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Balancing Tourism and Environment: The ETM Model

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***Abstract*—**Environment both endowed and built are essential for tourism. However tourism and environment maintains a complex relationship, where in most cases environment is at the receiving end. Many tourism development activities have adverse environmental effects, mainly emanating from construction of general infrastructure and tourism facilities. These negative impacts of tourism can lead to the destruction of precious natural resources on which it depends. These effects vary between locations; and its effect on a hill destination is highly critical. This study aims at developing a Sustainable Tourism Planning Model for an environmentally sensitive tourism destination in Kerala, India. Being part of the Nilgiri mountain ranges, Munnar falls in the Western Ghats, one of the biological hotspots in the world. Endowed with a unique high altitude environment Munnar inherits highly significant ecological wealth. Giving prime importance to the protection of this ecological heritage, the study proposes a tourism planning model with resource conservation and sustainability as the paramount focus. Conceiving a novel approach towards sustainable tourism planning, the study proposes to assess tourism attractions using Ecological Sensitivity Index (ESI) and Tourism Attractiveness Index (TAI). Integration of these two indices will form the Ecology – Tourism Matrix (ETM), outlining the base for tourism planning in an environmentally sensitive destination. The ETM Matrix leads to a classification of tourism nodes according to its Conservation Significance and Tourism Significance. The spatial integration of such nodes based on the Hub & Spoke Principle constitutes sub – regions within the STZ. Ensuing analyses lead to specific guidelines for the STZ as a whole, specific tourism nodes, hubs and sub-regions. The study results in a multi – dimensional output, viz., (1) Classification system for tourism nodes in an environmentally sensitive region/ destination (2) Conservation / Tourism Development Strategies and Guidelines for the micro and macro regions and (3) A Sustainable Tourism Planning Tool particularly for Ecologically Sensitive Destinations, which can be adapted for other destinations as well.

***Keywords*—**Tourism, Environment, Spatial Planning, Model

I. Introduction

GLOBAL tourism is one of the biggest and fastest growing industries. The contribution of Travel & Tourism economy to employment is expected to rise from 1,734,00 jobs in 2009 or 10.1% of total employment to 2,193,000 jobs or 10.8% of total employment by 2019 [1]. The benefits of tourism, mainly economic, have been enormous especially for destinations in the developing and poor countries, especially those that depend on its natural attractions.

The quality of environmental surroundings is important for all forms of tourism. Tourists demand places that are unpolluted and free from waste. Many tourists also appreciate the wildlife and flora around them even in cases where this is not their main purpose of visit to a particular area.

On the other hand however, the phenomenal growth of the sector has been accompanied by severe environmental and cultural damage, especially in destinations that are close to or have exceeded their carrying capacity limits. The cultural and environmental resources are the assets upon which tourism depends, so these unsustainable impacts of tourism do not only degrade a destination's image, but also undermine the long term viability of the sector. Many newly emerging as well as established destinations promote sustainability, but adopt the same old practices with the same adverse effects that have been troubling tourism for decades.

The high rates of growth of tourism over the past two decades have seen the expansion of tourism into new destinations and regions in ways that have taken inadequate account of environmental protection, social impacts, or biodiversity conservation. The forecasted expansion of tourism for at least two more decades indicates that more attention must be paid to the planning of tourism using tools that can limit its impacts over the long term.

II. Literature Review

Review of Literature was undertaken to understand the need for an appropriate planning process for a tourism destination and to assess global trends in formulating the much needed tools for tourism planning and development. Without planning there is a risk that an activity will be unregulated, formless or haphazard and likely to lead to a range of negative economic, social and environmental consequences [2], [3]. In short, the absence of planning leads only to malfunction and waste. Studies indicate that the pressures of tourism are much greater in smaller towns and communities and impacts are immediately felt (Orbasli 2000)[1]. As a result, there is a risk of losing the core values of destinations' that tourists are looking for, which eventually force them to replace the existing destinations by new and fresh ones.

Ref [4] suggests that, experiences around the globe imply that unplanned tourism development has negative impacts on tourism destinations. The Helsingborg Statement on Sustainable Tourism which took place during 2007 identified that unchecked and unplanned tourism can result in destruction of resources and add up to the imminent problems like climate change, global warming etc.

Many authors, ([3], [4] and [5]) argue that tourism planning is a necessary activity for all countries in order to develop tourism in a sustainable way. The key objectives of tourism

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planning [2] include a frame work for shaping and controlling the physical patterns of development, conservation of resources, as well as a framework for marketing destinations. In its earlier stages, tourism planning was essentially physical or land-use planning, with little or no consideration of issues relating to conservation or sustainable development [6].

Attempts have been made by tourism researchers to develop indicators to assess sustainability of tourism destinations. Tourism research over the period has listed out various indicators relevant for sustainability (Ceron & Dubois, 2003; Choi & Sirkaya, 2006; WTO, 2004)[2]. [3]Using the Complex Adaptive Systems (CAS) approach Schianetz et al.(2008) had developed Systemic Indicator System (SIS) which is used as a methodological framework for the selection and evaluation of sustainability indicators for tourism destinations. The SIS methodology is used as a decision aid for tourism practitioners and planners to improve the effectiveness of measures for pollution prevention and mitigation.

Bearing these learning in mind, it is evident that efforts are ongoing in developing appropriate tools and indicators that would help planners and policy makers, and there is a need for further research and development of new tools. This paper presents a sustainable tourism planning model – The Ecology – Tourism Matrix (ETM) Model that attempts to strike a balance between Environment and Tourism, which has been tested in a destination within the Munnar Special Tourism Zone in Kerala, India.

III. THE ETM MODEL

The tourism planning and development master plan for the STZ should invariably take into account its environmental sensitivity and at the same time address its development needs at an optimum level. In a scenario where there is no sustainable tourism planning model, developments occur in a manner and place that is governed mostly by ad hoc measures and market forces, and will be irrespective of the characteristics and sensitivity of the destination. Examples are the commercial establishments, street vendors and hawkers that spoil the tranquility of a beach destination, and the beauty of an ecologically sensitive mangrove rich area being lost to littering of plastic wastes by insensitive tourists. It is this concern of balancing Tourism Development and Environment Conservation in the planning process of a destination that led to the formulation of the Ecology – Tourism Matrix Model. The ETM model places paramount focus on resource conservation and sustainability that would help develop a Sustainable Tourism Development for Munnar Special Tourism Zone (STZ).

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Choi, H.C. and Sirakaya, E. (2006) Sustainability indicators for managing community tourism. Tourism Management 27, 1274- 1289

World Tourism Organisation (WTO) (2004) Indicators of Sustainable Development for Tourist Destinations: A Guidebook, Madrid: WTO

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A. Definitions

The basic units of the ETM Model are the (1) 'Nodes' - the different attractions/ activity centres that draw tourists, and (2) 'Hubs' – the major towns/ city centres within the region or sub-region. Identification of the basic unit - the Nodes is done through a Tourism Resource Inventory, developed through focus group discussions, stakeholder consultations and field surveys. In addition, the model defines the regional and strategic components constituting the Special Tourism Zone (STZ), which are: (1) Region – which is the STZ itself taken as a single unit, (2) Sub – regions that are constituted by a hub (town) and the surrounding nodes (attractions/ activity centres), and (3) Connectivity elements that link a hub to nodes and a hub to other hubs (Fig 1).

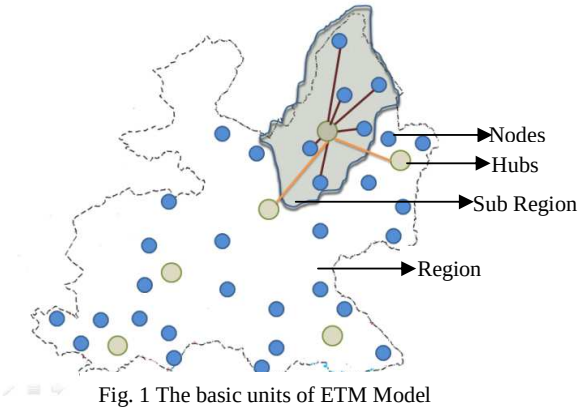


Fig. 1 The basic units of ETM Model

B. Tools

The ETM Model utilizes two indices - Ecological Sensitivity Index (ESI) and Tourism Attractiveness Index (TAI) to assess tourism attractions (nodes) within the Special Tourism Zone. The assessment is based on a set of parameters and sub – parameters and their assigned weightage, which is as follows: Ecological Sensitivity Index (ESI): This index is used for assessing the sensitiveness of a node from its ecological point of view. It assesses the node on the basis of three core parameters viz., ecosystem, biodiversity and landscape and about 15 sub parameters. Within each parameter, weightage has been assigned for each of the sub-parameter accordingly (Table 1). The composite score assigned for ESI is 250, which is later converted to a scale of 100. *Tourism Attractiveness Index (TAI):* The TAI is applied to each node to understand its tourism attractiveness, both existing and potential. Evaluation of the node is carried out through the application of three important parameters, viz; Inherent competitiveness, Significance and Activity Spectrum, and 7 sub – parameters, collectively constituting a score of 100 (Table 2). The highest score of 50 has been given to inherent competitiveness, followed by Significance (30) and Activity Spectrum (20).

C. Ecology – Tourism Matrix (ETM)

Each node after being evaluated separately using ESI and TAI, are graded as High, Medium or Low depending upon the scores they attain, based on the following scale:

1. High - ≥ 75
2. Medium - 51 – 74
3. Low - ≤ 50

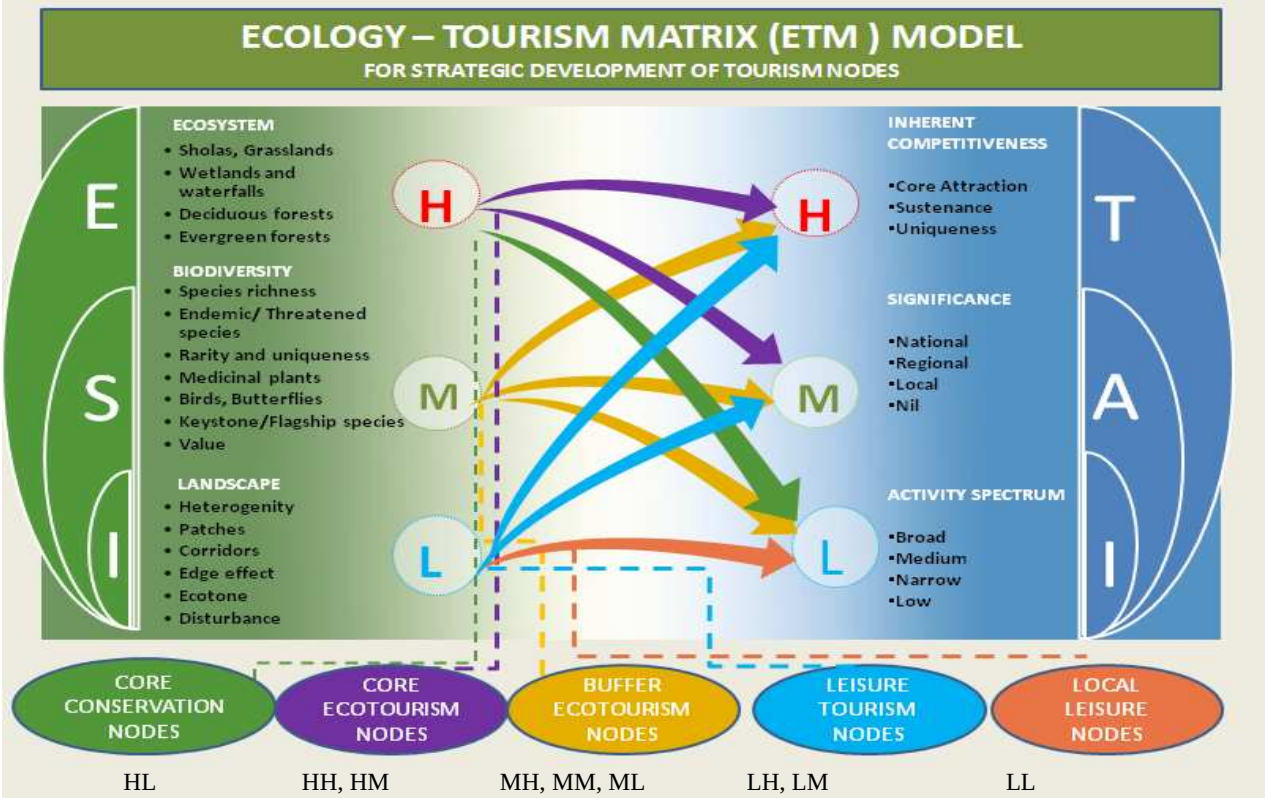
TABLE I
THE ECOLOGICAL SENSITIVITY INDEX

No		Parameter	Assigned Score
1		**Ecosystem (100)**	30
	1.1	Sholas	20
	1.2	Grasslands	20
	1.3	Wetlands and waterfalls	15
	1.4	Deciduous forests	15
	1.5	Evergreen forests	
2		**Biodiversity (100)**	50
2a		Flora (50)	10
	2.1	Species richness	5
	2.2	Endemic species	5
	2.3	Threatened species:	5
	2.4	Rarity and uniqueness	5
	2.5	Medicinal plants	5
	2.6	Keystone species	5
	2.7	Flagship species	4
	2.8	Educational value	4
	2.9	Scientific value	2
	2.10	Recreational value	
2b		Fauna (50)	10
	2.1	Species richness	5
	2.2	Endemic species	5
	2.3	Threatened species:	5
	2.4	Rarity and uniqueness	5
	2.5	Keystone species	5
	2.6	Flagship species	4
	2.7	Birds	3
	2.8	Butterflies	2
	2.9	Recreational value	3
	2.10	Educational value	3
	2.11	Scientific value	
3		**Landscape (50)**	
	3.1	Heterogeneity	15
	3.2	Patches	5
	3.3	Matrix of patches	5
	3.4	Corridors	5
	3.5	Edge effect	5
	3.6	Ecotone	5
	3.7	Disturbance	10

TABLE II
THE TOURISM ATTRACTIVENESS INDEX

No	Parameter	Assigned Score
1	**Inherent Competitiveness (50)**	
1.1	Core Attraction	
	Endowed Attraction	30
	Built Attraction	20
1.2	Sustenance	
	Permanent in Nature	10
	Seasonal in Nature	6
	Events based in Nature	4
1.3	Uniqueness	
	Has Uniqueness	10
	Has no Uniqueness	0
2	**Significance**	
2.1	National	
	Existing International/ Central Notification	30
	Any Potential National Relevance	30
2.2	Regional	
	Existing State Notification	20
	Any Potential Relevance to State	20
2.3	Local	
	Used only for local leisure purposes	10
2.4	No Significance at all	0
3	**Activity Spectrum**	
3.1	Range and number of Soft, Hard & Other Activities	
	(Broad) Range of 3 / More than 5 activities	20
	(Medium) Range of 2 / 3 - 4 activities	10
	(Low) Range of 1 / 1 -2 activities	5
	No Activity	0

Fig. 2: Classification of Nodes according to the ETM Model



Integration of the two indices ESI and TAI will form the Ecology – Tourism Matrix (ETM), which result in a classification of the nodes as (1) Core conservation Zone, (2) Core Eco tourism Zone, (3) Buffer Eco tourism Zone, (4) Leisure Tourism Zone and (5)Local Leisure Zone, according to its Conservation or Tourism Significance (Fig 2).

The criteria for classification of tourism nodes based on the Ecology –Tourism Matrix is given as Table III.

TABLE III
CRITERIA FOR CLASSIFICATION OF TOURISM NODES

Classification	ESI	TAI
Core conservation Zone (HL)	High	Low
Core Ecotourism Zone (HH, HM)	High	High, Medium
Buffer Ecotourism Zone(MH, MM, ML)	Medium	High, Medium, Low
Leisure Tourism Zone (LH, LM)	Low	High, Medium
Local Leisure Zone (LL)	Low	Low

IV. SPATIAL INTEGRATION OF CLASSIFIED TOURISM NODES INTO THE PLANNING PROCESS

Once the nodes are classified, spatial integration of the nodes and the identified hubs are done, based on the Hub & Spoke Principle. Each identified hub is connected to a number of nodes surrounding it, which may include all or some of the different categories of nodes. In cases where there are two or more towns / junctions competing with each other, a comparison between them on the basis of their general infrastructure availability will decide as to which town will be chosen as the Hub for tourism planning. Among the nodes connected to a Hub, there will be one or more flagship nodes, which is either the most popular tourism attractions in the vicinity,or those nodes that belong to the Core Conservation or Core Eco-Tourism Zone. A Hub and the nodes connected to it in this manner will constitute a specific Sub – Region, and different sub-regions thus formed will together constitute the Region, which in this case is the Special Tourism Zone itself.

V. DEVELOPMENT OF GUIDELINES AND STRATEGIES

This spatial integration forms the basis for infrastructure development, connectivity enhancement, and formulation of separate sets of appropriate Conservation/ Development control strategies and guidelines for the nodes, hubs, sub-regions, and the STZ as a whole. Separate guidelines and strategies will be prepared from conservation and development point of view. Any kind of development in within a sub-region will be governed by the characteristics of the flagship node/ nodes constituting it. The most significant among these are the conservation / development of each of the nodes, which will be governed by specific strategies, as follows:

Core Conservation Zone: This is the most sensitive area ecologically. And it represents High ESI and Low TAI. The

plan shall prescribe that such areas should be devoid of all kinds of tourism interference including tourism infrastructure. The whole focus should be on conservation and preservation.

zone' instead of a single destination or a tourism product. This act also identifies spatial planning as the most important step in tourism development.

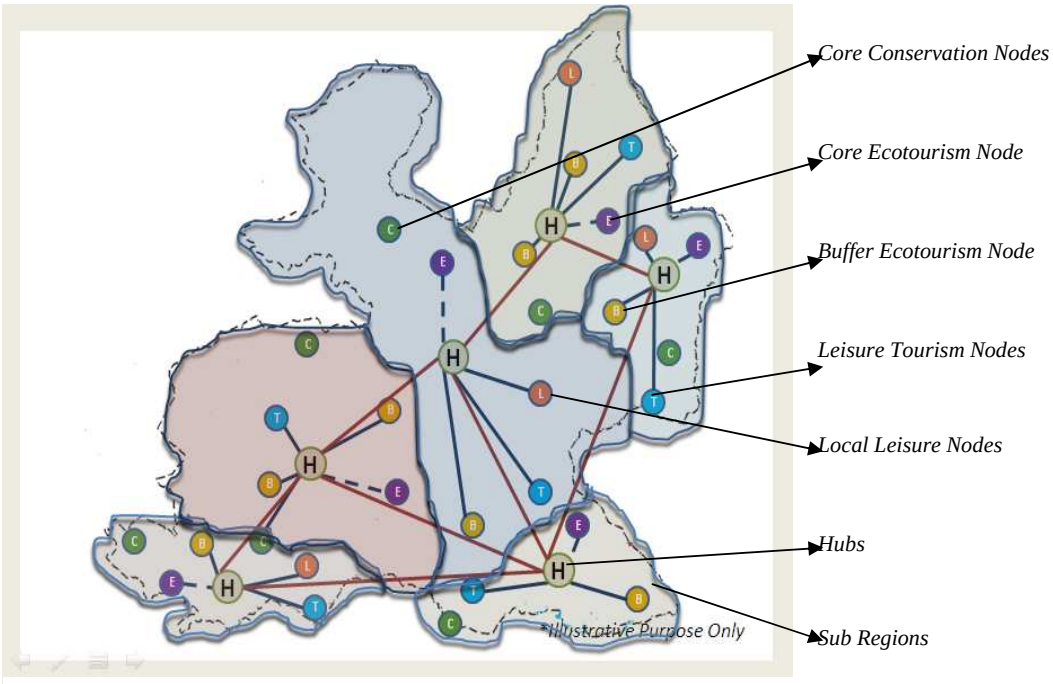


Fig. 3 Spatial Integration of the Classified Nodes

Core Ecotourism Zone: These are zones with High ESI- High TAI or High ESI – Medium TAI. All these zones can have tourism activities however very limited and regulated. All the infrastructural requirements should be developed in a suitable area away from the node.

Buffer Ecotourism Zone: These are nodes comprising of Medium ESI- High TAI, Medium ESI- Medium TAI and Medium ESI- Low TAI. Although ecotourism are allowed here, it should be planned and regulated. The development of minimum basic infrastructure and amenities are permitted at the node.

Leisure Tourism Zone: This indicates either the Low ESI- High TAI or Low ESI – Medium TAI nodes. Being less significant from ecological point of view such places are suited for large scale infrastructural developments.

Local Tourism Zone: Nodes which are low in ESI and TAI can be termed as Local tourism zones. Such zones are suited for mass tourism projects where leisure based activities are well recommended.

VI. Application of ETM Model to a Tourism Destination

In Kerala, which is better known as God's Own Country, tourism has been recognized as one of the core competent sectors by the Government of Kerala. The state has recently formulated the *Kerala (Conservation and Preservation of Areas) Act 2005* under which the focus for tourism development has been shifted to the 'conservation of tourism

Acclaimed as one of the most popular hill stations in India, Munnar is one of the regions that have been identified as a Special Tourism Zone. Falling part of the Western Ghats ecosystem, Munnar STZ is rich in biodiversity and natural beauty. Munnar has long been known as a summer destination from the time of the British Raj and now it is rated as one of the most visited destinations in southern India. Over the period, it has been widely observed that the condition of Munnar is in a deteriorating stage, due to the encroachments and deforestation. Munnar now is essentially a tea garden and the original vegetation is confined to a small area, restricted to some of the protected areas, most of which can be attributed to unplanned and destructive tourism development. Administratively, the region comprises of 6 Panchayats (Local Self Governance areas) namely, Munnar, Devikolam, Chinnakanal, Pallivasal, Vattavada and Kanthalloor.

The usefulness of ETM model has been tested and validated by applying it in Chinnakanal which is part of Munnar STZ, and has been found suitable for environmentally sensitive destinations. The application results in a multi – dimensional output, viz., (1) Classification system for tourism nodes in an environmentally sensitive region/ destination (2) Conservation / Tourism Development Strategies and Guidelines for the micro and macro regions and (3) A Sustainable Tourism Planning Tool particularly for Ecologically Sensitive Destinations.

VII. Conclusion

The ETM Model has been developed with specific focus on tourism destinations that are environmentally rich and sensitive. The model strives to achieve a balance between the infrastructure developments and conservation needs of a destination; and at the same time not compromising on the essential infrastructure facilities to be provided for the tourists. This has been developed in the background that in many of the developing countries, the absence of such a model turns out to be detrimental to the very existence and beauty of precious natural destinations.

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