Sustainable Tourism Indicator System for Andalusia

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INTRODUCTION

In today's competitive environment, tourist destinations must undergo a continuous process of increasing the value of services to improve tourists' experiences. For this purpose, the destination must first diagnose the reality of the situation (tourist supply, tourist demand, etc.) and be able to monitor and evaluate results, to identify deviations and to reorient tourism policies if necessary.

One of the main requirements in most plans implemented by any section of the administration is the development of a system of indicators for monitoring and verification that make it possible to understand the effects of plan-related activities. In relation to tourism policies, it is particularly important to have up-to-date, dynamic and interrelated indicator systems that provide an overall vision of the destination, because tourism policies are not static phenomena but, in addition to diagnosis, require evaluation and continuous reorientation, if necessary. In this context, universities, governments and public bodies are making different proposals.

In the case of Andalusia, there are various factors that work as catalysers for the creation of the Indicators System for Sustainable Tourism Development, which enables the evaluation of policies:

1. The **major relevance** in both absolute and relative terms **of tourism** in the Andalusian economy: Andalusia is a popular international tourist destination in terms of inbound international tourists, more so than countries such as Thailand or the whole of Oceania, and with more than three times as many tourists as Argentina and the Dominican Republic.
2. The substantial **statistical development** of Andalusia: with a capacity for creating its own statistics for both the tourism sector and other economic sectors with high levels of complexity, as in the case of input-output tables since the 1975 reference year and the existence of a Tourism Satellite Account since 2000.
3. **Independence** for Spain's Autonomous Communities **in terms of tourist policy**, which implies that there is really a demand for tools to manage and plan tourism.
4. **Integral sustainability concept** inherent in (Sustainable Tourism Master Plan for Andalusia 2014-2020), understanding sustainability not just as a result but as a management model with development procedures that respect the environment.

REVIEW OF THE MAIN PROPOSALS FOR THE INDICATORS SYSTEM FOR SUSTAINABLE TOURISM DEVELOPMENT

Proposals from universities include the works of Bramwell, (1996), Butler (1993), Hunter (1997), Vera (2001), and Sánchez and Pulido (2008). However, even though there are many works in the scientific bibliography for tourism indicators, three concerns arise when reviewing the literature: these are partial proposals; there is little agreement among them and they are very theoretical; and few authors address real development issues. Most studies are conducted from the integral perspective of the sustainability of the destination (a holistic vision of sustainability in the territory) and not from the sectoral perspective (sustainability of the tourism activity exclusively).

The initiatives of public bodies are very interesting, and there are three that stand out.

1. The **UNWTO** (2005) has been a pioneer since the early 1990s of creating sustainable development indicators from a sectoral perspective; the most common investigation is the guide that describes more than 40 themes concerning sustainability, developing specific indicators for different types of destination at various levels, with 25 case studies.
2. From a sectoral perspective and at a country level the **OECD** (Dupeyras and MacCallum, 2013) proposes measuring competitiveness in tourism using 11 basic indicators.
3. Finally, the **EU's** (2013) *European Tourism Indicators System Toolkit for Sustainable Destinations*, with 27 basic and 40 optional indicators, has an integral and sectoral perspective and is presented as a flexible system to meet the specific expectations of sustainability at each destination by adapting itself on a local scale.

Based on these works, there are governments that have defined a system of sustainability indicators for tourism (Cuba, Mexico, Costa Rica, etc.), as well as NGOs (Group de Dèvelopment) and companies such as the tour operator TUI.

Another very clear trend is the use of a large amount of information in order to analyse the various themes of sustainability. In this case the first question addressed, which reflects overall planning, is which indicator method should be developed: whether to opt for a system of indicators (non-aggregated focus) or a synthetic index (aggregated focus).

A system of indicators is used to carry out diagnoses and identify interrelations between components because behind any system there is a conceptualisation of sustainable development and a scientific model that helps to identify and organise information. This is true for the PSR model (Pressure-State-Response) (Ivars et al., 2001) and versions that have been derived from it, such as the DPSIR model (Driving-Forces-Pressure-State-Impact-Response) (Blue Plan, 2011). The aggregated focus involves a combined synthetic measure with no need for the separate analysis of indicators. Indices are of special interest in carrying out comparisons between various analysis units and in measuring progress or development towards the sustainability of tourist destinations. The best-known experiences are the Sustainable Tourism Development Index developed by Ko (2005), the Sustainable Performance Index (SPI) (Castellani and Sala, 2010), the Synthetic Indicator for coastal destinations applied in Croatia (Kozic and Mikulic (2011), or the Sustainability Performance Index for Tourism Destinations (SPITD) (Velázquez, 2009).

Both the academic and most proposals from public bodies contain a limited number of indicators, with a clear emphasis on simplicity, i.e. the incorporation of few variables. Another key area of debate is whether to analyse tourism destination sustainability (integral perspective) or tourism sustainability (sectoral perspective), since these two concepts are usually confused, which results in partial proposals that are highly centred on the environmental dimension. It is therefore another area of debate that we address in the following question, since it is of central importance to us that the proposal we present combines both these areas of debate: synthetic indicators and integral sustainability.

The proposal presented in this paper aims to incorporate the minimum requirements that should be provided by a system of indicators in order to manage a tourist destination so that it can easily be applied by tourist managers at the destination and with continuity. This is a debate that does not usually happen, yet from our point of view it is essential. The design that we have put forward aims to take special care both on the sources that supply the indicator variables and on the actual design for the results to be presented. Proposals based on ad hoc sources, or that are too theoretical, are therefore avoided.

In order not to lose sight of being realistic in the development of a system, indicators have also been suggested according to the statistical and documental information that is currently available. For us this information must primarily come from official bodies, ensuring a rigorous methodological procedure,

statistical representativeness and continuity. It can therefore be guaranteed that decision-making based on this system of indicators is supported by accurate information.

OBJECTIVE AND METHODOLOGY

Objective

The primitve objective of the Indicators System for Sustainable Tourism Development is to provide the Andalusian Tourism Government with a monitoring and evaluation tool enabling to understand the effects of its activities, and it was conceived as part of the Sustainable Tourism Master Plan for Andalusia 2014-2020. This plan defines the principles that characterise Integral Tourism Sustainability, and which are therefore the principles on which the Indicators System is based. These are:

- **Sustainability as a way of defending local values** (natural, cultural, ethnographic, landscape, etc.), since these values represent the various forms of tourism activity.

- **Sustainability as an efficient and fair way of producing tourism services**, which must promote the development of the business fabric, ensuring the profitability and competitiveness of businesses that manage tourism products, with particular emphasis on the stability and quality of employment.

- **Sustainability as a means of governance based on transparency, participation and joint decision-making**, where subsidiarity and public–private and public–public cooperation characterise decision-making.

- **Sustainability as a means of territorial cohesion**, so that the tourism activity contributes to balanced development in the various territories of Andalusia.

- **Sustainability as a social means of appropriating the tourist activity for citizens**.

- **Sustainability as a continuous means of investigation, development and innovation**.
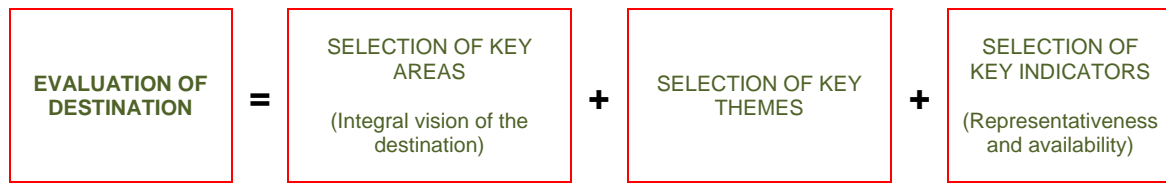
The Indicators System for Sustainable Tourism Development in Andalusia shall involve **two different forms of measurement:**

- A more **strategic** measurement aimed at portraying departure and arrival scenarios, accurately describing the situation of the tourist destination before and after planning and
- Another type of **continuous** measurement that serves as a warning system for deviations in results or substantial changes in the environment, with the aim of correcting them over time and avoiding discrepancies with the model of sustainable tourism development.

Methodology

Three levels of analysis are established owing to the complexity of the reality to be measured. The most general being the **key areas** that offer an integral vision of the destination. Within these areas **key themes** are selected that make it possible to come close to the reality of these areas, and finally indicators are defined and chosen that make it possible to understand the status of the **key themes**.

Figure 1. Architecture of the Indicators System

EVALUATION OF DESTINATION	=	SELECTION OF KEY AREAS (Integral vision of the destination)	+	SELECTION OF KEY THEMES	+	SELECTION OF KEY INDICATORS (Representativeness and availability)

The system developed comprises more than 300 indicators that make it possible to maximise the analysis potential to interpret **the complex reality of tourism, seen from various perspectives: demand, supply, administration, and local population.**

Each indicator separately shows a partial reality that makes it possible to understand only one concrete aspect of tourism in some of the dimensions observed within the concept of sustainability. Using the architecture of the planned system the objective is to maximise the analysis potential of a group of variables to interpret the complex reality of tourism.

The process of selecting **indicators** involves considering the following **characteristics** (Horn R., 1993):

- **Easy to understand or interpret** by all users and society;

- **Easy to obtain**, easy to create using existing procedures with minimum effort and cost;

- Be relevant; must **synthesise** the greatest possible number of conditions or various factors that affect the situation described by the indicator;

- **Be comparable** with other destinations or over time;

- **Be accurate**; the data used to create the indicator must be reliable. Satisfactory sources of information have been chosen following a rigorous methodological process and statistical representivity;

- **Be verifiable**; the information required must be accessible and, with this information, two different observers should be able to reach the same conclusion.

In order to facilitate the use of this tool by managers of tourist destinations, the **synthetic indicators** formula has been selected, which has the following main **advantages**:

- To be able of synthesising complex and interdisciplinary information to facilitate understanding and management,
- To summarise the amount of information administered by a group of indicators,
- To promote the use of quantitative measurements for the monitoring and evaluation of units analysed over time,
- To facilitate the communication of results to the wider public, enabling complex themes to enter into the public dialogue,
- To construct an analytical support for design and use in public policy, and
- To enable users to compare complex dimensions effectively.

There are also some **disadvantages** as the system may lead to simplistic conclusions, the difficulty of agreement in the selection of indicators and their weighting, the lack of information for key themes that could result in inappropriate decisions, or the fact that the information generated and the variety of existing methods for construction could lead to arbitrary and poorly justified synthetic indicators.

In developing the process we have tried to minimise the negative aspects of this methodology, seeking objectivity and neutrality for the system in the sources of information, selected indicators and calculation

method. The course of the project, as well as the presentation of the theoretical framework and the results obtained in academic, technical and public forums, enables the system to be tested and validated.

For individual treatment of each indicator, as well as for the construction of synthetic indicators, we shall use the **reference point technique**. Originally proposed by Wierzbicki (1980), this technique is based on consideration of the reference point, which is made up of desirable values for each of the objectives (indicators). Once this reference point is specified, a scaled function of success measures the proximity of the values of each indicator to its corresponding reference point. These functions of success also incorporate weightings, the role of which may vary from mere standardised factors to parameters that collect the preference of the central decision-maker (Ruiz et al., 2009).

The original diagram of the reference point can be generalised if a double reference point (reserve-aspiration) is used. In this case, for each indicator j we can have a reserve level r_i (i.e. a minimum permitted value) and an aspiration level a_i (i.e. a desirable value). Wierzbicki et al. (2000) proposed this methodology to make objective rankings between alternatives, and it has subsequently been used by Ruiz et al. (2010) to create synthetic indicators of sustainability. In our study, for most indicators the mean value achieved by the indicator during previous years has been used as the reference value, and the level of reserve has been the mean value minus an interval of 1% (for indicators of the type 'when more, better', and the opposite for the others). For some indicators in particular other values specified by experts have been used. In any case, if the indicator is of the type 'when more, better', the following scaled function of success is used for each indicator j (I_i is the value of the indicator in the study zone)[1]:

$$s_j\big(I_j, r_j, a_j\big) = \begin{cases} 1 + 49\dfrac{I_j - a_j}{I_j^{max} - a_j} & \text{si} \quad a_j \leq I_j \leq I_j^{max} \\[2mm] \dfrac{I_j - r_j}{a_j - r_j} & \text{si} \quad r_j \leq I_j \leq a_j \\[2mm] 50\dfrac{I_j - r_j}{r_j - I_j^{min}} & \text{si} \quad I_j^{min} \leq I_j \leq r_j \end{cases}$$

where I_j^{min} and I_j^{max} are, respectively, the minimum and maximum values that the indicator can take. This scheme can be adapted to indicators of the type 'when less, better' or other more complex types. In this case the function of success has a negative value (between -50 and 0) if the value of the indicator has a value less than the reserve level (tendency to deteriorate), a value of 0 to 1 if the indicator has a value between the reserve and aspiration values (maintenance zone), and a value of 1 to 50 if the indicator improves the level of aspiration (tendency to improve). The use of the success function also supposes de facto standardisation of all indicators, measuring them using a common scale.

Once the functions of success have been calculated for each indicator corresponding to a specific theme, and if we have a weight ω_j for each indicator, we can create synthetic indicators for each theme, following the paradigms of weak and strong sustainability. The paradigm of weak sustainability enables compensation between the various indicators, for which the weak synthetic indicator of the theme t takes the form:

$$I_t^d = \sum_{j=1}^{n_t} \omega_j\, s_j\big(I_j, r_j, a_j\big),$$

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[1] The interval [-50, 50] is established for most cases as values between which the indicator can vary, although for some specific cases the upper and/or lower limit(s) has/have been modified.

if there are n_t indicators in the theme t. However, the strong synthetic indicator does not enable compensation between various indicators, for which it takes the value of the worst indicator, weighed as follows:

$$I_t^f = \min_{j=1,\dots,n_t} \overline{\omega}_j \overline{s}_j\left(I_j, r_j, a_j\right)$$

where $\overline{\omega}_j$ and $\overline{s}_j$ are modified values of the weights and functions of success to ensure that the strong indicator is maintained within the interval [-50, 50] according to the values of individual indicators.

As the synthetic indicators of each theme take values between -50 and 50, they can be used as if they were functions of success to obtain the synthetic indicators in each class, and later those of distinct classes can be synthesised again to form overall synthetic indicators.

The **weights** for the various elements of the study have been determined by consulting various **groups of experts**.

- The weights assigned to indicators of a specific theme indicate the contribution of each indication for the measurement of the theme. To determine these weights, a quantitative scale is used where the expert must decide on the contribution. If it is decided to use a scale of 1-3, 1 is assigned to the least important, 2 to double importance and 3 to triple importance.
- To assign weights to themes in the same area, or for different areas, we must know the opinion of experts on the relative importance of each element. Therefore, a qualitative scale has been used that measures the importance of each theme in the corresponding area, from 0 to 5 (0 – not important, 1 – Very unimportant, 2 – Unimportant, 3 – Neither unimportant nor important, 4 – Important, 5 – Very important). Once these qualifications are obtained, a multiplicative scale will be used that keeps the coefficients constant between two successive evaluations.

Finally, the weights obtained for one or another of the procedures are standardised so that the synthetic indicators obtained are maintained in the interval [-50, 50] of success functions.

DETERMINATION OF KEY AREAS AND THEMES

Since the system must shows the integral sustainability of a destination, which must be viable and practical, and considering the transversal activity of the tourist activity, a group of experts made up of technicians from the Regional Administration and professors from the University of Málaga who are specialists in various disciplines (geography, marketing, new technologies, etc.), determined that the system should comprise 7 key areas and 40 key themes.

Table 1. Indicators System of Sustainable Tourism Development in Andalusia

KEY AREAS	KEY THEMES
GOVERNANCE	INFORMATION AND TRANSPARENCY
	COOPERATION OF SOCIETY ON NETWORKS
	LOCAL DEVELOPMENT FOCUS
	FOCUS TOWARDS CITIZENS
	EFFICIENT ADMINISTRATION
TERRITORY	TERRITORIAL COHESION
	HUMAN PRESSURE
	QUALITY OF THE ENVIRONMENT
	PROTECTION
	USE OF RESOURCES
	TRANSPORT
	HOUSING
	ENVIRONMENTAL AWARENESS
VULNERABILITY	MERKETS
	SEGMENTS
	SEASONALITY
	ACCOMODATION
	TRANSPORT
	INTERMEDIARIES
PROFITABILITY	COMPETITIVENESS
	PRODUCTIVITY
	EMPLOYMENT
	TOURISM EXPENDITURE
	HOTEL REVENUE
DIVERSIFICATION	PRODUCT POSITIONING
	COMPLEMENTARY NATURE OF PRODUCTS
	SPECIALISED TOURISM RESOURCES
	Sun and beach
	Culture
	Nature
	Health and wellbeing
	Golf
	Meetings and congresses
	Marinas
	Cruises
	Spanish courses
	Micro-sectors
QUALITY	DESTINATION
	RESOURCES- BEACH
	RESOURCES - HERITAGE
	RESOURCES- NATURAL AREAS
	PUBLIC INFRASTRUCTURES
	ACCOMODATION
	RESTAURANTS
TECHNOLOGY	R&D + i
	INTERNET
	ONLINE COMMERCE
	CRM
	SOCIAL MEDIA
	MOBILE TECHNOLOGY

SYNTHETIC INDICATOR

GOVERNANCE

This is an area that aims to evaluate the model of government developed by the Regional Tourism Council in application of its tourism policy as well as the level of sustainability of the destination. Within this are measured the basic variables that define sustainable governance.

Table 2. Governance Area. Key themes.

KEY THEMES	DEFINITION
INFORMATION AND TRANSPARENCY	Use of instruments with which the government provides information to the tourist industry and citizens, distribution of information using channels supported by new technologies, and measurement of participation in the sector
COOPERATION OF SOCIETY ON NETWORKS	Measurement of the capacity and efforts of the administration to form close-knit and efficient networks that promote spaces for cooperation in terms of funding, mixed destination management, product creation, training and innovation.
LOCAL DEVELOPMENT FOCUS	Creation of tourism products using local resources, social awareness of the importance of tourism for sustainable development in Andalusia
FOCUS TOWARDS CITIZENS	Perception of the citizenship and interest groups with regard to the costs and benefits generated for them by tourist activity
EFFICIENT ADMINISTRATION	Use of budget in management as well as the expected return on the budget in terms of results

TERRITORY

The aim is to launch an evaluation of the sustainability of the territory – i.e. of the destination – with variables that are not always tourism-related, taking into account the interrelations of tourism with the heritage-related, natural, social, economic and institutional surroundings.

The basis for this scheme was the European Strategy for Sustainable Development and the Spanish Strategy for Sustainable Development, taking into account the European Tourism Indicators System Toolkit for Sustainable Destinations.

Table 3. Territory Area. Key themes.

KEY THEMES	DEFINITION
TERRITORIAL COHESION	Measurement of territorial inequalities that exist between various provinces in Andalusia
HUMAN PRESSURE	Understanding of human density in Andalusia and the burden on the resident population
QUALITY OF THE ENVIRONMENT	Measurement of levels of environmental quality using landscape indicators in the territory and tourism satisfaction indicators
PROTECTION	Quantification of the conservation of basic resources linked to the environmental quality of the territory
USE OF RESOURCES	Measurement of the level of use of the territory and its resources (water, waste, CO2, etc.)
TRANSPORT	Measurement of relations between tourism and the transport sector
HOUSING	Measurement of relations between tourism and the housing sector
ENVIRONMENTAL AWARENESS	Measurement of long-term sustainability by understanding awareness among the resident population

VULNERABILITY

Vulnerability refers to the likelihood that the destination will be harmed by exposure to tensions associated with the surroundings (environmental, economic and social change) and the absence or poor capacity for adaptation to these changes.

Although it is most common to see an analysis of the vulnerability of destinations as linked to an environmental context and natural catastrophes, this system extends beyond this concept, since a destination may be fragile not only in its environmental context and security but also in terms of the sustainability of the industrial fabric and its social repercussions.

The focus of this area is based primarily on the fact that the strong dependence of a single factor puts us in a situation of disadvantage since we would be to the mercy of changes in the environment not controlled by us. Therefore, in terms of demand, the excessive dependence of a market or sector puts us in a more vulnerable position, whereas in terms of supply, the development of a destination centred on a class of product (type of accommodation, transport or distribution channel) also puts us in a disadvantage.

Therefore the various themes in this area measure, as a reflection of the situation of vulnerability in Andalusia, the level of concentration (dependence) that exists in each of the key themes, and they are as follows:

Table 4. Vulnerability Area. Key themes.

KEY THEMES	DEFINITION
MARKETS	Concentration on markets and especially for the hotel sector
SEGMENTS	Concentration of demand, given the reason/motive to visit Andalusia
SEASONALITY	Concentration of demand at the destination along the year
ACCOMODATION	Dependence of the destination on a type of accommodation or business group
TRANSPORT	Dependence of the destination on a type of transport or business group
INTERMEDIARIES	Dependence of the destination on commercial channels/ business group

PROFITABILITY

It is essential to understand tourism as a strategic economic sector and thus it is vital for this sector to be profitable. This is precisely the objective of this area of the system: to measure the utility (profitability) of the Andalusian tourism sector by addressing its key aspects: income generation, employment and its competitive position.

Economic utility is included here, whereas other types of utility (social/public) are covered by *governance*. Taking this into consideration, the key themes to be evaluated within the area of *profitability* are as follows:

Table 5. Profitability Area. Key themes.

KEY THEMES	DEFINITION
COMPETITIVENESS	Ability and performance of Andalusian tourism sector to sell its products in relation to the ability and performance of other destinations
PRODUCTIVITY	Measurement of incomes generated per unit (tourism and employment)
EMPLOYMENT	Measurement of employment in the tourism sector and its structure
TOURISM EXPENDITURE	Measurement of the tourism expenditure and hotel profitability as a reflection of the sector's potential to generate income seen from a general perspective, supply and demand
HOTEL REVENUE	

QUALITY

The objective of this area is to evaluate satisfaction of demand and the ability and performance of the supply to meet tourists demands, i.e. approaching the measurement of from demand and supply perspective.

In terms of demand, quality means satisfactory and adequate meet clients' expectations, and therefore includes indicators of demand satisfaction such as the complaints/claims that they might express with regard to the various aspects of tourism.

For the quality of supply, standards of quality have mainly been used (ISO, *Q Turística*, etc.), along with more specific data such as the number of blue flags for beaches or monuments recognised as world heritage sites by UNESCO. Measures of accessibility, quality of training/education, etc., have also been used.

Table 6. Quality Area. Key themes.

KEY THEMES	DEFINITION
DESTINATION	Perceptions that tourists make concerning their entire stay, general measurements of supply and of the whole of Andalusia in terms of standards, accessibility, training, etc.
RESOURCES- BEACH	Perception/use by tourists and other indicators of the quality of beaches, cultural heritage and natural areas
RESOURCES - HERITAGE	
RESOURCES- NATURAL AREAS	
PUBLIC INFRASTRUCTURES	Use of elements that support activity and are managed directly or indirectly by the Public Administration (sanitation, cleanliness, safety, accessibility, transport and tourist information)
ACCOMODATION	Specific monitoring of quality in a key sector at the destination: accommodation
RESTAURANTS	Specific monitoring of quality in a key sector at the destination: restaurants

DIVERSIFICATION

It is clear that demand is heterogeneous and relies on multi-motivational and active tourists. Yet, on the other hand, Andalusia does not have a specific product but a range of tourist offers. This extensive and diverse range varies from traditional sun and beach tourism to health and wellbeing, from the coast to inland areas via cities and natural landscapes.

The tourism strategy in Andalusia involves making the most of these demand opportunities by drawing mostly from varied resources.

However, this provision of tourism variety cannot be randomly presented. In the face of demand there must be a clear product positioning strategy, an image and a clear range of products.

Table 7. Diversification Area. Key themes.

KEY THEMES	DEFINITION
PRODUCT POSITIONING	Measurement of the image we portray to tourists and the gap between the real and planned image
COMPLEMENTARY NATURE OF PRODUCTS	Collection of information of complementary and substitute nature between segments and understanding of the dragging effect of the main reasons to visit Andalusia
SPECIALISED TOURISM RESOURCES	Measurement of the capacity of the destination to respond to varied demand, and understanding of the capacity of the destination's main tourism resources to meet demand (sun and beach, culture, nature, etc.)

TECHNOLOGY

Innovation in the tourism sector in the past decade has transformed management and channels of communication and marketing as well as client relations, and it has therefore been seen as necessary to include a specific area in the Indicators.

Tourism is a sector that is strongly influenced by the development of new technologies, especially the mass adoption of the internet by consumers, reaping huge benefits for this sector, which has had to adapt itself rapidly to new market conditions.

Table 8. Technology Area. Key themes.

KEY THEMES	DEFINITION
R&D + i	Research, Tecnological Development & Innovation importance in the hotel sector
INTERNET	Analysis of the use of this tool from the perspective of demand (potential and real), such as for accommodation businesses in Andalusia
ONLINE COMMERCE	Measurement of the level of use of this means of marketing for both demand and supply
CRM	Understanding of how supply uses innovation, by means of CRM tools, to capture, store and use information on clients for commercial and marketing purposes
SOCIAL MEDIA	Understanding of the use of social media for demand and the level at which they are used in terms of accommodation supply for marketing, publicity and image management, as well as an information channel for the user
MOBILE TECHNOLOGY	Measurement of the use of mobile devices during trips

CURRENT SITUATION AND FUTURE OF THE SYSTEM

Having formed an integrated and complete vision of the theoretical framework of the system, efforts are now concentrating on the practical development of the project.

Alongside and a as a feedback process, the calculation of the indicators has also shaped the theoretical framework, adapting it also to the statistical reality of Andalusia, via the incorporation/elimination of new indicators and the inclusion of new themes that improve or complement the initial diagnosis and enrich the analysis. Thus we discovered some gaps of information necessary for the measurement of certain areas. In these cases we have opted to implement an ad hoc operation (questionnaire to the Andalusian population on the perception of tourism and the government) to choose indirect indicators or identify incalculable indicators due to a lack of information.

In this first phase of development, **the group of indicators for 2012 have been calculated**, establishing the course of the indicator in the period 2008-2011 as the reference point. There were exceptions since it was not possible to establish this time reference either because the data for 2012 were not yet available or since there were only data for 2012. In these cases it was necessary to change the definition or wording of the indicator or its inclusion as a reference point.

The selected time framework made it possible to diagnose the situation before implementation of the Sustainable Tourism Master Plan, serving as a starting point for the Plan itself and enabling evaluation and reorientation, if necessary, since the system would be updated annually.

The mathematical calculation of more than 300 indicators regarding the seven existing areas in the system included an exhaustive search of sources of information capable of meeting the requirements of the indicators, in addition to an analysis of the efficiency and interpretation of the indicators, their coherence and comparability.

More than 90 experts from various fields (public administration, investigators, specialist consultants, academics and representatives of the private sector) have been consulted in order to get the weight of the indicators and the theme areas for the calculation of the synthetic indicator.

The opinion of politicians in the Regional Government who define the importance of each key area within their government objective will also be included. The Indicators System will aso be presented to sector representatives in the Tourism Council (in which the Andalusian Administration, trade unions and the Andalusian Business Confederation are represented).

Due to the large amount of information contained in the Indicators System and the obvious complexity in drawing up synthetic indicators when there are more than 300 indicators, we also rely on software that has made it possible to automate the calculation. Certain characteristics of the system, as well as its graphic design, have been modified and adapted to make it easier to be interpreted by the general public and politicians, who are the end users of a system that involves a certain amount of internal complexity.

From the beginning the system has been understood as an **ongoing process** in that any progress in definitions, methodologies or statistical tools and/or documental tools should continually be integrated in the interests of perfection.

In the medium and long term, it is logical that the theoretical model we present in this article will need to develop. Three areas can be identified in which the Indicators System for Sustainable Tourism Development in Andalusia has a high potential for development: in policy management, in the statistical system, and in the methodology of the system.

Policy management: The objective for which this system has been designed is to show an evolution at Andalusian destination using continuous updating, transforming it into a monitoring and evaluation tool for the effects of implementing the Sustainable Tourism Master Plan for Andalusia 2014-2020. Furthermore, it must also serve as an instrument for planning and policy orientation in the medium to long term, simulating scenarios and alternative situations capable of reducing the level of uncertainty that is inherent in the tourism-related circumstances of a destination. If the challenge of creating this tool is overcome, it would be easier to make managers and policy makers aware of the usefulness of the Indicators System in decision-making and monitoring, evaluation and policy reorientation.

Statistical system: most of the indicators have been created from official sources owing to the richness of the Spanish and Andalusian statistical systems in general, and the tourist system in particular. However, the Indicators System for Sustainable Tourism Development in Andalusia must stay alive, undergoing continuous improvement via the provision of new sources of information and therefore by reorienting and incorporating new indicators. The work of compiling various statistical sources and continuous review helps in not duplicating personnel and budget resources. In addition the structure of the Indicators System for Sustainable Tourism Development in Andalusia makes it possible to adapt it to difference requests for information, either coming from other Tourism Plans or from the tourism sector, public institutions, private organisations, universities, etc. The process of compiling the indicators also allows to identify aspects where there is a lack of statistical information despite being considered important parts of the system. In some cases, such as those that refer to the opinion of the local population and tourism private sector, or ad hoc survays has been launched and in other cases they are planned for future development.

Methodological development: the Indicators System for Sustainable Tourism Development in Andalusia can be expanded for comparison with other areas/tourist destinations since the use of official statistical sources that are available for many other territories (more so in other destinations in the European Union) facilitate the work. Another development that offers a great challenge is that of establishing maximum and minimum thresholds and identifying potential limitations for Andalusia as a tourism destination.

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