

Observatory of Sustainability of the Algarve Region for Tourism: Proposal for Environmental and Sociocultural Indicators

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Abstract—The Observatory of Sustainability of the Algarve Region for Tourism (OBSERVE) will be a valuable tool to assess the sustainability of this region. The OBSERVE tool is designed to provide data and maintain an up-to-date, consistent set of indicators defined to describe the region on the environmental, sociocultural, economic and institutional domains. This ongoing two-year project has the active participation of the Algarve's stakeholders, since they were consulted and asked to participate in the discussion for the indicators proposal. The environmental and sociocultural indicators chosen must indicate the characteristics of the region and should be in alignment with other global systems used to monitor the sustainability. This paper presents a review of sustainability indicators systems that support the first proposal for the environmental and sociocultural indicators. Others constraints are discussed, namely the existing data and the data available in digital platforms in a format suitable for automatic importation to the platform of OBSERVE. It is intended that OBSERVE will be a valuable tool to assess the sustainability of the region of Algarve.

Keywords—Sustainability, observatory, environmental indicators, sociocultural indicators, development, tourism, Algarve.

I. INTRODUCTION

TOURISM has important impacts on society, the economy and environment. It also has a great potential to make progress across the Sustainable Development Goals (SDGs) [1].

Tourism destinations should promote their activities in a context of sustainable development. And this is a challenge to be taken into account in all activities [2].

In Portugal, tourism receipts achieved, in 2018, a value of 8.2% of per capita GDP and 328,500 employees. The Algarve is the most significant touristic region in Portugal and is responsible by a share of the overnights of 34%. The Algarve region covers 6% of Portugal's total area with an approximated 5000 km², being bathed by the Atlantic Ocean on West and South. The proximity of the Mediterranean Sea greatly influences the Algarve climate, considered as moderate. Due to these characteristics, the Algarve region is a well-known touristic destination, with good perspectives of growth. However, tourism has a major impact on the natural and built environment, as well as on the culture and wellbeing

of population. Consequently, the sustainable development of the region is a crucial aspect for the future [3].

To ensure the sustainability of a region, there is a need for policies and plans, with the direct participation of stakeholders, involving, public administration, service providers, local communities, local citizens and tourists. Its evaluation must be continuously assessed with a basis on indicators [4].

This paper presents a brief description of the OBSERVE project (Section II), a literature review of sustainable indicators frameworks applied to tourism (Section III), the OBSERVE indicators proposal (Section IV) and the conclusions (Section V). The complementary information for environmental and sociocultural indicators is presented in Appendix.

II. OBSERVE PROJECT

OBSERVE [5], is an instrument to monitor and evaluate the sustainability levels of the region of Algarve for tourism. Its main goal is to provide environmental, economic, social-cultural and institutional indicators to support the decision-making process for the sustainable growth of the region.

This project has nine operational goals, directly indexed to the activities presented in the work plan:

1. To make more efficient and easy the process of systematizing and exchanging data on sustainable development and its implications on tourism.
2. To provide a broad base of sustainable development indicators relevant to the region, including environmental, economic, socio-cultural and institutional.
3. To support and observe sustainable development strategies of the region and the tourist activity.
4. To provide a decision support instrument.
5. To communicate technical information in an objective and reliable way.
6. To improve communication between stakeholders.
7. To evaluate the integration of sustainability in the different sectors of the tourism activity.
8. To involve actively all stakeholders in the assessment and reporting of sustainability.
9. To create a channel for the dissemination of information related to sustainability and tourism activity, aiming for the destination promotion (region of Algarve).

The OBSERVE platform is being designed to be dynamic, interactive and to be able to self-update data. It will have modules designed to interact with social platforms, like

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Facebook and Twitter; to manage and send periodic newsletters to the stakeholders; to validate data and detect system faults; to link to data sources so that indicators can be automatically self-updated.

To develop this project, the University of Algarve has a research team that incorporates human resources with high competence in several areas of knowledge and with consolidated experience in the areas of intervention. This two-year project seeks the widest possible participation from central and local administrations, universities and research centers, as well as, enterprises, associations, and tourists and citizens, aiming to add value for the stakeholders and for the region.

OBSERVE is intended to be an instrument of major importance for the future, as it reflects the reality of the region and supports the decision-making process, in order to improve environmental quality, social equity, economic efficiency and increase the public awareness and citizen participation.

III. SUSTAINABILITY INDICATORS

Sustainability indicators are the new-born tool among all the others tools used to measure sustainability [6], [7]. Until now, there is no consensus among researchers regarding a universal list of indicators, which could be capable of revealing the sustainability level of the various touristic destinations [8], [9].

The number of indicators to assess the sustainability of tourism still remains imprecise [10]. For the World Tourism Organization (UNWTO) [4], 12 to 24 indicators are accepted to be optimal, while Sors [11] argues that 20 to 50 indicators are quite enough.

In Europe, in 2013, the European Commission launched ETIS [12]. This system was created for monitoring and measuring the sustainable tourism performance of destinations is an important management tool. It is based on 27 main indicators and 40 possible extra indicators.

Indicators are used as performance markers, which tourists, residents, governmental agencies, tourism operators and stakeholders in general, use to deal with the pressure impose to the systems and to manage the sustainable development of the touristic regions.

According to UNWTO [4], indicators should be selected based upon relevance and feasibility, according to sustainability development targets, pointed out by national and international organizations.

A relevant system for the region of Algarve was SIDS Algarve (System of Indicators of Sustainable Development) [13]. The SIDS project stopped to update information in 2007, and, nowadays, is not an operational system. Unfortunately, it depended on information collected by different entities, which does not ensure the feeding of data continuity.

In Portugal, there are different entities, such as those listed below, that regularly collect data, and in some cases provide

indicators:

- “Instituto Nacional de Estatística” (INE - National Statistical Institute of Portugal) [14].
- “Agência Portuguesa do Ambiente” (APA - Portuguese Environmental Agency) [15].
- “Comissão de Coordenação e Desenvolvimento Regional do Algarve” (CCDR-Alg - Algarve Commission of Coordination and Regional Development) [16].
- “Aeroportos de Portugal” (ANA - Airport Authority of Portugal) [17].
- “Infraestruturas de Portugal” (IP – Infrastructures of Portugal) [18].
- “Entidade Reguladora de Águas e Resíduos” (ERSAR - Water and Waste Services Regulation Authority) [19].
- “Instituto de Conservação da Natureza e Florestas” (ICNF - Institute for Nature Conservation and Forests) [20].

A. Indicators Proposal

As previously mentioned, the OBSERVE project seeks to provide indicators in four domains. However, in this paper, only the environmental and sociocultural indicators are explained.

The indicators are used to assess the effects of tourism on the sustainable development of the region of Algarve.

The indicators content and the methodology for data collection are extremely relevant for the management and regulation of the touristic activities.

The indicators adopted in OBSERVE were obtained from currently available data, preferably with a correspondence to national and international standard indicators, to which, it is possible to compare and analyze the results.

A detailed review of international and Portuguese framework indicators was initially performed, including, Algarve’s Sustainable Development Indicators (SIDS Algarve) [4], UNWTO [5], European Tourism Indicator System (ETIS) [6], Models of Integrated Tourism in the Mediterranean Plus (MITOMED +) [7], Portugal Tourism Travel BI [8], Croatian Sustainable Tourism Observatory (CROSTO) [9] and the Portuguese National Statistical Institute (INE) [10].

B. Environmental and Sociocultural Indicators

The initial environmental and sociocultural indicators, proposed for OBSERVE are presented, respectively, in Tables I and II. They resulted from the analysis of the information presented in another framework (Appendix I).

IV. DISCUSSION

This first approach will suffer a reduction after the discussion with the most relevant stakeholders of the Algarve region. Nevertheless, some of the following recommendations shall be taken into account.

TABLE I
ENVIRONMENTAL INDICATORS (INITIAL OBSERVE PROPOSAL)

| Sub-Domain | No. | Indicator | Data Availability |
|--------------------------------|-----|--|-------------------|
| Climate and climate change | A01 | Average air temperature | * |
| | A03 | Temperature extremes | * |
| | A02 | Average precipitation (max and min) | * |
| | A04 | N° Beaches and marinas with blue flag | * |
| | A12 | Municipal expenses in Environment per 1000 inhabitants | * |
| Environment management | A07 | Coastline evolution | ** |
| | A06 | N° Bathing waters and quality classes | * |
| | A10 | % Establishment with certifications | *** |
| | A05 | Bathing season duration | * |
| | A11 | Environment expenses | * |
| Carbon management | A08 | Coastal management measures | ** |
| | A09 | % Establishments providing environmental training to employees | *** |
| | A13 | Carbon footprint | *** |
| | A14 | GEE emissions | ** |
| | A20 | N° Embarked and Disembarked Passengers (Faro Airport) | * |
| Mobility | A26 | Daily traffic on A22 and EN125 | ** |
| | A16 | Cycle routes or Cycle Infrastructure | ** |
| | A25 | N° and location of charging stations for electric vehicles | ** |
| | A22 | N° Passengers-kilometer carried by enterprises exploring inland transportation | * |
| | A21 | N° Passengers boarded at airports | * |
| Energy management | A19 | N° Rail passengers disembarked per inhabitant | * |
| | A18 | N° Number of passengers per month of rail transport | ** |
| | A23 | N° Passenger movement per port | * |
| | A24 | Movement of goods (t) in ports | * |
| | A15 | % Tourists using different means of transport | ** |
| Water Cycle management | A17 | Estimation of the monthly number of users in cycling routes | ** |
| | A28 | Electricity consumption per inhabitant | * |
| | A30 | Q% Gross Electricity Production | * |
| | A27 | Direct energy consumption | ** |
| | A29 | Power consumption (kWh) | * |
| Materials and waste management | A34 | Emissions (direct energy) | ** |
| | A33 | % Use of energy efficiency measures | *** |
| | A31 | % Establishments with low consumption systems | *** |
| | A32 | % Establishments with energy reduction objectives | *** |
| | A35 | Emissions (electricity consumption) | ** |
| Territory management | A39 | % Safe water | * |
| | A47 | Quality indicators of the wastewater sanitation service | * |
| | A40 | Water consumption per inhabitant | * |
| | A36 | % Establishments that optimize water consumption | *** |
| | A43 | % Use recycled water | *** |
| Air quality and noise | A38 | % Water controlled and good quality | *** |
| | A44 | % Wastewater treated | ** |
| | A41 | % Population served | * |
| | A37 | % Establishments with consumption reduction objectives | *** |
| | A45 | Volume of wastewater treated | ** |
| Natural capital management | A46 | % Lodging served by sewage drainage | * |
| | A42 | % Use of water-efficient measures | *** |
| | A49 | % Urban waste prepared for reuse and recycling | * |
| | A53 | % Establishments that make waste separation | *** |
| | A50 | % Urban waste collected selectively | * |
| Territory management | A52 | Urban waste selectively collected per inhabitant | * |
| | A48 | Urban waste collected | * |
| | A54 | % Establishments with environmental criteria | *** |
| | A51 | Urban waste collected per inhabitant | * |
| | A55 | Burnt area | * |
| Territory management | A61 | Investments on protection of biodiversity and landscapes of municipalities | * |
| | A57 | % Tourism companies that support actions for the protection, conservation and management of biodiversity and landscape | *** |
| | A60 | Land use (vegetation) | ** |
| | A59 | N° Endangered species and priority habitats | ** |
| | A58 | Invasive Species vs. Autochthonous Species | ** |
| Air quality and noise | A56 | % Forest cover | ** |
| | A62 | N° Green spaces for public use | ** |
| | A63 | % Reconstructed total area | ** |
| | A64 | Air Quality Index | * |
| | A67 | Levels of population exposed to noise | * |
| Air quality and noise | A66 | Air Quality: Particles < 2.5 ug | * |
| | A65 | Air Quality: Particles < 10 ug | * |

Data availability: *Available data; ** Requires protocol or advanced calculation; *** Information does not exist

TABLE II
SOCIOCULTURAL INDICATORS (INITIAL OBSERVE PROPOSAL)

| Sub-Domain | No. | Indicator | Data Availability |
|-------------------------|-----|--|-------------------|
| Tourist satisfaction | S01 | % Tourist satisfaction | *** |
| | S02 | Tourists who repeat their visit to Portugal | *** |
| | S03 | % Satisfaction of inhabitants with tourism | *** |
| Resident satisfaction | S04 | % Satisfaction of inhabitants with impacts of tourism | *** |
| | S05 | Units classification (booking and tripadvisor) | ** |
| Wellness in destination | S06 | Tourist Intensity | ** |
| | S09 | Tourist Density | ** |
| | S07 | N° Tourist beds per 100 inhabitants | * |
| Pressure | S08 | Lodging capacity in hotel establishments by 1000 inhabitants | * |
| | S10 | Occupancy rate | ** |
| | S12 | N° Accessible beaches | * |
| ACCESSIBILITY | S11 | % Accessible rooms | ** |
| | S13 | N° Events that promote local culture | ** |
| | S19 | Expenditures on cultural heritage of municipalities | * |
| Culture | S18 | N° Cultural properties | * |
| | S20 | Expenditures on cultural heritage of municipalities | * |
| | S14 | N° Zoos, botanical gardens and aquariums | * |
| | S15 | N° Museums | * |
| | S17 | N° Visitors of museums | * |
| Education | S16 | N° Visitors of zoos, botanical gardens and aquariums | * |
| | S21 | Population aged 15 and over by level of schooling | * |
| | S22 | N° Hospital beds | * |
| Health care | S23 | N° Personnel employed in universal access hospitals | * |
| | S24 | N° Pharmacies per 1000 inhabitants | * |
| | S25 | N° Pharmacies | * |
| Safety | S26 | Crime rate | * |
| | S27 | N° Registered crimes | * |
| | S28 | Regional development composite index (Cohesion) | * |
| Social cohesion | S33 | N° Secondary Houses per 100 Houses | * |
| | S30 | Beneficiaries of the social integration income | * |
| | S32 | N° Personnel employed in hotel establishments | * |
| | S29 | % Beneficiaries of guaranteed minimum income and social integration income | * |
| | S31 | Social Security disability subsidy allowance | * |
| DEMOGRAPHY | S34 | Resident population | * |
| | S35 | Annual population growth: total, natural and migratory | * |
| | S36 | Foreign population with status of residence | * |

Data availability: *Available data; ** Requires protocol or advanced calculation; *** Information does not exist

1. Information access and API: The information availability is a crucial aspect. The OBSERVE team greatly learned from the example of a previous project (SIDS Algarve). Although it contained very relevant information, the project ended because it became obsolete; it only contained information until 2007 [13], due to the impossibility of guaranteeing updated data over the years. The SIDS team considers essential to guarantee automatic access to sources of data through an API (Application Programming Interface), or at least for a substantial part of the indicators.
2. Repository of information and data analysis: OBSERVE is a repository of available information. It also should include potential benchmarks, references and data analysis. In addition, sectorial meetings will seek to identify possible new sources of information and, if necessary, protocols will be developed to ensure the regular provision of such information.
3. Competitiveness: Competitiveness is an essential issue of

the project. OBSERVE has to contribute to the competitiveness of the region and to the stakeholders, as well as to provide a significant added value. Actually, it is not possible to be competitive without being sustainable. OBSERVE will allow to identify trends and compare the relative performance of other regions in environmental, social, economic and institutional domains. In addition, it will allow to think about the sustainability of the Algarve region in an integrated way.

V.CONCLUSIONS

This paper presents an extended review of systems of sustainability indicators and reports the first approach of environmental and sociocultural indicators for the OBSERVE.

The data availability and the ability to self-update of the information are essential to assure the future of the platform. This will require access to information through APIs for a substantial number of indicators and is considered in the

selection of the indicators. The expected organized information is useful to relevant stakeholders of the Algarve tourism region. As an example for competitiveness, some

aspects are highlighted, namely: Understand regional trends and the compare it to other regions; spatial differentiation and the domains that need (or could) be improved.

APPENDIX

TABLE III

INTERNATIONAL AND PORTUGUESE FRAMEWORK INDICATORS

| Subdomain | Indicator | Indicators Systems | | | | | | | | |
|----------------------------|--|--------------------|----------|---------|--------|-------------------|---------------|------|-----|-------|
| | | Travel BI | MITOMED+ | MITOMED | CROSTO | SIDS Algarve 2007 | UNWTO Balears | ETIS | ETE | Other |
| Mobility | Percentage of tourists and same day visitors using different modes of transport to arrive at the destination | ✓ | ✓ | ✓ | | | ✓ | ✓ | | |
| | Carbon footprint | ✓ | | | | | ✓ | ✓ | | |
| | Percentage of tourists and same day visitors using local/soft mobility/public transport services to get around the destination | | | | | | | ✓ | ✓ | |
| | Airport passenger arrivals and departures | ✓ | | | | | | | | |
| | Harbor passenger arrivals and departures | ✓ | | | | | | | | |
| | Km of cycling routes (versus km's of roads) | | ✓ | ✓ | | | | | | |
| | Percentage of establishments with low consumption systems | ✓ | | | | | ✓ | ✓ | | |
| | Percentage of tourism enterprises that take actions to reduce energy consumption | ✓ | | | | | ✓ | ✓ | ✓ | |
| | Percentage of use of energy efficiency measures | ✓ | | | | | | ✓ | | |
| | Electricity consumption | ✓ | | | | | | | | |
| Energy | Emissions (direct energy) | ✓ | | | | | | | | |
| | Emissions (electricity consumption) | ✓ | | | | | ✓ | | | |
| | Production of energy from renewable sources | | | | | ✓ | ✓ | ✓ | | |
| | Energy Intensity | | | | | ✓ | ✓ | | | |
| | Percentage of electric energy consumed by renewable sources (%) | | ✓ | ✓ | | | | | | |
| | Energy consumption (KWh) per person per day | | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| | Emissions of atmospheric pollutants | | | | | ✓ | | | | |
| | Emissions of Greenhouse Gases | | | | | ✓ | | | | |
| | Temperature (maximum and minimum) | | | | | ✓ | | | | |
| | Precipitation | | | | | ✓ | | | | |
| Climate and Climate Change | Percentage of days when the NO ₂ threshold is trespassed (%) | | ✓ | ✓ | | | | | | |
| | Percentage of establishments that optimize water consumption | ✓ | | | | | ✓ | ✓ | | |
| | Percentage of tourism enterprises using recycled water | ✓ | | | | | ✓ | ✓ | | |
| | Percentage of tourism enterprises taking actions to reduce water consumption | ✓ | | | | | ✓ | ✓ | | |
| | Percentage of controlled water and good quality | ✓ | ✓ | ✓ | | | ✓ | | | |
| | Percentage of use of water efficiency measures | ✓ | | | | | | ✓ | | |
| | Number of blue flags in relation to the number of beaches as that part of the coastline considered bathing area | ✓ | ✓ | ✓ | | | ✓ | ✓ | | |
| | Percentage of excellent and good bathing waters | ✓ | | | | | | | | |
| | Quality of the aquatic system in estuaries and coastal lagoons | | | | | ✓ | | | | |
| | Percentage of bathing water quality in the interior | | | | | | | | | ✓ |

| Subdomain | Indicator | Travel BI | Indicators Systems | | | | | | | |
|---------------|---|-----------|--------------------|---------|--------|-------------------|---------------|------|-----|-------|
| | | | MITOMED+ | MITOMED | CROSTO | SIDS Algarve 2007 | UNWTO Balears | ETIS | ETE | Other |
| Environmental | Quarterly consumption by municipality per year | | | | | ✓ | | | | |
| | Quality of surface and groundwater by water body | | | | | ✓ | | | | |
| | Percentage of safe water per municipality | | | | | ✓ | | | | |
| | Percentage of population served by public water supply systems | | | | | ✓ | | | | |
| | Percentage of compliance with the license discharge | | | | | | | | | |
| | Percentage of population served by wastewater treatment plants | | | | | ✓ | | | | |
| | Percentage of wastewater treated | | | | ✓ | ✓ | ✓ | | | |
| | Monthly values of the water volume ratio stored in the reservoir/storage capacity | | | | | ✓ | | | | |
| | Coastline evolution | | | | | ✓ | | | | |
| | Coastal management measures | | | | | ✓ | | | | |
| | Water consumption in liters per person per day | | ✓ | ✓ | ✓ | | | ✓ | | |
| | Number of pollution in seawater per 100 ml | | ✓ | ✓ | | | | ✓ | | |
| | Number of berths and moorings for recreational boating in relation to total length of coastline | | ✓ | ✓ | | | | ✓ | | |
| | Volume of sand nourishment | | ✓ | ✓ | | | | | | |
| | Percentage of sand nourished (%) | | ✓ | ✓ | | | ✓ | ✓ | | |
| | Use of land: area of developed and building land in relation to land designated as not for building | | ✓ | ✓ | | | ✓ | | | |
| | Percentage of the area of the destination with a sustainable tourism strategy/action plan, with agreed monitoring, development control and evaluation arrangement (%) | | ✓ | ✓ | | | | ✓ | ✓ | |
| | Fauna and flora species threatened and protected | | | | | ✓ | | | | |
| | Management and nature conservation actions | | | | | ✓ | ✓ | | | |
| | Percentage of local enterprises in the tourism sector actively supporting protection, conservation, and management of local biodiversity and landscapes. | ✓ | | | | | | ✓ | ✓ | |
| Environmental | Percentage of the destination area that is designated for protection (%) | | ✓ | ✓ | | | | | ✓ | |
| | Percentage of the destination area under a biodiversity protection plan (%) | | ✓ | ✓ | | | ✓ | | ✓ | |
| | Percentage of tourism enterprises separating different types of waste | ✓ | | | | | ✓ | ✓ | ✓ | |
| | Solid urban waste produced by destination | ✓ | ✓ | ✓ | | ✓ | ✓ | | | |
| | Waste production per person | | | | ✓ | | | ✓ | | |
| | Volume of solid urban waste recycled | | ✓ | ✓ | | ✓ | | | | |
| | Environmental expenditure | ✓ | | | | | | | | |
| | Percentage of tourism enterprises in the destination using a voluntary verified certification/labeling for environmental/quality/sustainability and/or CSR measures (%) | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | |
| | Percentage of establishments with environmental criteria in the acquisition of goods and services | ✓ | | | | | | | | |
| | | | | | | | | | | |

| Subdomain | Indicator | Travel BI | Indicators Systems | | | | | | | |
|----------------------------|----------------------------|--|--------------------|---------|--------|-------------------------|------------------|------|-----|-------|
| | | | MITOMED+ | MITOMED | CROSTO | SIDS Algarve 2007 | UNWTO Balears | ETIS | ETE | Other |
| Sociocultural | Education | Percentage of establishments that provide environmental training to employees | √ | | | | | | | |
| | Employment | Personnel employed | √ | | √ | | √ | | | |
| | | Employment rate | | | | √ | √ | | √ | |
| | | Unemployment rate | | | | √ | √ | | | |
| | | Percentage of jobs in tourism that are seasonal | √ | √ | √ | | √ | √ | | |
| | Social Cohesion | Percentage of men and women employed in the tourism sector | √ | √ | √ | | | √ | √ | |
| | | Average wage in tourism for women compared to men's employment | | √ | √ | | | | | |
| | | Percentage of commercial accommodation establishments participating in recognized accessibility information schemes | | √ | √ | √ | | √ | | |
| | | Percentage of tourism enterprises where the general manager position is held by a woman | | √ | √ | | | √ | | |
| | | Percentage of beaches accessible to all | √ | √ | √ | | | √ | | |
| | | Percentage of tourist attractions that are accessible to people with disabilities and/or participating in recognized accessibility schemes (%) | | √ | | | | | | √ |
| | | Percentage of coastline km of free access beaches relative to total km of beaches (%) | | √ | √ | | √ | √ | | |
| | | Percentage of public transport that is accessible to people with disabilities and with specific access requirements | | | | | | √ | √ | |
| | | Number of second homes per 100 homes | | √ | √ | | √ | √ | | |
| | | Percentage of initiatives to support the local community | √ | | | | | | | √ |
| | Safety | Percentage of tourists who register a complaint with the police | | | | | √ | √ | | |
| | | Number of museum visitors | | | | | | | | √ |
| | Culture | Percentage of the destination's events that are focused on traditional/local culture and heritage | | | | √ | | √ | | |
| | | Number of cultural sites and practices considered at risk according to UNESCO WHS list/total number of cultural resources | | √ | | | | | | |
| | | Proportion of cultural sites and practices under some protection label related to the total number of cultural resources | | √ | √ | √ | | √ | √ | |
| | | Visitors satisfaction | √ | √ | √ | | √ | √ | √ | |
| Wellness in Destination | Wellness in Destination | Percentage of repeat/return visitors | √ | | | | | √ | √ | |
| | | Percentage of residents that are satisfied with the impacts of tourism on the destination's identity | √ | | √ | | | √ | | |
| | | Number of beds available in commercial visitor accommodation per 100 inhabitants | √ | √ | √ | | | √ | √ | |
| | | Tourist intensity | √ | | | | √ | | | |
| | Wellness in Destination | Tourist density | √ | | | | | | | |
| | | Occupancy rate in commercial accommodation (%) | √ | √ | √ | √ | | √ | √ | |
| | | Percentage of rooms in commercial accommodation establishments accessible for people with disabilities | √ | | | | | √ | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Subdomain | Indicator | Indicators Systems | | | | | | | | |
|-----------|--|--------------------|----------|---------|--------|-------------------|---------------|------|-----|-------|
| | | Travel BI | MITOMED+ | MITOMED | CROSTO | SIDS Algarve 2007 | UNWTO Balears | ETIS | ETE | Other |
| | Number of overnight stays | √ | | | | | √ | | | |
| | Percentage of accommodation establishments open all year | √ | | | | | | | | |

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REFERENCES

- [1] UNWTO; UNDP. Tourism and the Sustainable Development Goals—Journey to 2030; UNWTO: Madrid, Spain, 2017; ISBN 978-92-844-1939-5.
- [2] Higgins-Desbiolles, F. Sustainable tourism: Sustaining tourism or something more? *Tour. Manag. Perspect.* 2018, 25, 157–160, doi: 10.1016/j.tmp.2017.11.017.
- [3] Região de Turismo do Algarve, Plano de marketing estratégico para o turismo do algarve 2015-2018, Faro, pp. 160–291, 2014.
- [4] World Tourism Organization, Indicators of Sustainable Development for Tourism Destinations: A Guidebook, ISBN 92-844-0726-5, Madrid, pp. 8–10, 2004.
- [5] OBSERVE Project, <https://observe.pt/en/>, accessed online on January 15, 2019.
- [6] Ko, T. (2005). Development of a tourism sustainability assessment procedure: A conceptual approach. *Tourism Management*, 26 (3), 431–445.
- [7] Mowforth, M., & Munt, I. (2003). *Tourism and sustainability: New tourism in the third World*. London: Taylor & Francis.
- [8] Cernat, L., & Gourdon, J. (2012). Paths to success: Benchmarking cross-country sustainable tourism. *Tourism Management*, 33, 1044–1056.
- [9] Fernández, J., & Rivero, M. (2009). Measuring tourism sustainability: Proposal for a composite index. *Tourism Economics*, 15(2), 277–296.
- [10] Cernat, L.; Gourdon, J. Paths to success: Benchmarking cross-country sustainable tourism. *Tour. Manag.* 2012, 33, 1044–1056.
- [11] Catherine Sors, J. Measuring Progress towards Sustainable Development in Venice: A Comparative Assessment of Methods and Approaches. *SSRN Electron. J.* 2001, doi:10.2139/ssrn.275133.
- [12] EC. The European Tourism Indicator System. ETIS Toolkit for Sustainable Destination Management; EC: St Julian's, Malta, 2016.
- [13] CCDR-Alg; UAlg SIDS. Algarve—Sistema de Indicadores de Desenvolvimento Sustentável do Algarve. Available online: <https://web.ccdr-alg.pt/sids/indweb/index.asp?idp=1> (accessed on 18 February 2019).
- [14] Instituto Nacional de Estatística, Online, <https://www.ine.pt>. Accessed on: 18 February 2019.
- [15] Agência Portuguesa do Ambiente, Online, <https://www.apambiente.pt/>. Accessed on: 18 February 2019.
- [16] Comissão de coordenação e desenvolvimento regional do Algarve, Online, <https://ccdr-alg.pt/site/>. Accessed on: 18 February 2019.
- [17] Aeroportos de Portugal, Online, <https://www.ana.pt/>. Accessed on: 18 February 2019.
- [18] Infraestruturas de Portugal, Online, <http://www.infraestruturasdeportugal.pt/>. Accessed on: 18 February 2019.
- [19] Entidade reguladora dos serviços de águas e resíduos, Online, <http://www.ersar.pt/pt>. Accessed on: 18 February 2019.
- [20] Instituto da conservação da natureza e das florestas, Online, <http://www.icnf.pt/>. Accessed on: 18 February 2019.