

TRANSFORMING URBAN TOURISM: ESSENTIAL CONDITIONS AND LOW-CARBON ATTRIBUTES FOR SUSTAINABLE TOURIST BEHAVIORS

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Abstract

This study examines the role of low-carbon tourism attributes in shaping sustainable tourist behaviors (STB) within urban destinations. Drawing on Stimulus-Response (S-R) theory and necessity logic, the research identifies six critical attributes, including eco-friendly accommodation (ECA), sustainable service providers (SSP), efficient transportation (ET), low-carbon activities (LA), sustainable dining (SD), and responsible waste management (WM). Using Integrated Generalized Structured Component Analysis (IGSCA) and Necessary Condition Analysis (NCA), data from 440 urban tourists in Thailand was analyzed to determine the sufficiency and necessity of these attributes in influencing STB. The findings indicate that ECA, SSP, and ET are the most influential determinants, while LA, SD, and WM serve as necessary but less impactful conditions. The study provides empirical validation of necessity logic, demonstrating that without the presence of key low-carbon enablers, tourists' sustainable behaviors do not reach high levels. The results offer theoretical insights into STB formation and inform policy recommendations for urban planners and tourism stakeholders to enhance sustainability strategies. By integrating low-carbon tourism attributes into urban policies, cities can foster environmentally responsible travel behaviors and contribute to global climate action initiatives.

Keywords: Low-carbon tourism, sustainable tourist behavior, urban tourism, Stimulus-Response theory, necessity logic

1. INTRODUCTION

The rapid expansion of urban tourism has produced significant economic benefits for cities worldwide (Leruksa et al., 2025) but has also exacerbated environmental degradation, particularly through carbon emissions (Pinthong et al., 2024). As urban centers become key destinations for global travel, the urgency for sustainable tourism practices aimed at mitigating carbon footprints has never been more pronounced (Fakfare & Wattanacharoensil, 2023a). The tourism sector, responsible for approximately 8% of global carbon emissions, is increasingly scrutinized for its environmental impact, necessitating the adoption of low-carbon strategies aligned with global climate action goals (Fakfare & Wattanacharoensil, 2024). Urban tourism, characterized by dense populations, extensive transportation networks, and energy-intensive hospitality services, represents a major contributor to these emissions (Kumsura et al., 2024). Thus, fostering sustainable tourism behaviors (STBs) among tourists is crucial for transitioning toward low-carbon urban tourism.

Sustainable tourism behaviors (STBs) encompass environmentally responsible actions undertaken by tourists, including reducing energy consumption, utilizing public transportation,

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