

## Article

# Roadmap Toward Sustainable Tourism Development: An Evidence- and Knowledge-Based Approach from Thailand

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## Abstract

Tourism is recognized as one of the key enabling industries driving Thailand's strategic transition toward the Thailand 4.0 economic model. This paper presents the development of a national technology roadmap to support the transition toward sustainable tourism in Thailand, conducted between January and October 2024. The primary objective is to promote tourism growth that is environmentally responsible, economically viable, and socially inclusive. The roadmap was developed through a combination of a literature review, statistical data, and group discussions with tourism professionals. The roadmapping process focused on aligning external drivers, strategic goals, and the current capabilities of Thailand's technological ecosystem. The key drivers identified include environmental concerns, the advancement of digital platforms, the growing trends of an aging population, diversity, and inclusion, political instability, and the emergence of middle-income nations. The resulting roadmap outlines a strategic vision for Thailand's tourism sector from 2024 to beyond 2030. It emphasizes the transition linking sustainability and eco-design principles to smart tourism, metaverse applications, and personalized travel experiences. Priority areas include the adoption of green technologies, sustainable practices, and advanced digital platforms. This study further recommends research and development (R&D) initiatives in sustainability, biodiversity conservation, Data Analytics, Cybersecurity, and E-Tourism solutions. Ultimately, this roadmap provides actionable guidance for tourism stakeholders in defining their roles, responsibilities, and contributions toward achieving a sustainable tourism future in Thailand.

**Keywords:** sustainable tourism; tourism technology; sustainability; technology roadmap; roadmapping; Thailand



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## 1. Introduction

Sustainable tourism has been regarded as the future of the Thai tourism industry as one of the global predominant trends like experience tourism, personalized tourism, community tourism, urbanization tourism, and digital tourism. After the global COVID-19 pandemic, the Thai tourism industry is being turned around with the growing number of tourists. In 2023, approximately 38 million international tourists visited Thailand, compared with 28 million in 2022, representing an increase of 34.88% [1]. While the Thai tourism industry is facing intense competition from other destinations and an over-reliance on arrivals from particular countries (e.g., China, Russia, India, etc.), the problem of overtourism is being addressed. Overtourism has caused severe impacts on the sustainability of local destinations from the environmental dimension (e.g., biodiversity loss and degradation) to