Sustainability-Driven Green City Framework and its Impact on Malaysia's Tourism Industry Development

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ABSTRACT

The sustainability-driven Green City framework has emerged as a transformative urban development framework with direct implications for tourism industry growth. This study examines how Green City principles contribute to Malaysia's tourism industry development, focusing on Melaka as a key case study due to its proactive implementation of the Green City Action Plan (GCAP). Using a mixed-method research design comprising policy analysis, surveys (n = 308), and semi-structured interviews with government officers and local authorities, this study identifies strong associations between green governance, environmental literacy, community readiness, and tourism industry outcomes. Findings indicate that sustainable urban practices—such as green mobility, renewable energy adoption, waste reduction, and smart environmental management— enhance tourism competitiveness and overall destination appeal. However, behavioural inconsistencies between workplace and household practices, coupled with governance coordination gaps and limited private-sector participation, remain significant challenges. The study concludes that sustainability-driven green city frameworks offer Malaysia a strategic pathway to strengthening its tourism industry, recommending enhanced community engagement, integrated governance, and innovative green infrastructure to accelerate long-term tourism transformation.

Keywords: Green City Framework, sustainability, Malaysia, Melaka, tourism industry development, green governance, urban sustainability

INTRODUCTION

Sustainability-driven urban planning has been a key catalyst in advancing the development of Green Cities, ensuring that tourism growth is aligned with environmental protection and long-term urban resilience. Tourism is one of the key drivers of economic growth in Malaysia, contributing significantly to employment, foreign exchange earnings and regional development. However, rapid urbanization and tourism expansion have increased environmental pressures, including congestion, carbon emissions, waste generation and ecosystem degradation. These issues highlight the need for a sustainability-driven approach in shaping the future of the tourism industry (Tourism Recovery Framework 2.0, 2018).

Green City framework introduces an integrated framework focusing on ecological responsibility, low-carbon mobility, renewable energy solutions, adaptive governance, and community participation. International trends show that tourists increasingly prioritise eco-friendly destinations, reinforcing the need for sustainable urban-tourism development (UNWTO, 2020). Aligning tourism growth with environmental stewardship has therefore become a central strategy for long-term industry sustainability.

Malaysia has adopted various sustainability policies such as the Low Carbon Cities Framework (LCCF), the

National Tourism Policy 2020–2030, and state-level Green City Action Plans. Melaka's Green City Action Plan (GCAP) reflects the state's strong commitment to sustainability through initiatives such as renewable energy development, electric mobility, smart waste management, and energy-efficient buildings (GCAP, 2014). These efforts not only improve environmental quality but also enhance Melaka's competitiveness as a tourism destination (Md Khairi et.al, 2021). Although global studies highlight the positive link between green city development and tourism growth, research in Malaysia has remained focused on environmental policy rather than its direct implications for the tourism sector.

Therefore, this study examines how governance, community readiness, and green infrastructure contribute to tourism development within Melaka's green city framework. The state's strategies—supported by the State Development Policy, the Melaka Blueprint 2011–2020, and the role of the Melaka Green Technology Corporation (MGTC)—further strengthen Melaka's agenda towards becoming a Low-Carbon State by 2035. These combined efforts provide the foundation for analysing the relationship between green city implementation and tourism industry advancement in Melaka.

Melaka, designated as a green technology leader under the Asian Development Bank-supported GCAP, offers a valuable context for analysing how green city transitions contribute to tourism industry development. Despite global interest, limited empirical studies explore Malaysia's green city–tourism nexus. This study aims to fill this gap by analysing community readiness, behavioural patterns, and governance structures that influence the integration of Green City framework into tourism industry development.

LITERATURE REVIEW

The Green City in the context of a national development system is an integrated urban development model that realigns planning, infrastructure and governance to minimize environmental impact (Adesina et.al, 2024), reduce greenhouse-gas emissions and enhance residents' quality of life by combining low-carbon planning (energy-efficient buildings, renewable energy and sustainable transport), nature-based solutions (urban greening, storm water management and biodiversity protection), circular-economy approaches (resource efficiency and waste reduction), and smart-city technologies for real-time environmental management — all aligned with national policy goals and international frameworks such as the SDGs to ensure social inclusion, economic resilience and measurable performance. Moreover, national Green City strategies typically embed clear governance arrangements and community participation to translate policy into sustained local action (for example, Malaysia's LCCF and state Green City Action Plans), while also requiring vigilance against superficial "green" marketing that can undermine real sustainability outcomes. (Blueprint, 2011). The following are some discussions related to concepts involving the terms of Green City and sustainable tourism:

Green City Framework

Green City framework emphasizes low-carbon development, urban resilience, sustainable mobility, green infrastructure, and community-level environmental stewardship (Beatley, 2012). Cities such as Zurich and Copenhagen illustrate how sustainable urban environments enhance urban planners to improve sustainability strategies and ensure long-term benefits for tourism attractiveness and improve visitor satisfaction. (Oluwadamilola A et.al, 2025). Recent research expands this concept with several critical dimensions:

1. Climate Resilience and Nature-Based Solutions Modern Green City frameworks integrate nature-based solutions such as green roofs, rain gardens, and urban forests to mitigate urban heat islands and manage stormwater. These measures strengthen cities' ability to adapt to climate change and extreme weather events (OECD, 2023).

2. Alignment with Sustainable Development Goals (SDGs) Green City initiatives are now explicitly aligned with SDG 11 (Sustainable Cities and Communities) and related goals on clean energy and climate action. This alignment ensures that urban sustainability strategies contribute to global development targets while promoting inclusive governance and citizen engagement (UN-Habitat, 2022).

3. Circular Economy Integration. A key trend is the incorporation of circular economy principles into urban planning. This includes resource efficiency, waste minimization, and regenerative systems through practices such as material reuse, modular construction, and urban sharing models. These approaches reduce environmental impact and foster sustainable consumption patterns (Sevgim Pekdemir, 2025).

4. Smart City Synergy Green City framework increasingly overlaps with smart city technologies, leveraging IoT sensors, AI-driven energy optimization, and smart grids. These tools enable real-time monitoring of energy, water, and waste systems, improving resource efficiency and supporting data-driven decision-making for sustainability (World Bank, 2023).

5. Health and Well-being Focus Urban greening is recognized for its role in improving public health, mental well-being, and social cohesion. Initiatives such as community gardens and green corridors not only reduce pollution but also create inclusive spaces that enhance quality of life and social interaction (WHO, 2023).

Sustainable Tourism and Industry Trends

The tourism industry accounts for approximately 8% of global carbon emissions (Lenzen et al., 2018), driving destinations to adopt sustainability-focused strategies. Sustainable tourism pathways increasingly integrate conservation, renewable energy, waste reduction, and climate-resilient planning. Tourists now actively seek eco-conscious destinations, making sustainability a competitive asset.(Rahman et.al, 2024). Recent studies highlight several emerging trends (Agarwal et.al, 2024):

1. Carbon-Neutral Travel and Sustainable Aviation Fuels(SAF) Airlines and tour operators are investing in carbon-neutral flights and SAF, which can reduce emissions by up to 80% compared to conventional jet fuel. Over 50 airlines have pledged net-zero emissions by 2050, signaling a strong industry shift toward decarbonization (WTTC, 2024).

2. Eco-Friendly Accommodations and Green Certification Hotels and resorts increasingly adopt renewable energy systems, zero-waste operations, and eco-certifications such as Green Key and Earth Check. These practices enhance brand reputation and attract sustainability-conscious travelers (Travel Daily News, 2024). traveldailynews.com

3. Climate-Resilient Destination Planning Coastal and island destinations are implementing climate risk assessments, nature-based solutions, and adaptive infrastructure to withstand extreme weather events and rising sea levels. Initiatives like the Glasgow Declaration on Climate Action in Tourism aim to halve emissions by 2030 and achieve net zero before 2050 (Sustainable Travel International, 2024). [sustainabl...travel.org]

4. Integration of Technology for Sustainable Tourism Digital innovations such as AI-driven personalization, blockchain for supply chain transparency, and mobile apps for carbon footprint tracking are transforming how travelers make eco-friendly choices. The technology can optimize resource management, enhance guest experiences, and foster community engagement, contributing to sustainable tourism initiatives (Khatun Tafura, 2024)

5. Renewable Energy Adoption in Tourism Destinations. Solar, wind, and hybrid energy systems are increasingly used in resorts and attractions to reduce dependency on fossil fuels. Countries like Spain, Germany, and China lead in renewable energy integration for tourism, supported by government incentives and eco-certifications (Edita Tverijonaite et.al, 2024)

Green City Framework and Tourism Industry Development

The integration of urban sustainability principles into tourism supports energy efficiency, enhanced mobility, pollution reduction, and improved environmental aesthetics—all of which elevate destination appeal. Research indicates that green infrastructure and environmental quality are critical tourism competitiveness factors (Gössling & Hall, 2006; Mihalič, 2016). Recent studies provide additional insights:

1. Smart Tourism and Green City Synergy Green City principles increasingly intersect with smart city technologies, enabling real-time monitoring of energy use, waste management, and visitor flows. This integration enhances resource efficiency and improves tourist experiences through digital engagement and smart mobility systems (Escobar & Hall, 2024). [emerald.com]

2. Nature-Based Solutions for Tourism Resilience Cities are adopting nature-based solutions—such as urban forests, green corridors, and wetlands—to improve climate resilience and create attractive tourism landscapes. These measures not only mitigate urban heat and flooding but also provide eco-friendly recreational spaces for visitors (Eccles, R et.al, 2025).

3. Green Infrastructure as a Competitive Advantage Investments in green infrastructure, including low-carbon transport systems and energy-efficient buildings, are now seen as key drivers of tourism competitiveness. Destinations with strong sustainability credentials attract higher visitor satisfaction and repeat visits (OECD, 2024). [oecd.org]

4. Circular Economy and Tourism Development Green City frameworks increasingly incorporate circular economy principles in tourism planning—such as resource reuse, waste-to-energy systems, and sustainable supply chains. These practices reduce environmental impact while creating new green tourism products (Rossana, 2024).

5. Community Engagement and Governance Effective governance and community participation are essential for integrating Green City framework into tourism. Studies show that destinations with strong local involvement and transparent governance achieve better sustainability outcomes and stronger tourism branding (Wang, Qibin & Wei, Chaoyi, 2024)

Melaka's Green City Action Plan (GCAP) demonstrates a strong commitment to sustainability by promoting renewable energy projects such as *Solar Valley*, electric mobility corridors, smart waste management, and energy-efficient buildings, all of which create opportunities for green tourism development. Community engagement plays a critical role in this process, as Ajzen's Theory of Planned Behavior suggests that environmental actions are shaped by attitudes, social norms, and perceived control; tourists often judge a destination's credibility based on local green practices (Ajzen, 1991). Despite global evidence linking green cities to tourism competitiveness, Malaysian research has largely focused on environmental policy rather than direct tourism impacts.

This study addresses that gap by exploring how governance, community readiness, and behavioral consistency influence tourism growth within a green city framework. While international research highlights the benefits of green cities for tourism, Malaysian studies often focus on environmental policy rather than tourism industry impacts. This study contributes new insights by examining behavioural, governance, and policy factors affecting tourism industry development through green city transitions.

The action plan that has been formulated also reflects the long-term commitment of the State of Melaka in achieving the mission to reduce carbon consumption to a low level, improve environmental quality and strengthen economic competitiveness in the present and future (LCCF). In addition, in achieving the mission towards a Green Technology City, Melaka has also organized work towards achieving the vision and mission of developing a Green Technology City as follows:
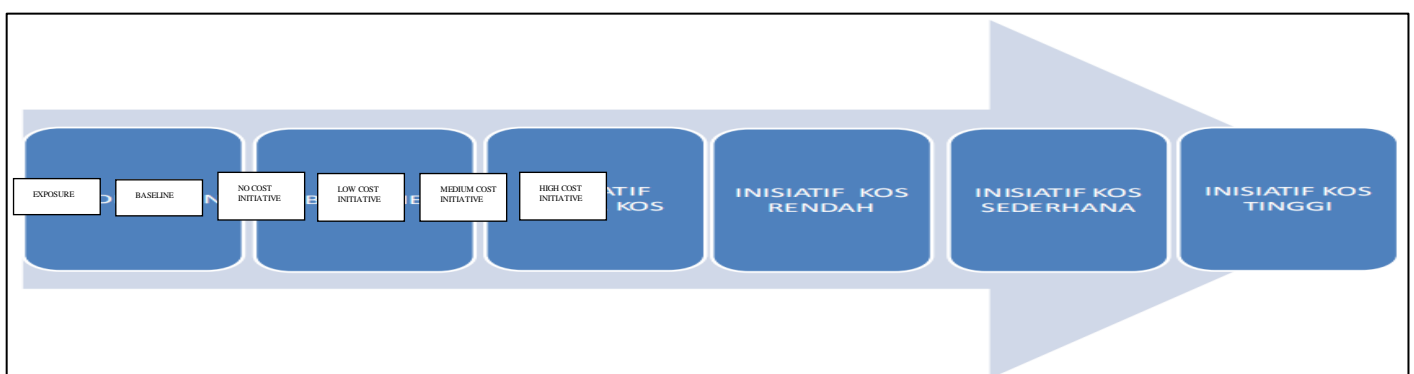
Figure 1: Green Practice /Workflow (UPEN, Melaka/2014)

GCAP also reflects Melaka's long-term commitment to reducing carbon consumption, improving environmental quality, and strengthening economic competitiveness. The move towards a Green Technology City is guided by the State Development Policy and the Melaka Blueprint 2011–2020, with the Melaka Green Technology Corporation (MGTC) serving as the lead agency for green technology development. (GCAP, 2014)

MGTC works closely with the State Government and the State Economic Planning Unit to align tourism and industrial policies towards achieving a Low-Carbon State by 2035. Three main missions have been outlined:

1. Reducing carbon emissions,

2. Creating sustainable townships and protecting the environment,

3. Improving energy efficiency and increasing the use of renewable energy.

These missions are implemented through three phases:

- Short term (2017–2018): groundwork and inventory activities,

- Medium term (2018–2020)**:** promoting and expanding green technology projects,

- Long term (2017–2035): scaling up green technology applications across all development sectors.

METHODOLOGY

Research Design

This study adopted a mixed-method approach to comprehensively examine the integration of Green City framework into tourism development in Melaka. The approach combined document analysis, quantitative surveys, and qualitative interviews to ensure triangulation and validity of findings.

- Document Analysis**:** Key policy documents were reviewed, including the National Tourism Policy 2020–2030*,* Low Carbon Cities Framework (LCCF)*,* Melaka Green City Action Plan (GCAP)*, and the* Blueprint Melaka 2011–2020. This provided the policy context and strategic direction for green urban development.

- Survey: A structured questionnaire was administered to 308 respondents selected through stratified random sampling within MPHTJ. The survey measured:

o Environmental awareness and literacy

o Community readiness for green practices

o Green behaviour at workplace vs household

o Perceptions of governance clarity

o Expectations for tourism development under green initiatives Reliability was assessed using Cronbach's Alpha with validity score with 0,909 value, and data were analysed using descriptive statistics, and cross-tabulations in SPSS (Version 25).

- Interviews: Semi-structured interviews were conducted with government officers, local authority representatives, and stakeholders involved in green city planning. The interviews explored strategic factors, implementation challenges, and governance mechanisms. Responses were analysed using thematic coding to identify recurring patterns and strategic insights.

Study Area

The research was conducted in Majlis Perbandaran Hang Tuah Jaya (MPHTJ)**,** Melaka, which serves as the focal point for the implementation of the Green City Action Plan (GCAP) and related sustainability initiatives.

Data Analysis

- Quantitative Analysis**:** Descriptive statistics were used to summarise demographic profiles and key variables. Inferential tests (Chi-square) examined associations between community readiness and green behaviour. Additional analysis included cross-tabulation of workplace vs household practices and factors influencing strategic implementation.

- Qualitative Analysis**:** Thematic analysis was applied to interview transcripts to extract insights on leadership commitment, organisational culture, and strategic enablers. Themes were aligned with the conceptual framework based on Ajzen's Theory of Planned Behaviour and strategic management principles.

Ethical Considerations

All participants provided informed consent prior to data collection. Confidentiality and anonymity were maintained throughout the study. Ethical approval was obtained from the relevant institutional review board.

FINDINGS AND DISCUSSION

The themes discussed are as follows:

Community Readiness Enhances Tourism Industry Sustainability

More than 75% of respondents expressed a high level of readiness to adopt green practices, indicating a strong societal foundation for sustainability-led tourism development. This level of readiness reflects growing environmental literacy among local communities, which is essential for shaping responsible behaviours, supporting low-carbon urban practices, and reinforcing policy implementation. High community readiness also demonstrates positive public acceptance of green initiatives introduced under the Green City Action Plan (GCAP), signalling that local stakeholders are willing to engage in environmental transformation efforts that align with tourism development goals.

Strong environmental literacy further enhances the sustainability of the tourism industry by strengthening the authenticity of green destinations. Tourists increasingly evaluate destination credibility not only through its infrastructure but also through the visible environmental practices of local communities. When residents demonstrate responsible waste management, energy-saving behaviours, and support for green mobility, these behaviours collectively reinforce a city's green identity. This alignment between community practices and urban sustainability goals contributes to a more immersive and trustworthy tourism experience, thereby increasing visitor satisfaction and strengthening Malaysia's competitive positioning in the global sustainable tourism market. (Di, Juma & Nur Adhifa, Muhammad, 2025)

Behavioural Gaps Affect Tourism Credibility

The findings reveal a noticeable behavioural gap, where 240 respondents reported practising green behaviour at the workplace, yet only 158 sustained similar practices at home. This discrepancy suggests that environmental behaviour may be influenced by situational factors such as workplace policies, organisational expectations, or the availability of structured systems that encourage sustainable actions. In contrast, household environments may lack similar enforcement mechanisms, incentives, or access to green facilities, resulting in lower levels of consistent behaviour. Such gaps highlight the need for targeted community education and household-level interventions to strengthen sustainable habits beyond institutional settings.

This behavioural inconsistency also has implications for tourism credibility, as tourists increasingly evaluate destinations based on the authenticity of local environmental practices. When visitors observe inconsistent or contradictory behaviours—such as visible waste mismanagement or limited household recycling—it may weaken the perceived commitment of the community to sustainability. This can undermine the overall image of a green city and reduce trust in destination branding efforts (Qiu, Hongliang et.al, 2022). Addressing these behavioural gaps is therefore critical in ensuring that the sustainability narrative promoted by local authorities is supported by consistent, community-wide environmental practices that reinforce a destination's reputation as a credible and responsible tourism hub.

Governance Clarity Boosts Tourism Confidence

The study shows that 76.6% of respondents believe governance clarity is essential for the success of green initiatives, indicating strong public expectations for transparent and well-coordinated policy implementation. Clear governance structures help reduce confusion regarding agency roles, streamline decision-making processes, and enhance the overall effectiveness of sustainability programes. This situation occurs in MPHTJ Melaka, where development management based on Green Technology applications has been chosen in the state's development policy, causing the government and the community to receive instructions and implement the technology vision and mission based on the stages planned by the state government.

When responsibilities are clearly defined across local authorities, environmental agencies, and tourism departments, initiatives such as green mobility, waste reduction, and eco-friendly urban planning can be executed more efficiently (Siti Hajar et.al, 2023). This clarity is particularly important in cities undergoing green transformation, where multi-level coordination is required to ensure long-term policy continuity.

Interview findings further show that improved policy alignment strengthens tourism planning and enhances visitor trust. Stakeholders reported that when environmental policies and tourism strategies are aligned—such as through integrated green transport systems, sustainable infrastructure standards, and harmonised land-use planning—tourism development becomes more coherent and reliable. Tourists are more likely to perceive a destination as credible when sustainability messages are supported by consistent actions across government agencies and visible outcomes in the city environment. Thus, strong governance clarity not only improves operational efficiency but also reinforces destination branding, contributing to a more trustworthy and competitive tourism industry.

Environmental & Economic Drivers Stimulate Tourism Growth

Respondents ranked environmental protection (95%) and economic benefits (86%) as key motivators. Green infrastructure such as Solar Valley contributes to eco-tourism and innovation tourism. This demonstrates that residents recognise the dual value of sustainability—both in preserving ecological quality and in contributing to long-term economic resilience. Environmental protection ensures cleaner air, reduced waste, and healthier urban ecosystems, all of which enhance the overall quality of life for both residents and visitors. When environmental conditions improve, the tourism industry benefits from a more attractive and pleasant destination environment, creating a positive feedback loop between ecological stewardship and tourism appeal.

In addition to environmental factors, economic considerations play an increasingly central role in shaping community acceptance of green programmes. Green infrastructure projects such as the Solar Valley not only reduce carbon footprints but also contribute to new economic opportunities through eco-tourism and innovation-driven tourism products. These developments diversify the tourism portfolio by promoting educational tours, renewable energy showcases, and technology-based attractions. As destinations adopt more green infrastructure, they position themselves as forward-looking and environmentally responsible, attracting a growing market of eco-conscious travellers. Thus, environmental and economic drivers jointly strengthen tourism growth (Gupta, 2023) while reinforcing Malaysia's long-term sustainability agenda.

Almost 90% of respondents believe Melaka is moving toward sustainability. This shows strong public trust in the city's green initiatives. People see Melaka as a credible green tourism destination. They expect visible

results from sustainability efforts within 5 to 20 years. This outlook matches international standards for sustainable tourism development.

Key interviews revealed that leadership continuity is crucial for progress. Collaboration between government agencies also strengthens implementation (Olusegun, John. (2024). Careful and systematic planning guides long-term actions. These factors together support Melaka's sustainable tourism growth. The city has the potential to become a resilient and future-ready tourism hub.

RECOMMENDATIONS

The following recommendations are derived from the findings of interviews involving the Melaka State Government, including MPHTJ officers, senior state officials and diverse communities. These recommendations suggest strategic actions to better align green city initiatives with sustainable tourism outcomes by increasing community capacity, strengthening green infrastructure, integrating tourism-related sustainability indicators, advancing green technology innovation and strengthening cross-sectoral governance. The details of the recommendations are as follows:

Strengthen Community-Based Green Tourism Education.

To deepen the impact of green tourism, local communities should be empowered through education and awareness programmes. Workshops, school programmes, and community outreach campaigns can teach residents about sustainable practices — such as waste reduction, energy conservation, responsible resource use, and respect for cultural and natural heritage. By building environmental awareness at the household and community level, residents become partners in sustainability rather than passive observers. Such engagement not only supports environmental goals but also enhances the authenticity and social value of tourism, fostering pride and shared ownership of green tourism initiatives. (Sustainable Tourism Malaysia, https://sustainabletourism.my/)

Incentives — such as recognition for households or neighborhoods that maintain good green practices, or subsidies/benefits for participation in eco-programmes -could further boost community participation. When locals see direct benefits from sustainable behaviour, the shift becomes more enduring and meaningful.

Enhance Green Tourism Infrastructure.

Improving physical infrastructure is essential to give substance to green tourism ambitions. This could include expanding green mobility — such as pedestrian walkways, cycling lanes, low-emission public transport, or electric-vehicle infrastructure — so that visitors and locals can move around in environmentally friendly ways. Such features enhance visitor experience by making the city more accessible, safe, and pleasant, while reducing reliance on fossil-fuel transport.

Moreover, investing in smart environmental systems — for example, efficient waste management, water recycling, green building design, renewable energy, and urban green spaces — can substantially improve the tourism environment. Green accommodations that employ energy- and water-saving designs, waste reduction, and renewable energy align with tourist expectations of sustainability, and are increasingly seen as desirable by eco-conscious travellers.

Urban green spaces - parks, riverside walkways, shaded zones, heritage-green corridors — not only enhance the aesthetic and recreational appeal of the city, but also contribute to ecological resilience, air quality, heat mitigation and overall quality of life for residents and visitors alike. Strategic development of such infrastructure supports both everyday livability and tourism attractiveness.

Integrate Tourism Indicators into Green City Frameworks

To ensure that green city efforts genuinely benefit tourism, sustainability frameworks like GCAP and associated mechanisms should explicitly incorporate tourism-specific indicators. Metrics could include:

number of eco-certified accommodations, percentage of tourist movements using green mobility, waste and water-use per tourist, local community participation rates in tourism, and tourist satisfaction with green facilities.

By embedding such tourism metrics into green city evaluation and monitoring systems, authorities can more accurately measure the impact of sustainability efforts on tourism performance and urban environment — and adjust policies as needed. This integration helps align environmental, social and economic objectives in a coherent way and supports transparent, data-driven planning (GCAP, 2014).

Promote Green Technology and Innovation Tourism.

Melaka and other cities should explore and invest in tourism attractions centered arround green technology and environmental innovation. This could involve developing demonstration sites - for example, renewable-energy powered eco-parks, waste-to-energy facilities that are visitor-friendly, sustainable building showcases, or urban farms/agro-eco tourism sites that highlight local biodiversity and sustainable agriculture.

Such attractions not only serve as educational and leisure venues for environmentally conscious tourists, but also create opportunities for local businesses and green-technology small and medium enterprises (SMEs) to grow. Incentives and support mechanisms for green SMEs — such as access to green financing, capacity building and technology support — would encourage innovation and participation in the green tourism economy. Recent support mechanisms for green technology SMEs in Malaysia illustrate the feasibility of such initiatives. GreenTech Malaysia+1

Moreover, combining green-technology showcases with cultural and heritage tourism could create a unique hybrid offering — attracting tourists interested in sustainability, culture, heritage and innovation.

Strengthen Cross-Sector Governance and Collaboration

Sustainable tourism development requires coordination across multiple sectors: environment, urban planning, transport, tourism, energy, and community development. Effective cross-sector governance — involving government agencies, local authorities, private sector, community groups, and civil society — is essential to implement integrated green development. The GCAP framework for Melaka already assigns responsibilities across various agencies, demonstrating a structured approach to shared governance. (Melaka 2035 @ melakagreentech.gov.my+1)

To reinforce this, periodic inter-agency coordination meetings, shared planning platforms, and inclusive stakeholder consultations should be institutionalised. Collaboration with private sector businesses, green SMEs, NGOs, and academic institutions can bring in expertise, innovation, and community engagement, making green tourism development more holistic, inclusive, and sustainable.

In addition, monitoring and evaluation mechanisms should be established to track progress, measure impacts, and ensure accountability. Transparent reporting and public communication about sustainability outcomes will build public trust and support long-term commitment. This kind of good governance helps ensure that green tourism development benefits both residents and visitors, and aligns with broader national sustainability goals. Planning Malaysia+2GreenTech Malaysia+2

Concept Map Development

The concept map in figure 2 illustrates the core relationship between the Sustainability-Driven Green City Framework and Tourism Industry Development in Malaysia, with Melaka as the focal case study. It centers on five principles: low-carbon development, renewable energy, smart environmental management, waste reduction, and green mobility. These principles support eco-friendly urban planning that strengthens destination competitiveness and visitor satisfaction.

The map also shows key challenges such as behavioral gaps, weak governance, and limited private-sector involvement. Success depends on community readiness, governance clarity, and strong environmental-

economic drivers. Recommended actions include community-based green tourism education, improved green infrastructure, integrating tourism indicators into GCAP, and promoting green technology and innovation. Together, these strategies provide a clear roadmap for sustainable tourism growth.
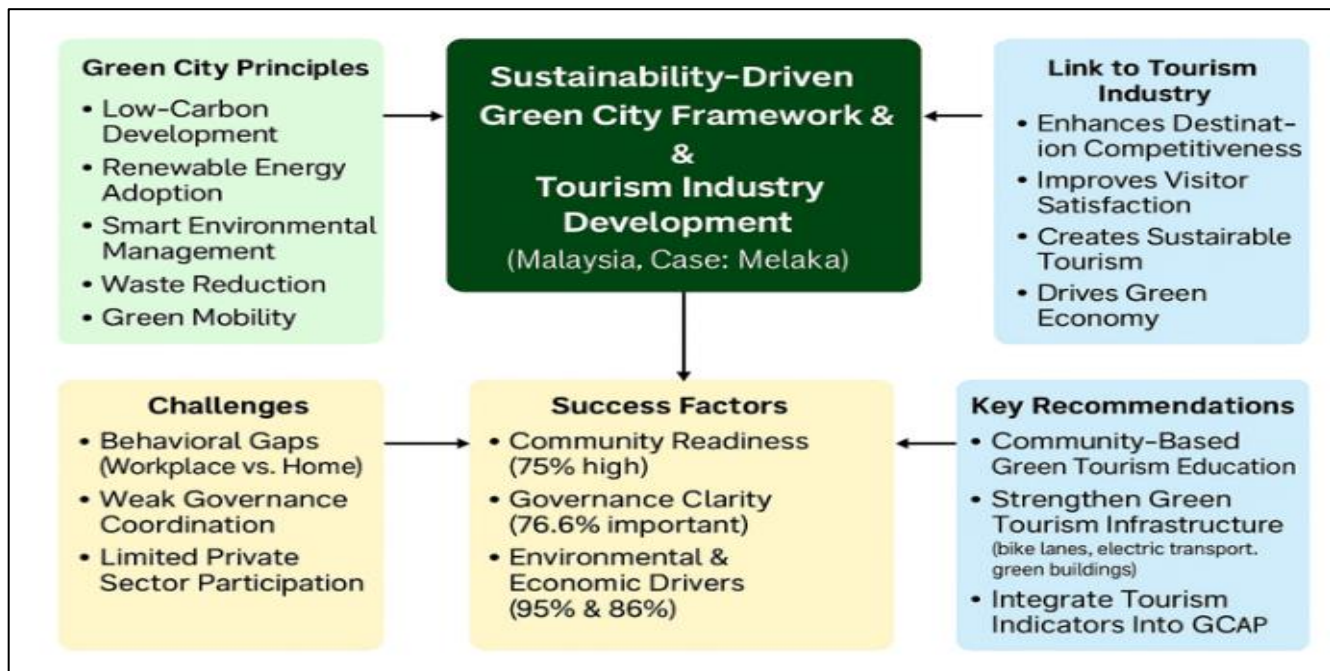

Figure 2:Concept Map for Sustainability Driven Green City   Framework

CONCLUSION

Melaka's experience demonstrates that the implementation of a sustainability-based Green City framework has successfully integrated urban planning, governance, and community engagement effectively. This approach not only enhances environmental quality and resource efficiency but also strengthens destination competitiveness through improved city livability, higher-quality tourist experiences, and the development of sustainable tourism potential, in line with global standards.

In line with national policies such as the National Tourism Policy 2020–2030, the National Green Technology Policy, and the National Urbanization Policy, the implementation of sustainable Green City principles enhances Malaysia's capacity to drive sustainable tourism development while maintaining global competitiveness. Future research is recommended to examine how the integration of digital technologies with Green City initiatives can improve destination management, tourist experiences, and holistic sustainable tourism development, while providing strategic guidance for policy formulation and the implementation of sustainable Green City initiatives in the eyes of the world.

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