and implementation strategies.

In addition, the use of expert interviews allows for a deeper understanding of complex issues that cannot be fully captured through quantitative methods. This approach is particularly suitable for exploring policy-related topics, where insights from experienced professionals can provide valuable guidance for practical implementation.

Results

The findings from the expert interviews can be categorized into four key themes: barriers to carbon offset adoption, behavioral mechanisms, economic incentives, and policy framework, as summarized in Table 1.

Table 1: Summary of Key Themes and Policy Implications

Theme	Key Findings	Policy Implications
Barriers to Adoption	Low awareness, lack of understanding, trust issues (greenwashing), and price sensitivity	Improve communication, transparency, and public awareness campaigns
Behavioral Mechanisms	Perceived responsibility, social norms, and ease of participation influence decision-making	Apply nudging strategies and simplify carbon offset processes
Economic Incentives	Participation is influenced by rewards, tax benefits, and cost-sharing mechanisms	Develop incentive-based programs such as reward points and tax deductions
Policy Framework	Multi-stakeholder involvement is required, including government, airlines, and environmental agencies.	Establish national standards and regulatory support for carbon offset programs

The results indicate that low awareness, lack of understanding, and trust issues remain major barriers to participation. Behavioral factors such as perceived responsibility, social norms, and ease of participation also play a significant role in influencing decision-making. In addition, economic incentives, including rewards and tax benefits, were identified as key drivers of participation. Finally, a strong policy framework, supported by collaboration among government agencies, airlines, and environmental organizations, is essential for long-term implementation.

Overall, carbon offset adoption is influenced by a combination of behavioral, economic, and institutional factors rather than awareness alone. These findings also indicate that addressing a single factor, such as awareness, is not sufficient to significantly improve participation. Instead, a comprehensive approach that integrates behavioral, economic, and policy dimensions is required to achieve meaningful and sustainable outcomes.

Conclusion

This study explored the factors influencing carbon offset adoption in Thailand's aviation industry using expert interviews. The findings reveal that low awareness, lack of trust, and limited economic incentives remain key barriers to passenger participation. In addition, behavioral mechanisms and policy support play a crucial role in shaping decision-making and enhancing participation.

The study demonstrates that carbon offset adoption is a multidimensional issue that requires a combination of behavioral, economic, and institutional approaches. Addressing these factors simultaneously can significantly improve participation rates and support the development of sustainable aviation practices. Overall, the study provides a comprehensive understanding of both the challenges and potential solutions for promoting carbon offset adoption in Thailand, contributing to more effective policy development and long-term sustainability in the aviation sector.

Discussion and Recommendation

The findings of this study are consistent with previous research in ASEAN countries, indicating that awareness of carbon offset programs remains relatively low and does not always translate into actual participation (Nguyen & Pham, 2021; Putra & Hidayat, 2019). Similar to Malaysia, Thai passengers show moderate awareness but limited engagement due to low perceived impact and insufficient incentives. In contrast to Singapore, where strong policy support has led to higher participation (Han et al., 2020), Thailand still lacks clear policy direction and standardized implementation mechanisms. This highlights the importance of policy intervention in bridging the gap between awareness and behavior.

Based on the findings, several recommendations are proposed. Behavioral strategies such as default options and nudging should be applied to increase participation. In addition, economic incentives, including reward programs and tax benefits, can enhance motivation. A standardized and transparent carbon offset framework is also essential to build trust and credibility. Finally, collaboration among government agencies, airlines, and environmental organizations is crucial for effective implementation and long-term sustainability.

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