Identifying Core Indicators of Sustainable Tourism: A Path Forward?

Abstract

Progress toward a more sustainable tourism sector at an enterprise level has been slow, even though a number of studies have developed a variety of indicators. Indeed, so many indicators have been developed that industry seems to be overwhelmed by choice, leading to inaction, poor decision-making or adoption of the easiest option. Perhaps, simplicity is the way forward. The purpose of this paper is to evaluate a number of studies that have proposed a variety of indicator themes to identify commonalities among them that may serve as a starting point for enterprises to move towards a more sustainable path. Seven key indicator themes emerged, including job creation, business viability, quality of life, water quality, waste management, energy conservation and maintenance of community integrity. The term 'indicator theme' is used for it identifies what needs to be assessed to monitor progress towards sustainable tourism, while simultaneously recognizing that specific measurement metrics may vary depending as they are site, context and enterprise specific.

Keywords: Indicators; Meta-analysis; Sustainability; Sustainable tourism

Introduction

This paper argues that a fundamental rethinking of our approach to sustainable tourism at an enterprise level is needed. At present, the tourism and hospitality sectors are overwhelmed by indicators, leading to inaction or selective choices of how to act that essentially embeds existing practice (and non-practice) as 'sustainable', as much by omission as by real action. Instead of producing impressive looking lists of indicators, which are largely ineffective, the authors propose adopting an alternative approach to focus on a smaller set of real, actionable items industry can adopt, embed in its corporate culture and act on in a meaningful manner. Insights into the identification of the core dimensions of sustainable tourism and the identification of the relevant indicator themes under each dimension may come from a meta-analysis of studies published between 2000 and 2015 that

have proposed and validated sustainable tourism indicators. In doing so, it may be possible to identify a set of core indicators and associated actionable steps that all those involved in the tourism industry can pursue.

Sustainability and the Tyranny of Choice Overload

The path to a more sustainable tourism sector is a journey that consists of many small steps, where progress is made incrementally, though not necessarily slowly, and not necessarily sequentially. Sixteen years ago, McCool, Moisey and Nickerson (2001) felt that key issues relating to the process (how to progress toward a sustainable path?) and the object (what do we need to sustain?) were unresolved. These issues largely remain unresolved today, in spite of continuous efforts to encourage sustainable tourism (Williams & Ponsford, 2009; Dodds & Butler, 2010). The reasons for lack of resolution are manifest. Time scale is always problematic, for economic sustainability can be measured immediately, while social, cultural and ecological sustainability may only be measured over many years, and in some cases, even generations. Moreover, sustainability is a never ending journey, as technical and managerial innovations along with changes in consumer behavior will always create opportunities to improve performance.

In spite of some small successes, a number of studies identify a range of underlying structural and attitudinal issues that seem to inhibit many businesses from adopting more sustainable practices. Ignorance is common, for while many industry operators are genuinely concerned about sustainability, few really understand the specifics of issues such as climate change, adverse environmental, and social impacts (McKercher, Mak, & Wong, 2014; Muangasame & McKercher, 2015). These issues may be well known, but are not known well. Kietäväinen and Tuulentie (2013), for example, report that climate change is still regarded as an abstract concept that may affect businesses in the long term, but not immediately. Additionally the array of issues to be considered is so vast (Tanguay, Rajaonson & Therrien, 2013) that many in industry believe the actions of individual operators contribute little (McKercher et al., 2014). The belief that adopting such measures will add to costs and therefore reduce competitiveness is also common (Bramwell & Lane, 2013). Finally, difficulties in identifying and operationalising a set of meaningful and measureable indicators inhibit progress (Cruz, 2003).

Indicators are the central issue for they also inform matters relating to ignorance, failure to believe one's actions can make a difference and inertia inhibiting action. Butler (1999) reminds us that, without indicators, the term 'sustainable' becomes little more than a meaningless hyperbole. Ironically, the core problem is that we are overwhelmed by too many indicators rather than too few (Marzo-Navarro, Pedraja-Iglesias, & Vinzon, 2015), with Moldan, Stewart and Plocq-Fichelet (2007, p. xxiv) commenting that "too many indicators, indicator sets and indices have been developed" since the Rio Earth Summit. The attempt by the United Nations World Tourism Organization (UNWTO) to encourage a more sustainable tourism sector through the publication of its *Indicators of Sustainable Development for Tourism Destinations: A Guidebook* (UNWTO, 2004) highlights the issue. This manual is over 500 pages long, identifies 13 broad dimensions of sustainability covering over 40 major sustainability issues, ranging from the management of natural resources (waste, water, energy, etc.), to development control, satisfaction of tourists and host communities, preservation of cultural heritage, seasonality, economic leakages, and climate change. It then proceeds to identify more than 150 sub-components and defines over 700 possible indicators.

This publication represents a classic case of choice overload. Choice overload (Schwartz, 2014), occurs when the number of alternatives or choice options is greater than the person's ability to make effective and efficient decisions (Haynes, 2009). The impact of choice overload depends on the complexity of the choices available, how well the options align (alignment or non-alignment) with each other and the presence or lack of a clearly preferred option (dominant choice, non-dominant choice) (Bollen, Knijnenburg, Willemsen, & Graus, 2010; Chernev et al., 2015). Non-alignment occurs when a set of discrete choices is presented that are largely unrelated (Gourville & Soman, 2005), while non-dominance occurs when no one option is clearly perceived as being best (Fasolo, McClelland, & Todd, 2007). The likelihood of choice overload occurring is enhanced when the person making the decision is largely ignorant of the issue and, therefore, unable to make an informed choice, for choices always involve some sort of trade-off (Chernev et al., 2015). Sustainable tourism issues as varied as ending sex tourism, to waste management and seasonality are evidence of significant non-alignment found in the UNWTO manual, while the failure to identify core issues reflects non-dominance. In short, while the manual attempts to cover the broad array of sustainability issues facing the tourism sector, it is largely ineffective

because it is simply too broad and too comprehensive. Preparing impressive lists ignores the fact that people create mental 'ladders' that rank items and are most likely to act on those items appearing near the top of the list, while ignoring those lower down the list (Ries & Trout, 1986).

The net result is a tendency to avoid acting (Park & Jang, 2013), to choose simple alternatives that require little personal investment, continue with habitual or routine actions (Bettman, Luce, & Payne, 1998; Chernev, 2003; Griffin, Liu, & Khan, 2005; Iyengar & Kamenica, 2007); or to pick and choose options that suit one's narrow personal interests, even though they may not be in the best interests of others (Miller & Twining-Ward, 2005). Picking and choosing emerged as a key barrier to the effective implementation of the *7 Greens* tourism policy in Thailand, where so many items were identified that operators could claim to be 'sustainable' by 'cherry picking' items, without actually changing their business practice (Muangasame & McKercher, 2015). In short, bigger is not necessarily better. So many indicators have been developed that they obfuscate the issue, rather than clarifying it.

An alternative school of thought suggests the identification of a limited set of core actions that can be adopted fairly easily and embedded in the corporate culture, and to define meaningful indicators to assess progress to achieving targets (Gourville & Soman, 2005; Bollen et al., 2010). A small set of secondary actions can be added at a later date for those who have deeper knowledge of the issue (Fasolo et al., 2007). This strategy has worked well for organisations such as Shangri-La Hotels in Bangkok which invested about US$400,000 to install a solar hot water heating system, with the net result that it has reduced its LPG consumption by 30% over annum (Pimolsindh & Traisupa, 2012). TUI Travel, one of Europe's largest tour operators has identified sustainability and corporate social responsibilities as core values, with the result that it has reduced carbon emissions per passenger/km by 10% for the past six years and at the same time has delivered 10 million fairer and greener holidays (TUI Group, 2015a). TUI group has achieved this result through a number of core actions including operating carbon efficient airlines (i.e. TUI fly, Dreamliner), promoting greener and fairer holidays, and providing sustainable tourism skills and education to school children through the TUI's Eco-traveler education programme (TUI Group, 2015b). Scandic Hotels has also succeeded in cutting its waste production per guest

room by two-thirds and its water consumption by half (Cuenllas, 2014) through its core programme, *The Resource Hunt*, that focused on three core actions of sorting waste, reducing unnecessary water use, and dimming or turning off corridor lights to save energy (Goodman, 2000; Cuenllas, 2014).

Key features of effective indicators are relevance, availability of data to evaluate them, and the feasibility of comparing results over time (Blancas, Gonzalez, Lozano-Oyola, & Pérez, 2010). Moreover good indicators have the added advantage of separating central from peripheral issues which tend to obscure priorities and hence retard progress (Keeble, Topiol, & Berkeley, 2003; Manning, 1999). Again, simplicity is the key. The tendency to develop overly ambitious sets of indicators may be politically appealing but accomplish little more than greenwashing. Moreover, the combination of funding constraints, lack of commitment and support, lack of proper implementation and action framework, unclear goals and outcomes, unclear definition of stakeholder roles, and little development of systematic measures of assessment for enterprises is a recipe for failure (Marzo-Navarro et al., 2015; McCool & Stankey, 2004; Miller & Twining-Ward, 2005; Schianetz, Kavanagh, & Lockington, 2007; Larson & Poudyal, 2012).

The time has come to take a step back and look at what has already been proposed, rather than constantly creating new indicators. Much excellent research has been conducted, but it has tended to be on an ad hoc and piecemeal basis. Little attempt has been made to integrate these studies to see what common themes and sub-themes emerge that may be useful in identifying a smaller set of core, actionable sustainable tourism indicators that can be adopted by industry. Broad issues of how these indicators can be measured can also be developed from a review of past studies, although it is recognized that specific measures for each indicator may vary from business to business.

Method

A meta-analysis of 27 studies that have proposed sustainable tourism dimension and indicator themes that were published between 2000 and 2015 is undertaken. Gretzel and Kennedy-Eden (2012) note that meta-analysis has the potential to offer new insights into a collective body of research. Doing so can provide a degree of scientific rigour that cannot be achieved by any single study (Crouch, 1995). Effective meta-analysis studies begin with

a clear definition of the research question and research hypotheses or propositions (McKercher, Wang & Park, 2015).

Studies were selected based on the criteria determined by the research questions. In particular, they had to be relevant and potentially applicable at an enterprise level, even though some may have adopted a broader perspective. Identified indicators also had to be validated through either expert opinions (i.e. Delphi technique) or by stakeholder inputs (i.e. interviews, workshops or surveys) to ensure their relevance. An initial search for candidate papers was conducted on online databases, such as Google Scholar, Google, Scopus and Web of Science using the keywords "indicators of sustainable tourism," "sustainability," sustainable tourism," and "indicators of sustainability." The papers included in this study are summarised in Table 1.

Insert Table 1 about here

Content analysis was conducted with NVIVO software, with the results uploaded onto an SPSS spreadsheet to facilitate further analysis. The coding exercise used is a thematic analysis, which seeks to unearth the pattern within a data set (Attride-Stirling, 2001). This method helped identify patterns that are prevalent in a text. Prevalence denotes the number of occurrences across the data set (Ryan & Bernard, 2003; Braun & Clarke, 2006).

Analysis sought first to identify the dimensions of sustainability that emerged from these works and second, to identify potential indicator themes under each dimension. The term 'indicator theme' is used for it identifies what should be assessed to measure progress towards sustainable tourism, without identifying specific metrics to measure progress. Specific metrics must be fit for purpose, and therefore, have to be site, context and enterprise specific.

Ten papers were analysed initially to identify broad themes that could be used to identify sustainability dimensions and their respective indicators in accordance with accepted protocols for use of this software. Prospective themes and indicators were updated as new items emerged when the remaining studies were analysed. This updating process

continued until saturation. At this point, new data categories were fit into the already developed ones (Charmaz, 2012). Items were grouped into common issues, even though different terms may have been used to describe them. From here, further analysis sought to identify the dominant thematic domains and sub themes. For example, the coding exercise for the social indicator of *Residents' involvement, participation and awareness* involved initial identification of common basic themes as used by authors (Residents'/Community involvement; Residents' participation and awareness; and Tourism awareness). The initial unique coded terms used by each author upon reflection were further grouped under a common code of *Residents' involvement, participation and awareness,* which was further coded as a social indicator.

Some limitations of this study must be noted. To begin, the 27 works likely do not constitute the whole universe of primary data-based indicator studies. No doubt, others may have emerged if different keywords or different languages were used. Further, the adoption of a qualitative approach to the grouping and categorisation of indicators has the inherent risk of introducing subjectivity (Drapeau, 2002), a risk identified by Roberts and Tribe (2008). However, the probability of researcher bias was minimised through triangulation among the three authors of this paper, where each independently examined the results and developed their own groupings, before comparing and finalising the set presented below.

Findings

The Findings section is divided into two parts. The first part focuses on the identification of key, relevant sustainability dimensions, while the second part identifies indicator themes for each relevant dimension.

Four Dimensions of Sustainability and Three Peripheral Dimensions

Somewhat surprisingly, the first task faced by the authors was the need to differentiate central from peripheral dimensions of sustainability. Sardianou, Kostakis, Mitoula, Gkaragkani, Lalioti and Theodooropoulou (2016), summarising the literature, remind us that sustainable tourism development must focus on the four areas of economic, environmental, social and cultural sustainability. These themes adhere to Elkington's (1994) universally accepted triple bottom line approach to sustainability, quadruple if the

dimension of social impacts is disaggregated to include social and cultural dimensions. It was therefore surprising to discover that the seven different sustainability dimensions were identified from the set of studies, as shown in Table 2. The first four items, economic, environmental, social and cultural, align closely with the accepted principles, while the three other dimensions of political, managerial and technological, do not.

Insert Table 2 about here

The inclusion of these added dimensions (ie. political, managerial and technological) creates two major problems. The first is that they introduce an element of mission creep that moves away from the core question raised by McCool et al. (2001) of what are we trying to sustain, and instead conflates process issues with core elements. Political, managerial and technological issues are more of a reflection of a means to an end (in the case of technology) or of catalytic preconditions that facilitate the means to an end (in the case of political and managerial considerations), than ends in themselves. The second, and far more important problem, is that to consider these three peripheral sustainability dimension would be to exonerate people from taking any personal responsibility and therefore justify non-action. Transference of responsibility, and therefore, obligation to act is common among the tourism industry (McKercher et al., 2014; Thomas & Vanel, 2009). People often feel powerless because issues are so vast, or they tend to blame others, and in doing so, call on others to act first (either government, other stakeholders or consumers) (McKercher, Prideaux, & Pang, 2103, McKercher et al., 2014). Introducing politics, especially, but also management and technology, as core dimensions essentially provides operators an excuse to avoid taking any personal responsibility. As such, they have been removed from further analysis to identify indicators.

Indicator Themes

Table 3 summarises the frequency with which specific indicator themes were mentioned for each of the four core dimensions of economic, environmental, social and cultural sustainability. On the one hand, the studies identified the breadth of the issues faced by the tourism sector, with more than 40 unique indicator themes identified. Yet, on the

other hand, a broad consensus of opinion emerged as to key themes within each of the dimensions, as discussed below.

Insert Table 3 about here

Business viability and its associated indicator of job creation were mentioned in three quarters or more of the studies as indicators of economic sustainability. Business viability corresponds closely to Butler's (1999) and Swarbrooke's (1999) contention that sustainable tourism can only be achieved if businesses are commercially viable. Achieving the optimal mix among economic, environmental and social/cultural objectives necessarily involves trading off or sacrificing some profitability to achieve the other objectives (Brown, Adger, Tompkins, Bacon, Shim & Young, 2001; Moeller, Dolnicar & Leisch, 2011). Such a tradeoff may be seen as an unaffordable luxury if the business is only marginally viable. Instead, operators may adopt practices to ensure the business survives by looking at ways to reduce costs or to re-allocate resources to generate income.

Job creation may not be an end in itself, but it does relate closely to the range of issues identified under social sustainability, and as such, is worthy of inclusion as an important indicator thematic domain. Job creation relates to both the number of jobs created and the quality of jobs, suggesting a shift from the narrow well-known quantitative effects of tourism (i.e. quantity of jobs) to the inclusion of the quality of jobs created, which is seldom emphasized by tourism enterprises or national tourism plans (Liu & Wall, 2006). Given that the number of jobs created does not reflect other relevant issues surrounding the nature of jobs (i.e. pay, working conditions and opportunity for advancement), several scholars have argued for the inclusion of quality of jobs for a comprehensive understanding of the employment effects of tourism (e.g. Roehl, 1999; Liu & Wall, 2006). In essence, the economic indicator theme of job creation should be assessed in terms of both quantity and quality of jobs created.

The other 10 themes identified under the economic dimension represent possible metrics that can be used to assess the two indicators. Business viability is a direct function of the volume of visitors, subsequent occupancy levels, expenditure and length of stay, while satisfaction and repeat visitation rates relate to the quality of the product offered. Unemployment is a crude indicator of job creation, but may not be directly applicable at an

enterprise level. Instead, local ownership, expenditure, volume and visitor satisfaction influence the potential to create jobs.

Water quality and solid waste management emerged as the two core issues under the dimension of environmental sustainability. Global concerns about water use and its role in tourism services warrant its inclusion as an indicator of sustainable tourism (Gössling et al., 2012; Hadjikakou, Chenoweth, & Miller, 2013), with the key issue lying in the indirect water use of tourism, with food constituting a significant part of tourism's consumption of water (Hadjikakou, Chenoweth, & Miller, 2013). Solid waste management, similarly, represents one of the key environmental management issues of both small and large firms in the tourism and hospitality industry (Radwan, Jones, & Minoli, 2012; Pirani & Arafat, 2014).

It is also interesting to note that most of the other environmental thematic indicators lie outside the direct control of operators, with the exception of recycling and energy consumption. Here recycling is a possible metric to measure solid waste management. Somewhat surprisingly, energy conservation was only identified in only one quarter of the papers. Yet, this is one area where operators can exert a great deal of control, as highlighted by the Shangri-La case in Bangkok.

The resolution of issues relating to air and water quality, pollution, number of endangered species and overall environmental awareness fall outside the direct ability of industry to resolve. Clearly, businesses do have much control over the emissions they produce, and can adopt a number of strategies to reduce their own ecological footprint. But addressing broader pollution, environmental degradation and resource over-consumption practices is something that requires dedicated policies and actions by central governments.

The thematic indicators for social and cultural sustainability are more nuanced and often location-specific. The sets of social and cultural indicator themes identified highlight the scope of the issue facing the tourism sector. Tourism touches all aspects of a community, in ways both beneficial and detrimental. While a large number of social sustainability thematic indicators were identified, on closer inspection, they reflect different elements of quality of life. The dimension by which quality of life is measured reflect the evolving

nature of this topic in the tourism literature and includes such elements as community satisfaction (Choi & Sirakaya, 2006), safety and security (Marzo-Navarro et al., 2015), access (Larson & Poudyal, 2012) and community health (Choi & Sirakaya, 2006).

In a similar manner, while a broad set of issues emerged in the cultural dimension they all relate to maintaining cultural integrity, especially of indigenous and minority communities (Choi & Sirakaya, 2006). Retention of local customs and language as well as maintenance of cultural sites were core themes for indigenous communities, while concerns regarding threats to local cultures have led to calls for more proactive cultural management and preservation (Besculides, Lee & McCormick, 2002).

Both the dimensions and the range of indicator themes highlight the challenge of operationalising social and cultural sustainability at an enterprise level. Operators can exert direct control over such indicator themes as gender equity, sex tourism, child sex abuse, access to community assets used by tourism and to a lesser extent resident involvement in tourism. However, most of the other indicator themes, such as community involvement, represent classic examples of the 'tragedy of the commons' syndrome, where effects of the actions of individual enterprises may be minimal, but the collective action of all enterprises may exert significant impacts on communities and certain populations within communities. They also represent the type of issues for which it is easy for operators to abrogate personal responsibility or to call on an amorphous other, usually 'government' or the 'tourist' to act.

Discussion and Conclusions: Towards a Core set of Achievable Sustainable Tourism Indicators

It is a relatively easy task to produce policy, but, it is much harder to implement it in a meaningful way, especially among such a diverse group of stakeholders as is found in the tourism sector (Krutwaysho & Bramwell, 2010). In spite of 30 years of rhetoric, actual progress towards a more sustainable tourism sector has been slow. While there are individual examples of excellence, they seem to be more of the exception than the norm. Pulido-Fernández, Andrades-Caldito, and Sánchez-Rivero (2015, p.47) note that a general criticism of sustainable tourism is that both academics and public agencies have taken the concept on board with a surplus of enthusiasm but a deficit of results. They note that

academics have generated a huge amount of literature but few practical tools while public agencies have misused the term to legitimize tourism development decisions. Yet, in spite of these criticisms, it is also widely accepted that all sectors of the community, including tourism, must move toward a more sustainable future and that effective operationalization of any policy must occur at an enterprise level.

This paper has argued that an overabundance of non-alignable and non-dominant indicators leads to choice overload, inaction, selective action or justification of continuation of existing practices. Too many choices, then, represents the greatest inhibitor to more widespread adoption of sustainable tourism practices. A rethink is needed. Instead of developing extensive lists of rather meaningless indicators, we need to focus on a small set of meaningful, enterprise-specific indicator themes that can be adopted relatively easily and then embedded in organizational culture.

A meta-analysis of 27 studies was undertaken to identify what, if any, common themes emerged from these studies that may represent a starting point. These papers were instructive in many ways. To begin, they illustrated a degree of mission creep in the conceptualization of sustainable tourism, by identifying three peripheral dimensions, along with the four central dimensions that aligned closely with Elkington's (1994) triple bottom line concept. In addition, the large number of indicator themes identified under each of the dimensions highlights how deeply tourism touches all aspects of the environment it encounters. For the most part, the set of core and peripheral dimensions identified from the papers provide insights on how sustainability could be positioned in tourism particularly of what is core in the short term and what is not. This important classification provides clear path for most organizations coming to terms with which dimensions and indicators to work towards within a particular time frame.

Insert Figure 1 about here

While no single perfect set of indicators exists (Manning, 1999), six key indicator themes were identified most commonly across the studies evaluated in this paper (Table 4). The authors propose adding a seventh theme, energy conservation, even though it was

identified in a minority of studies. All can be considered as useful first steps for tourism enterprises to adopt, and importantly, address the essential question posed by McCool et al. (2001) of "what should tourism sustain?" Moreover, the other indicators that emerged in the study may provide a basis for enterprises to develop their own specific metrics to measure their current status, set goals and assess progress toward achieving the goals.

Insert Table 4 about here

Operationalising economic and environmental indicator themes will be relatively easy to achieve, as absolute metrics can be identified and monitored for these aspects of sustainability (income, permanent jobs created, amount of solid waste, amount of recyclable good, energy consumption, etc.). Moreover, existing managerial practices can be adopted to optimise economic benefits and to minimise energy use and waste production, while existing technical solutions also address environmental concerns. Addressing the type of social and cultural indicators identified will be more challenging for they often defy simple resolution, require industry- and community-wide involvement and involve a deep commitment on behalf of enterprises to embrace corporate social responsibility in a meaningful manner. Yet, examples elsewhere indicate that these goals can also be achieved.

Bigger is not better, especially as far as sustainable tourism practice is concerned. The path to a more sustainable tourism sector is a journey that consists of many small steps, where progress is made incrementally. Overwhelming industry with too many choices serves only to delay real progress. Instead, adopting a smaller set of core, yet manageable actions represents a powerful first step, and the definition of a core set of unambiguous and universal indicators by which these actions can be guided and assessed is an essential step in enabling this.

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Table 1- Data sources

Authors	**Sources of validated sustainable tourism indicators**	**Study setting**
Blackstock , White, McCrum, Scott, & Hunter (2008)	Consultant input, interviews, and review of strategic documents	Scottish National Park's
Castellani & Sala (2010)	Consultation, analysis and planning involving thematic focus groups with local stakeholders, interviews and surveys with local actors and experts.	Alpi Lepontine, Italy
Chávez-Cortés & Maya (2010)	Interviews and specialized literature	Copalita, Mexico
Choi & Sirakaya (2005)	Literature review, Survey & Delphi technique	Texas
Choi & Sirakaya (2006)	Delphi technique	N/A
Cottrell, Vaske, & Roemer (2013)	Literature Review & Survey	Frankenwald Nature Park (FNP) in Germany
Cvelbar & Dwyer (2013)	Literature Review, Delphi technique, & Personal interviews/Questionnaires	Slovenia
Jurado et al.(2012)	Literature Review; interviews; survey, Delphi Technique	Eastern Costa del Sol (Spain)
Logar (2010)	In-depth interviews & literature review	Crikvenica, Croatia
Lozano-Oyola et al.(2012)	Literature review & Survey	Andalusia region, Spain
Marzo-Navarro et al. (2015)	Literature, expert review & residents survey	Colon and San Salvador (Argentina).
McCool et al. (2001)	Questionnaires	Montana
Mihalič et al.(2012)	Literature review, Delphi technique, & Survey	Slovenia
Miller & Twining-Ward (2005)	Literature review, local workshops & interview	Berewala, Sri Lanka
Miller (2001)	Delphi technique	N/A
Pérez, Guerrero, González, Pérez, & Caballero (2013)	Literature review & local consultation via workshop	Cuba
Pinter, Bizikova, Kutics, & Vari (2008)	Conceptual framework & focus group	Lake Balaton Region
Rebollo & Baidal (2003)	Secondary data, in-depth interviews & survey	Torrevieja, Spain

Reddy (2008)	Literature review, survey & interviews	Andaman & Nicobar Islands
Roberts & Tribe (2008)	Case studies/existing framework, Delphi technique & survey	Tobago
Schianetz & Kavanagh (2008)	Workshop & other project information	Lamington National Park in Queensland, Australia.
Sirakaya-Turk, Ekinci, & Kaya (2008)	Delphi technique, literature review & interviews	Turkey and the Turkish Republic of Northern Cyprus
Tsaur, Lin, &Lin (2006)	Interviews, Delphi technique & survey	Taiwan
Twining-Ward & Butler (2002)	Literature review, survey& interviews	Samoa, South Pacific
UNWTO (2004)	Literature review & Delphi technique	N/A
Wang, Lam, Harder, Ma, & Yu, (2013)	Literature Review, Delphi & Questionnaire survey	Pudong New Area, Shanghai
Zhang et al. (2015)	Review of literature, stakeholder involvement with researchers, tourism operators, policy makers & residents	Tibet

Table 2- Dimensions of Sustainability

Dimensions	**Frequency**	**Percentage of cases (%)**	**Core or peripheral**
Economic	27	100.0	Core
Social	26	96.3	Core
Environmental	26	96.3	Core
Cultural	14	51.9	Core
Political	9	33.3	Peripheral
Management / institutional	8	29.6	Peripheral
Technology	4	14.8	Peripheral

Table 3 – Frequency of Indicator Themes Identification

Dimension	Indicator Themes	Frequency	Percentage of cases (%)
Economic (n = 27 cases)	Revenues and profitability	21	77.8
	Employment	20	74.1
	Visitor satisfaction	14	51.9
	Tourists arrivals, volume and numbers	8	29.6
	Seasonality	8	29.6
	Accommodation quality, capacity and occupancy	8	29.6
	Local ownership in business	6	22.2
	Repeat visit	6	22.2
	Expenditure	5	18.5
	Unemployment rate	5	8.5
	Leakage	4	14.8
	Length of stay	2	7.4
Social (n = 26 cases)	Residents involvement, participation and awareness	9	34.6
	Congestion and overcrowding	9	34.6
	Community satisfaction	8	30.8
	Safety and security	7	26.9
	Access	6	23.1
	Community health	6	23.1
	Wellbeing and quality of life	5	19.2
	Residents attitude and complaints	5	19.2
	Education	5	19.2
	Crime rate and harassment	5	19.2
	Gender equality	3	11.5
	Sex tourism and child sex abuse	2	7.7
	Tourists visits to local doctors	2	7.7
Environmental (n = 26 cases)	Water quality and management	19	73.1
	Solid waste discharge and management	15	57.7
	Recycling rate	8	30.8
	Air / atmospheric quality	8	30.8
	Energy consumption	7	26.9
	Environmental awareness	7	26.9
	Air pollution	7	26.9
	Noise pollution	4	15.4
	Number of endangered species	3	11.5
	Others	4	15.4

Cultural (n = 14 cases)	Retention of local customs and language	8	57.1
	Maintenance of cultural sites	7	50.0
	Actions and events taken to promote indigenous culture	6	42.9
	Satisfaction with local integrity	3	21.4
	Loss of authenticity	3	21.4

Table 4 – Key indicators and associated measures

Dimension	Key Indicator	Possible measures
Economic	Employment	Number, type and duration of jobs Gender equity
	Business Viability	Expenditure Arrivals Profitability Satisfaction, etc.
Social	Quality of Life	Resident empowerment Congestion and crowding Community attitudes to tourism Access to amenities Changes in crime rate
Environmental	Water quality and water management	Volume and changes in volume Water treatment, etc.
	Solid waste management	Recycling
	Energy conservation	Reduction in energy usage
Cultural	Maintenance of integrity of local communities	Retention of local cultures and traditions Maintenance of cultural sites Authentic representation of local cultures.

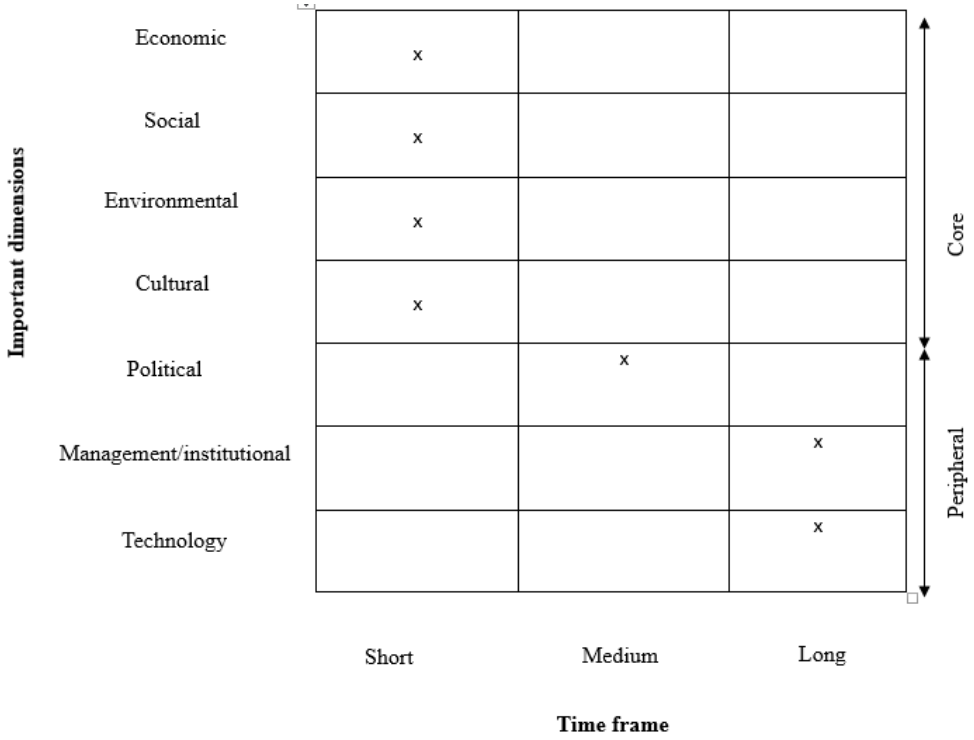

Figure 1: A framework for Sustainable tourism management