Improving decision making in cultural destinations:

KPIs for sustainable tourism for the Atlantic Heritage

Fundación Santa María la Real

Mario Tena

Work Package 4 /

Development of transnational knowledge and Strategy

Outline

- Calendar
- Design of the indicator system
- Strategic framework
- Structure of the system
- Output of the system

Work Package 4 /

Development of transnational knowledge and Strategy

Calendar

Nº	Activity	Responsible	Start	Finish
4.1	Identification of Good Practices -International benchmark	Fomento San Sebastián & Université de Pau et des Pays de l'Adour	04-2019	10-2020
4.2	Protocol of Measurement	Fundación Santa María La Real del Patrimonio Histórico	04-2019 / **11 -2019**	10-2019 / **07 -2020**
4.3	Development of an ad hoc BODAH versus RIS3 – Joint Strategy	Cork Institute of Technology	04-2019	12-2019

Work Package 4 /

Development of transnational knowledge and Strategy

Calendar

Nº	Deliverable	Finish
4.1	Benchmark	10-2020
4.2	Data Collection Technical Manual	10-2019 / **07 -2020**
4.3	BODAH versus RIS3 – Joint Strategy	12-2019

Design of the indicator system

Objectives

The **purpose** is to incorporate a system of **indicators** that allows monitoring relevant information (BODAH) on the background, **behavior, characteristics and impact of this saturation**. The application of this system must allow us to predict, monitor in real time and obtain a scope of the effects of this saturation in a predefined **building, space or heritage areas**. The BODAH system, therefore, must generate relevant information to reinforce the actions and **decision making for a sustainable management** of the selected heritage through the control of tourist saturation and its effects.

Design of the indicator system

Areas

indicators

destination management

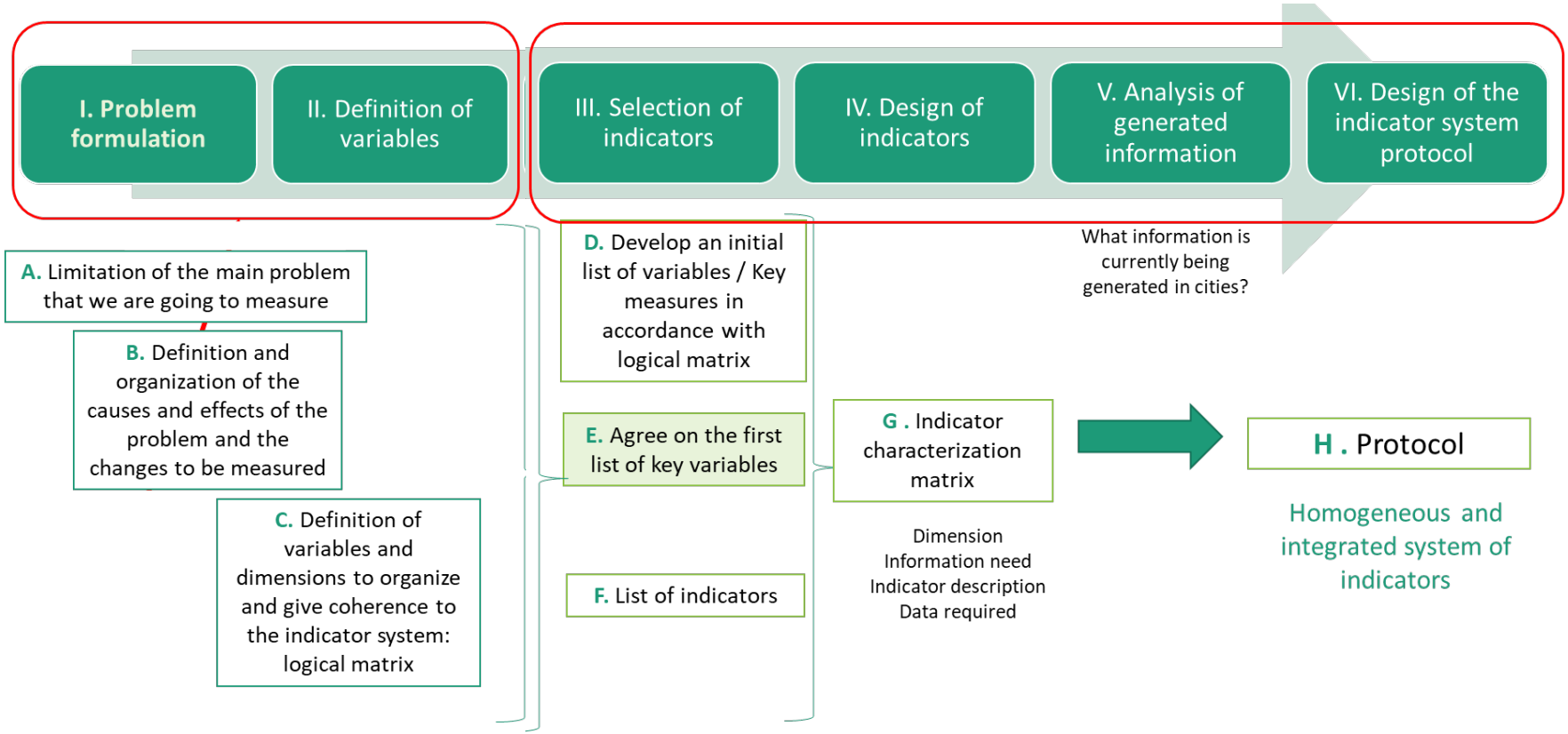
social and cultural impact

economic value

environmental impact

Design of the indicator system

Stages



How to measure?

Basic data to define the saturation (Input data)

Density: It is clear that it is relevant to have precise information on the number of tourists, where, and how long they are in the different itineraries of buildings and heritage nuclei. This measure should define an objective saturation index based on the density of people per area, and also ranges between which to establish a saturation scale.

Flow: Likewise, the characterization of the flow - itinerary defines not only a fixed photograph of the tourist behaviour, but also a moving scene of the density of people in the spaces being monitored.

Perception: On the other hand, it is relevant to incorporate a subjective measure of saturation related to the perception of the users (tourists and residents). Not only as a measure of the effects of saturation on the person, but as an indicator of real experience under different levels of saturation.

Changes: And finally a dimension of data that account for changes in the effects caused by saturation episodes, and that allows us to monitor the overall behavior of the problem.

How to measure?

How heritage condition the measurement (Structural data)

It is considered necessary that the system incorporates characterization data of the set of elements that make up the monitoring, and that can condition the analysis and interpretation of the data according to the different forms of tourism management in each city. Therefore, each city should propose some characterization variables, at least in the following levels:

- Characterization of reservations and types of routes through heritage spaces: System of tourist packages, reservations and itineraries.
- Characterization data of heritage spaces: building, historic centre.
- Tourist characterization data.
- Economic data.
- Historical data on the volume and impact of tourism in the city.

Design of the indicator system

Research

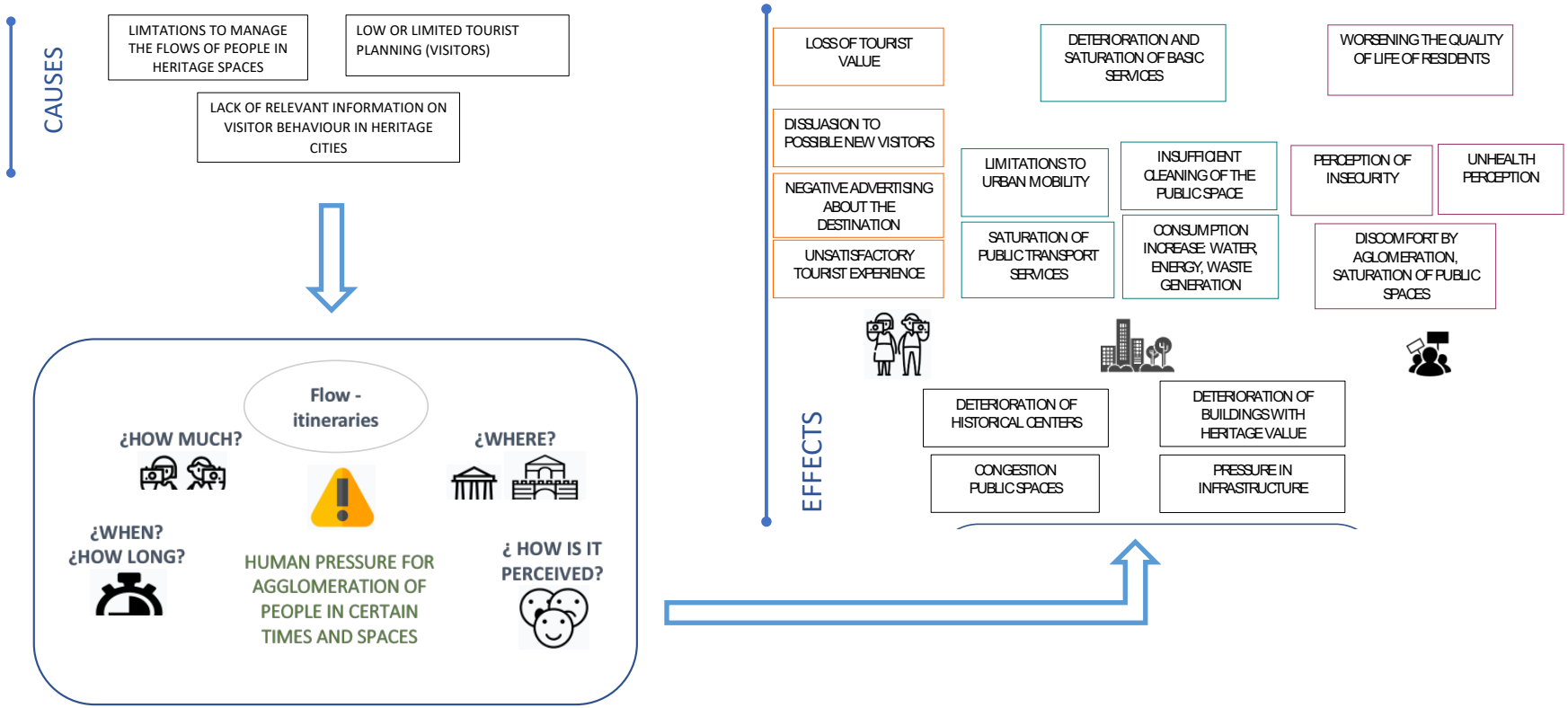
BODAH Survey – December 2019

Survey to collect different points of view regarding the development of project indicators and the measurement protocol.

- What is your vision about the indicators that we have to develop and measure in the project?
- What do you think are the main issues related to mass tourism?
- What variables and indicators are currently being measured in your region? Why? How are they hierarchically arranged?
- Linked to the object of the project. What kind of additional data do you think it would be necessary to collect? Classify them between "real time" indicators and strategic or long-term indicators.
- Should the indicator system be able to estimate the economic profitability associated with its application?

Design of the indicator system

Causes - Effects



Strategic framework of the system

Dimensions of the system

Data typology	Data description	BODAH dimensions		Indicator / Variable categories
Coverage data	Basic data to define the type of need (e.g. high concentration of people) that I want to measure 	1. Site / Buildings carrying capacity	Concentration degree related to: - Density level - crowding people / areas - Levels of preservation areas / environmental conditions preservation	Optimal concentration levels of people in spaces / areas Range of overnight stays Optimal levels of preservation of spaces / areas
		2. People - Flows in the city	Degree of concentration-traffic saturation: movement / itinerary of people susceptible to high concentrations in a space-area-circuit	Optimal levels of people transit in spaces / areas
		3. Perception - carrying capacity and flows in the city	Perception of the visitor and resident experience in relation to parameters of high density of people	Perceived experience (visitor / resident) in relation to: overcrowding - high density of people, security, hygiene and cleanliness, and preservation of heritage area
Effects data	What effects are producing the different concentration scenarios over time?	Coexistence: 4. Capacity, access and quality of services	Waste management levels, citizen security, preservation and the environment, transport and communications, etc.	Waste management capacity, citizen security, optimal environmental conditions, access to means of transport and parking
		Coexistence: 5. Socio-economic development	Touristification levels area (access basic services) Economic and patrimonial value	Access to housing, employment and local commerce Price increase Commercial value
Structural data of the monitoring areas	Characterization data of the set of elements that make up the focus of the monitoring system.	0. Tourist characterization spaces / areas / profiles	Characterization of profiles and stakeholders Characterization of spaces - itineraries Socioeconomic characterization area Tourism management model	

Strategic framework of the system

Sources of data

BODAH System

➔ **Preventive system**: how to prevent or anticipate saturation → Predictive indicators

➔ **Sensor system**: what is the situation and the problem in real time → Sensor indicators (real time)

➔ **Strategic system:** how to act against the causes - effects of saturation → Strategic indicators - consequences

Decision making

Sustainable tourism management

Structure of the system

System interpretation levels

Levels of use of the system: range forecasting and real-time performance

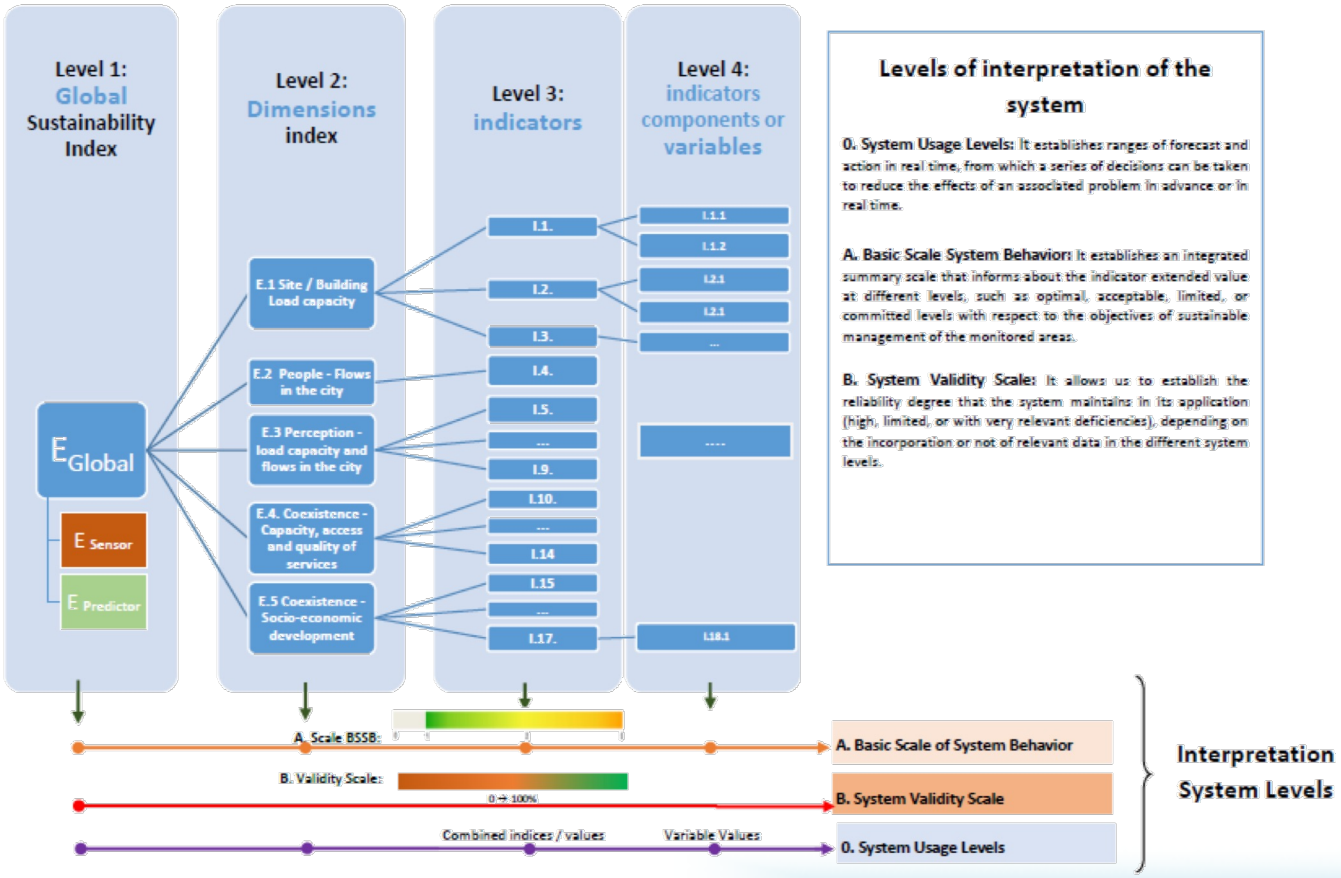
Basic scale of system behavior: optimal, acceptable, limited, or committed levels of sustainable management

System validity scale: degree of reliability that the system maintains in its application (high, limited, or with very relevant deficiencies)

Indicators system: hierarchical and organized indexes by relevance of variables

Structure of the system

Scheme of levels



Levels of interpretation of the system

0. System Usage Levels: It establishes ranges of forecast and action in real time, from which a series of decisions can be taken to reduce the effects of an associated problem in advance or in real time.

A. Basic Scale System Behavior: It establishes an integrated summary scale that informs about the indicator extended value at different levels, such as optimal, acceptable, limited, or committed levels with respect to the objectives of sustainable management of the monitored areas.

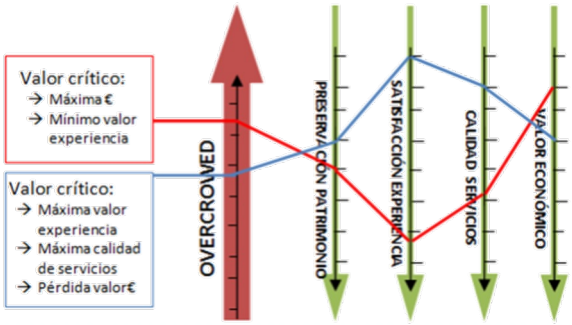
B. System Validity Scale: It allows us to establish the reliability degree that the system maintains in its application (high, limited, or with very relevant deficiencies), depending on the incorporation or not of relevant data in the different system levels.

Structure of the system

Indicators and KPIs

E1 Site / Building Load capacity	E3 Perception - load capacity and flows in the city	E4 Coexistence - Capacity, access and quality of services	E5 Coexistence - Socio-economic development
(E1) I.1. Degree of concentration - level of density of people in heritage areas	(E3) I.4. Tourist-Visitor-Resident perception of high density of people (feeling of saturation)	(E4) I.9. Capacity to maintain urban cleanliness (adequacy of services to needs)	(E5) I.13. Level of access to housing in heritage areas
(E1) I.2. Degree of concentration - level of preservation areas / environmental conditions preservation	(E3) I.5. Tourist-Visitor-Resident perception of security	(E4) I.10. Ability to maintain public safety at optimal levels in heritage areas	(E5) I.14. Level of access to quality employment in heritage tourism areas by the population
	(E3) I.6. Tourist-Visitor-Resident perception about hygiene, sanitation and cleanliness conditions	(E4) I.11. Ability to ensure that contamination levels are kept below	(E5) I.15. Level of access of residents to commodities in local shops in tourist areas
E2 People - Flows in the city	(E3) I.7. Tourist-Visitor-Resident perception of heritage conservation	(E4) I.12. Smooth access to public transport in heritage sites	(E5) I.16. Price levels in heritage tourism areas
(E2) I.3. Degree of concentration - traffic saturation: movement and itinerary of persons	(E3) I.8. Tourist-Visitor-Resident perception of commerce and services of the city or the analysed zone.		(E5) I.17. Level of proliferation of hotels, facilities or shops for tourists.
STRUCTURAL INFORMATION (SI)	**SI. Characterization of areas of heritage value** (SI) A. Characterization of heritage areas with tourist value (SI) B. Load capacity of the heritage area		

Definition of values in Basic scale of system behavior, BSSB (A Scale)	
0	NO DATA IN THE VARIABLE
1	> 1 m^2/person
2	0,97-1 m^2/person
3	< 0,97 m^2/person



Output of the system

Indicators list

Global (E) (L1)	DIMENSIONS INDICATORS (E_x) - (L2)	(L3) INDICATOR (In_x)	(L4) INDICATOR COMPONENTS OR VARIABLES (V_x)	INDICATOR RELEVANCE	COVID19	DATA USE		
						Predictive indicators	Sensory indicators	Strategic indicators
E_Θ	E.1 Site / Building Charge capacity	(E1) I.1. Concentration degree - density level of of people in heritage areas	(E1) I.1.1 Real concentration levels of people / saturation in heritage areas	1º n = 16,5	♥		☑	☑
			(E1) I.1.2 Saturation expectations in heritage areas	3º n = 1	♥	☑		
		(E1) I.2. Concentration degree - level of preservation areas / environmental conditions preservation - infrastructure (closed spaces)	(E1) I.2.1 Environmental conditions of heritage buildings	2º n = 3			☑	☑
			(E1) I.2.2 Investment costs - heritage buildings maintenance	3º n = 1				☑
	E.2 People – Flows in the city	(E2) I.3 Concentration degree - traffic saturation: people movement and itinerary	(E2) I.3.1. Real people traffic detection: number / area / time	1º n = 16,5	♥		☑	☑
			(E2) I.3.2. Reservation management analysis: predicting critical values of people concentration in tourist itineraries	3º n = 1	♥	☑		
	E.3 Perception – Charge capacity and flows in the city	(E3) I.4. Tourist-visitor-resident perception of high population density (saturation feeling)	(E3) I.4.1. Real-time perception of saturation feeling: social networks	3º n = 1	♥		☑	☑
			(E3) I.4.2. Post-experience perception index of saturation feeling (surveys)	1º n = 16.0	♥			☑
		(E3) I.5. Tourist-visitor-resident perception of security	(E3) I.5.1. Real-time perception of security: social networks	3º n = 1	♥		☑	☑
			(E3) I.5.2. Post-experience perception index of security (surveys)	2º n = 3	♥			☑
		(E3) I.6. Tourist-visitor-resident perception of hygiene, sanitation and cleanliness	(E3) I.6.1. Real-time perception of cleanliness and hygiene: social networks	3º n = 1	♥		☑	☑
			(E3) I.6.2. Post-experience perception index of cleanliness and hygiene (surveys)	2º n = 3	♥			☑
		(E3) I.7. Tourist-visitor-resident perception of heritage conservation	(E3) I.7.1. Post-experience perception index of the state of heritage conservation (surveys)	2º n = 3				☑
		(E3) I.8. Tourist-Visitor-Resident perception of commerce and services of the city or the analysed zone	(E3) I.8.1. Post-experience perception index perception of commerce and services (surveys)[5]	2º n = 3				☑
	E.4 Coexistence - Services capacity, access and quality	(E4) I.9. Capacity to maintain urban cleanliness (adequacy of services to needs)	(E4) I.9.1. Ratio people / bins / containers	2º n = 3				☑
			(E4) I.9.2. Volume of solid waste collected	3º n = 1				☑
			(E4) I.9.3. Frequency of cleaning services intervention by areas	2º				☑

Output of the system

Validation of the system

Strategic - Global System and validity scale (Validity EV_{Global}):

Global (E) (L1)	DIMENSIONS INDICATORS (E_x) - (L2)	(L3) INDICATOR (In_x)	(L4) INDICATOR COMPONENTS OR VARIABLES (V_x)	INDICATOR RELEVANCE	Validity Scale Estrategic - Global System
E_g	E.1 Site / Building Charge capacity	(E1) I.1. Concentration degree - density level of of people in heritage areas	(E1) I.1.1 Real concentration levels of people / saturation in heritage areas	1º n = 17	Strategic - Global System Validity EV_{Global}: Unit: $Vx \neq 0$ Values: - 1º = 17 - 2º = 3 - 3º = 1 Ranges: ☑ Optimal validity: range 76 to 100 ☑ Limited validity: range 51 to 75 ☑ Low validity: range 0 to 50
		(E1) I.2. Concentration level - level of preservation areas / environmental conditions preservation - infrastructure (closed spaces)	(E1) I.2.1 Environmental conditions of heritage buildings	2º n = 3	
			(E1) I.2.2 Investment costs - heritage buildings maintenance	3º n = 1	
	E.2 People – Flows in the city	(E2) I.3. Concentration degree - traffic saturation: people movement and itinerary	(E2) I.3.1. Real people traffic detection: number / area / time	1º n = 17	
	E.3 Perception – Charge capacity and flows in the city	(E3) I.4. Tourist-visitor-resident perception of high population density (saturation feeling)	(E3) I.4.1. Real-time perception of saturation feeling: social networks	3º n = 1	
			(E3) I.4.2. Post-experience perception index of saturation feeling (surveys)	1º n = 17	
		(E3) I.5. Tourist-visitor-resident perception of security	(E3) I.5.1. Real-time perception of security: social networks	3º n = 1	
			(E3) I.5.2. Post-experience perception index of security (surveys)	2º n = 3	
		(E3) I.6. Tourist-visitor-resident perception of hygiene, sanitation and cleanliness	(E3) I.6.1. Real-time perception of cleanliness and hygiene: social networks	3º n = 1	
			(E3) I.6.2. Post-experience perception index of cleanliness and hygiene (surveys)	2º n = 3	
		(E3) I.7. Tourist-visitor-resident perception of heritage conservation	(E3) I.7.1. Post-experience perception index of the state of heritage conservation (surveys)	2º n = 3	
		(E3) I.8. Tourist-Visitor-Resident perception of commerce and services of the city or the analysed zone	(E3) I.8.1. Post-experience perception index perception of commerce and services (surveys)	2º n = 3	
	E.4 Coexistence - Services capacity, access and quality	(E4) I.9. Capacity to maintain urban cleanliness (adequacy of services to needs)	(E4) I.9.1. Ratio people / bins / containers	2º n = 3	
			(E4) I.9.2. Volume of solid waste collected	3º n = 1	
			(E4) I.9.3. Frequency of cleaning services intervention	2º n = 3	

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Core team involved in BODAH

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