

# Tourism Destinations Sustainability Index (TDSI)

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# Background

- One of the biggest challenges in sustainable tourism is **defining what it actually means**. This ambiguity makes it difficult to set **consistent benchmarks** for evaluating destinations.
- Researchers and policymakers often **disagree on which indicators to use** and how to apply them. Yet, choosing the **right indicators is critical** — they show us how tourism contributes to sustainability and how we can manage its impacts effectively.
- So we asked:
  - *How can we develop a reliable, practical, and meaningful way to measure destination sustainability?* This question led us to create the **Tourism Destination Sustainability Index — TDSI**.

# Background

- Over the years, there's been a strong push to operationalise sustainability in tourism using measurable indicators. This demand has grown rapidly, especially at the destination level.
- Several major organisations have responded by developing indicator frameworks. Key examples include:
  - UNWTO's Indicators of Sustainable Development for Tourism Destinations
  - The European Tourism Indicator System (ETIS)
  - And the GSTC Destination Criteria (V2), which many of you here today will know well.
- *These tools offer comprehensive lists of potential indicators—but how they are selected and applied still varies greatly across destinations.*

# Problem / Gap

- Despite the rise in sustainability indicator frameworks, there's **no one-size-fits-all** solution for destinations. Why? Because **each destination faces unique challenges and governance structures**.
- Research shows that **site-specific adaptation is essential**—standardised indicators alone won't capture local realities. This ties into the idea of “**common but differentiated responsibilities**”—we need **both universal benchmarks and local flexibility**.
- *So, the challenge is to strike a balance: global comparability, without ignoring local context.*

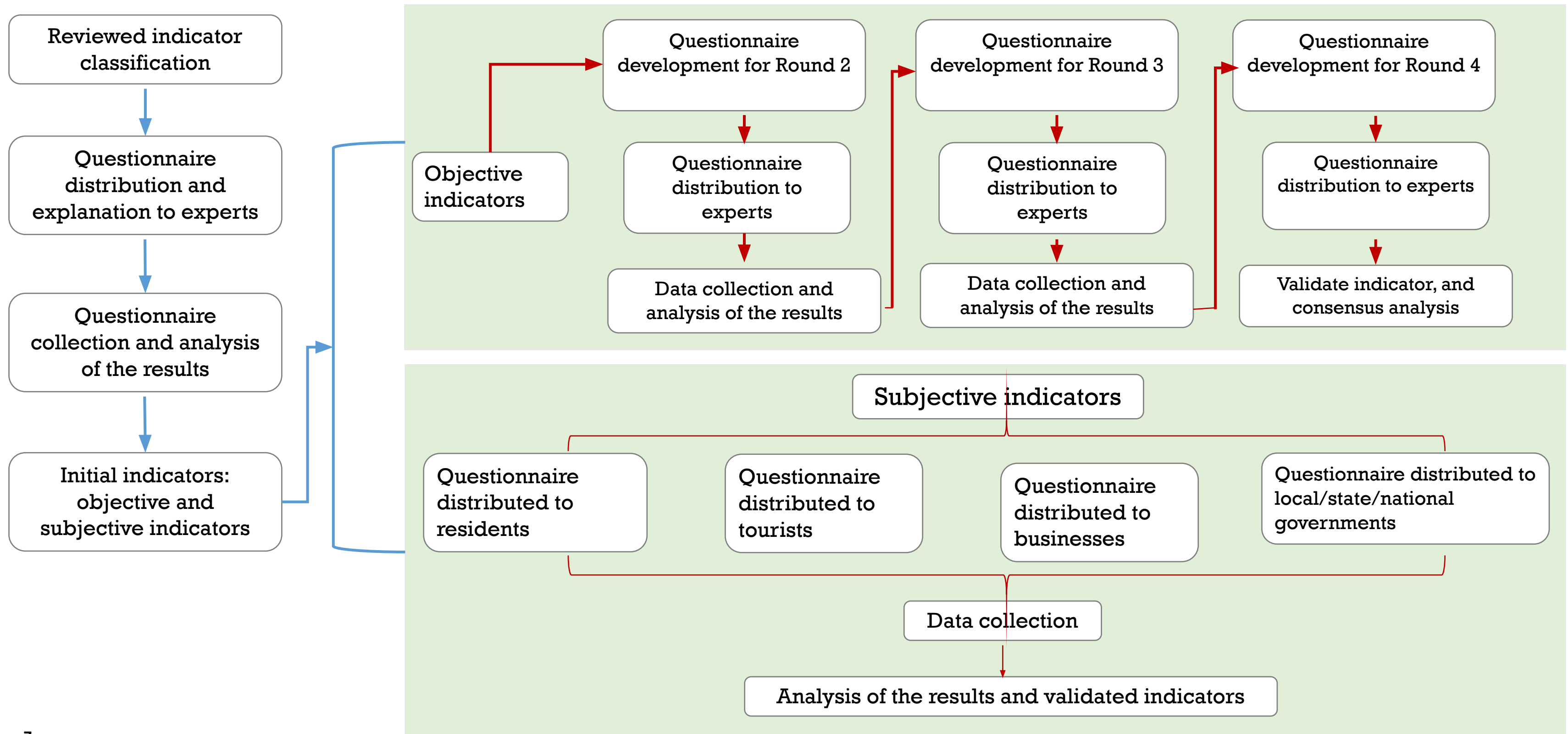
# Problem / Gap

- Beyond measurement, indicators play **multiple roles** in destination sustainability. A recent study by Crabolu et al. (2024) identifies **three key roles**:
  - **Instrumental** – linking indicators directly to policy action
  - **Conceptual** – encouraging dialogue and mindset shifts
  - **Structural** – shaping long-term destination sustainability
- For indicators to be truly effective, they must **incentivise discussion**, build **shared understanding**, and promote **networking among stakeholders**.
- *In other words, how we use indicators matters as much as what we measure.*

# Research Objectives

- To move forward, we grounded our approach in [the UN Sustainable Development Goals \(SDGs\)](#)—a universal benchmark for sustainability. But we also recognised the need for [context-specific adaptation](#). So, we focused on two countries—Malaysia and Thailand—to explore how indicators can be [locally tailored](#).
- We followed a [participatory process](#) with [key stakeholders](#), ensuring the indicators reflect real-world priorities. And importantly, we included both [objective indicators](#) (quantitative) and [subjective indicators](#) (perceptions),
  - *because numbers alone don't capture the full story of sustainable tourism.*

# Methodology





# Objective indicators

- **Economic Dimension**

- Ratio of women/men employed in tourism
- Percentage of unemployment off-season
- Ratio of locals receiving income from tourism compared to other industries
- Percentage of tourism revenue due to niche products or clusters

- **Socio-cultural Dimension**

- Percentage of residents participate in community meetings and discuss issues before policies are implemented
- Percentage of attractions, restaurants, hotels and public buildings with wheelchair access
- Ratio of migration into / out of community in order to take tourism jobs in the past year
- Ratio of tourists to locals (average and peak day)

- **Environmental Dimension**

- Total area considered degraded due to tourism
- Percentage of total energy used by tourism industry
- Percentage of annual amount of energy consumed from renewable sources
- Water consumption by tourists
- Percentage of businesses participating in energy conservation programs,

- **Political Dimension**

- Percentage of policies aiming at social issues of employment and relation with host communities

- **Technology Dimension**

- Percentage of tourism products purchased through mobile websites and applications
- Percentage of free WiFi hotspots coverage is available in the destination



# OBJECTIVE INDICATORS

ITEMS - OBJECTIVE INDICATORS	FORMULA TO CALCULATE	SCORE
OB-ECO Economic Sustainability Score	$\frac{\sum_{i=1}^{19} ECO(i)}{19}$	
OB-SOC Socio-cultural Sustainability Score	$\frac{\sum_{i=1}^{19} SOC(i)}{19}$	
OB-ENV Environmental Sustainability Score	$\frac{\sum_{i=1}^{12} ENV(i)}{12}$	
OB-POL Political Sustainability Score	$\frac{\sum_{i=1}^3 POL(i)}{3}$	
OB-TEC Technology Sustainability Score	$\frac{\sum_{i=1}^4 TEC(i)}{4}$	
OBJECTIVE-SUS This score is calculated based on the scores of Economic, Sociocultural, Environmental, Political, and Technology dimensions of objective indicators. These indicators for each destination are measured using secondary data	<p>Sustainability of Destination (OBJECTIVE - SUS)</p> $= \frac{(OB\_ECO + OB\_SOC + OB\_ENV + OB\_POL + OB\_TEC)}{5}$	

# Residents Perceptions

Economic indicators	Socio-cultural indicators	Environmental indicators
Tourism brings economic development to this destination	The local and traditional culture are preserved in this destination	Compared to other economic activities, tourism in this destination is less negative and more respectful towards the environment
Tourism attracts more investment to my community	The diversity of heritage is valued and protected in this destination	Tourism development provides an incentive for the conservation of natural resources
Tourism generates significant tax revenue for governments	Tourism promotes better understanding between culture	Community environment is protected in this destination
Tourism improves employment opportunities in this destination	Tourism development promotes cultural exchange	Tourism in this destination raises environmental awareness among residents
Tourism development causes an increase in the cost of housing and land	I treat tourists well in this destination	Tourism development in our community promotes positive environmental ethics
	I prefer living in this community over other communities	Tourism in our community is developed in harmony with the natural environment
	Local residents are consulted in the planning for tourism development	

Political indicators	Technology indicators
Government provides training and employment opportunities to local people	Social media plays an important role in communicating and building my perceptions of sustainable tourism
Government is able to control adverse impacts of tourism	Media influence my support for tourism events
Government encourages local residents into the tourism industry by recommending to the new tourism developments coming into the area to employ local people	Government provides the e-governance mode to deliver different services to the residence
Tourism can help to reduce tension, conflicts, barriers and suspicion between nations	Government provides different sorts of information to the residents using digital media
	ICT and technology applications promotes sustainable and accessible development of tourist areas, and an enhanced quality of life for residents



# Tourists Perceptions

<b>Economic indicators</b>
My trip brings economic benefits to this destination
I support and purchase local agriculture, hardware, crafts and products
The local products available are reasonably priced
The handicrafts sold are fairly priced
Overall cost for food and beverages is acceptable
<b>Socio-cultural indicators</b>
This destination is safe and secure
This destination offers excellent experiences
This destination offers good guides with in-depth knowledge as they are the best to explain their culture and the natural world that surrounds them
I enjoy the local cuisine
Local people are friendly
The destination has a variety of accommodation options (e.g., guesthouse, youth hostel)
The destination has a comfortable and good quality accommodation

<b>Technology indicators</b>
Online travel information is available
Available tourists' online travel reviews make me confident in travelling to this destination
This destination provides real-time information on traffic situations in this destination
Fast transport technology increases the volumes of tourists in this destination
The map application is available in this destination and helps to navigate way around this destination
ICT and smart technologies in the transport or logistic management are available in this destination and can help better manage a crowd
Access to internet and data mobile are available in this destination and contribute to the openness of the smart tourism ecosystem (STE).
Available technologies in this destination can provide valuable information and help me discover and select the points of interest that best fit my preferences
Available technology in this destination develops the processes of new services and improvement of the destination's attractiveness level

# Businesses Perceptions

<b>Economic indicators</b>
Our company is willing to support local agriculture, foods and products
Tourism development boosts local enterprise opportunities
Our company works with local authorities, indigenous community organizations, and leaders in order to establish a transparent and accountable mechanism of distribution of revenue generated through tourism

<b>Environmental indicators</b>
Our company supports and engages in campaign to reduce and mitigate emissions
Our company avoids penalties related to the violation of environmental laws
Our company promotes staff awareness regarding GHG emissions and sustainable tourism
Our company collaborates with green suppliers when arranging tours
Our company reminds tourists to prioritize local supplies when shopping during tours
Our company educates tourists on how to reduce carbon emissions during tours
Our company involved in GHG reduction programs at destinations

# Government Perceptions

<b>Economic indicators</b>
Government provides available finance information and other support in the destination for tourism-related SMEs
Government supports and provides advice to tourism-related business
Government takes action on the updating competency standards and curricula as well as on national mechanisms to drive tourism skills policy
Government enhances the links between tourism and trade policies to enhance the access of SMEs to international markets and promote the integration of SMEs into the global economy
Government takes actions to promote the value of employment in tourism in order to address the perception challenges of tourism jobs, and attract and retain talent in the sector
<b>Political indicators</b>
Government provides the strategy/action plan to wider sustainable development policy (including the pursuit of the SDGs), and vice versa
Government provides sustainability principles and an assessment of assets, issues and risks, contained in the strategy and action plan
Government applies codes of conduct (group size, mode of transport, equipment waste disposal, noise pollution, staff, energy efficiency, construction methods and materials, etc) designed to minimize negative impacts
Government provides tourism budget/plan
Government establishes mechanisms for collaboration among representatives of government, employers, workers and training providers, as well as between sector stakeholders at the national and provincial level especially employers and workers
Government provides policies to promote tourism through establishing facilities for exit and entry visas, and travel service



# SUBJECTIVE INDICATORS

## TOURISTS

Sustainability of destination from tourists' perspective

ITEMS - SUBJECTIVE INDICATORS	FORMULA TO CALCULATE	SCORE
TO-SUB-ECO Economic Sustainability Score	$TO\_SUB\_ECO = \frac{\sum_1^5 ECO(i)}{5} \star 10$ <p>Note = ECO(i) is average of answers from respondents to ECO(i)</p>	
TO-SUB-SOC Socio-cultural Sustainability Score	$TO\_SUB\_SOC = \frac{\sum_1^7 SOC(i)}{7} \star 10$ <p>Note = SOC(i) is average of answers from respondents to SOC(i)</p>	
TO-SUB-ENV Environmental Sustainability Score	$TO\_SUB\_ENV = \frac{\sum_1^8 ENV(i)}{8} \star 10$ <p>Note = ENV(i) is average of answers from respondents to ENV(i)</p>	
TO-SUB-POL Political Sustainability Score	$TO\_SUB\_POL = \frac{\sum_1^3 POL(i)}{3} \star 10$ <p>Note = POL (i) is average of answers from respondents to POL(i)</p>	
TO-SUB-TEC Technology Sustainability Score	$TO\_SUB\_TEC = \frac{\sum_1^9 TEC(i)}{9} \star 10$ <p>Note = TEC (i) is average of answers from respondents to TEC(i)</p>	
TOURIST-SUS Sustainability of destination from tourists' perspective	$\frac{(TO\_SUB\_ECO + TO\_SUB\_SOC + TO\_SUB\_ENV + TO\_SUB\_POL + TO\_SUB\_TEC)}{5}$	

# SUBJECTIVE INDICATORS

## BUSINESSES

Sustainability of destination from businesses' perspective

ITEMS - SUBJECTIVE INDICATORS	FORMULA TO CALCULATE	SCORE
BU-SUB-ECO Economic Sustainability Score	$BU\_SUB\_ECO = \frac{\sum_1^5 ECO(i)}{5} \star 10$ <p>Note = ECO(i) is average of answers from respondents to ECO(i)</p>	
BU-SUB-SOC Socio-cultural Sustainability Score	$BU\_SUB\_SOC = \frac{\sum_1^5 SOC(i)}{5} \star 10$ <p>Note = SOC(i) is average of answers from respondents to SOC(i)</p>	
BU-SUB-ENV Environmental Sustainability Score	$BU\_SUB\_ENV = \frac{\sum_1^7 ENV(i)}{7} \star 10$ <p>Note = ENV(i) is average of answers from respondents to ENV(i)</p>	
BU-SUB-POL Political Sustainability Score	$BU\_SUB\_POL = \frac{\sum_1^3 POL(i)}{3} \star 10$ <p>Note = POL (i) is average of answers from respondents to POL(i)</p>	
BU-SUB-TEC Technology Sustainability Score	$BU\_SUB\_TEC = \frac{\sum_1^2 TEC(i)}{2} \star 10$ <p>Note = TEC (i) is average of answers from respondents to TEC(i)</p>	
BUSINESS_SUS Sustainability of destination from businesses' perspective	$\frac{(BU\_SUB\_ECO + BU\_SUB\_SOC + BU\_SUB\_ENV + BU\_SUB\_POL + BU\_SUB\_TEC)}{5}$	



# SUSTAINABILITY OF DESTINATION

(OBJECTIVE-SUS + SUBJECTIVE-SUS)

ITEMS	FORMULA TO CALCULATE	SCORE
<b>OBJECTIVE-SUS</b>  This score is calculated based on the scores of Economic, Sociocultural, Environmental, Political, and Technology dimensions of objective indicators. These indicators for each destination are measured using secondary data	$\frac{\text{Sustainability of Destination (OBJECTIVE - SUS)}}{5}$ $= \frac{(OB\_ECO + OB\_SOC + OB\_ENV + OB\_POL + OB\_TEC)}{5}$	
<b>SUBJECTIVE_SUS</b>  This score is calculated based on the scores of Economic, Sociocultural, Environmental, Political, and Technology dimensions of subjective indicators. These indicators for each destination are measured using 10-Points Likert Scale.	$\frac{\text{Sustainability of Destination (SUBJECTIVE- SUS)}}{4}$ $= \frac{RESIDENT\_SUS + TOURIST\_SUS + BUSINESS\_SUS + GOVERNMENT\_SUS}{4}$	
<b>Total Score</b>	$\frac{\text{Total score of sustainability of destination = } OBJECTIVE\_SUS + SUBJECTIVE\_SUS}{2}$	

The score for each dimension, for objective and subjective indicators, and the total score will be calculated in the range of 0 to 100.

A closer score to 100 shows a higher level of sustainability of destination, whereas a score closer to 0 shows a low level of sustainability in the urban destination.

# Scorecard

- Each dimension in the index is scored on a scale from 0 to 100—for both objective and subjective indicators. A score closer to 100 means higher sustainability in that area.
- A score closer to 0 signals weaker performance and more urgent need for attention.
- This approach makes it easy to track and compare sustainability levels over time.
- *It also helps destinations prioritise tourism planning—focusing resources where the gaps are clearest.*

# Key Takeaway

- Many current frameworks, including GSTC, have provided an important foundation for defining sustainability in tourism—and continue to guide certification and benchmarking globally. However, they mostly work as **checklists**—great for standardisation,— but our index goes further by **actually measuring sustainability on the ground**.
  - Our indicators were **co-designed with local stakeholders**—making them **context-based and place-specific**. This means we include **stakeholder perceptions**, giving us insights not just into performance,— but also into how sustainability is **understood and experienced** at the destination level.
- *So, the TDSI combines **global relevance with local realism**—a key strength for actionable sustainability planning.*



# Conclusion

- This study developed a **context-based Tourism Destination Sustainability Index (TDSI)** tailored to **Malaysia and Thailand**.

The TDSI combines both:

- **Objective indicators** across four dimensions: *economic, social, environmental, and governance*, and
- **Subjective indicators** drawn from four key stakeholder groups: *residents, tourists, businesses, and government agencies*.
- These place-based indicators can help **monitor tourism impacts over time**, and **guide sustainable tourism development** at the destination level. The index offers a **practical tool** for tourism providers and policymakers to **plan, regulate, and evaluate** sustainability efforts.

➤ ***Ultimately, TDSI can support destinations in **staying attractive, resilient, and truly sustainable** in the long term.***

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*Thank you*

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Creative  
thinkers  
made here.