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Research Article

EVALUATION OF THE QUALITY OF AN INTELLIGENT AND SUSTAINABLE TOURIST URBAN SYSTEM IN TLEMCEN

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ABSTRACT

This article proposes the evaluation of a tourist urban system "Plateau LallaSetti, Tlemcen" in a global framework for the elaboration of a territorial diagnosis with a view to taking charge of urban complexity. The integrated "Quality Safety Environment" approach, which is very suitable for dealing with the complexity of urban systems, aims to introduce the site to urban sustainability by putting the principles of sustainable development by involving all stakeholders in decision-making through participatory governance by introducing the notion of urban intelligence.

This approach guarantees a consensus upstream of the decision-making process, reducing the likelihood of conflict situations linked to contradictory positions of its actors compared the main orientations governing the urban project.

Key words: QSE Integrated Approach, urban intelligence, urban sustainability, participatory governance, quality of tourist public spaces.

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1. INTRODUCTION

The design and management of urban tourist sites in Tlemcen, as well as all the other cities in Algeria, does not completely satisfy users because of the failure to assess their quality in order to establish sustainability. This is mainly due to the lack of appropriate methodological

references due to the poverty of tools for measuring the quality of urban systems, to the legislative support described as obsolete in the context of the integration of concepts related to sustainable development by their implementation. In practice those of urban intelligence (domotics and urban planning) as well as the governance mode which must rely on the complementarity of the stakeholders and aims at balancing their multiple particular interests,in order to reach the optimal solution under the common good [1].

Infact, sustainable development has become an important goal in urban policies. It is reflected in the adoption of various measures to ensure that a city, in all its sectors, can jointly improve its economic, social and environmental assessments, which are the main pillars of sustainable development [2].

On the other hand, tourism generates a large number of impacts that, when positive, benefit the entire national and local economy and preserve weak natural and cultural sites, and when they are negative, contribute to the loss of the same economic, social, environmental and cultural assets that make the basis of these territories. Thereforetourisme has repercussions on the economy, on the natural environment and built, on the local population of the destination and on the tourists themselves. This approach is strongly recommended for the formulation and application of tourism policies embedded in urban sustainability and intelligence as a globality integrating system

Thereby, environmental and digital technologies are establishing themselves in the name of the concept of a sustainable city. Technology is changing status. It is no longer focused solely on the progress of man, but also on the sustainability of the world from which he must henceforth take care to meet his needs without compromising those of future generations. As a result, the sustainable city must be intelligent by all its components. The design and management of a smart and sustainable urban tourism system is now subject to environmental techniques aimingat controlling energy, water, resource protection and digital technologies for the creation of smart grids, new services information and urban information.

This approach is framed by a normative reference of urban sustainability; ISO 9000 series (1987, 1994, 2000, 2015) quality management, ISO 14000 environment (1996, 2015), ISO 50001 (2011, 2017), ISO 31000 (2009, 2018), safety and health ISO 45001 (2016), social responsibility ISO 26000 (2010) and ISO 20400 (2017), urban intelligence; management planning and management of sustainable cities and communities ISO / TC268 (2012), intelligent city design through a data interoperability model ISO / IEC 30 182 (2018), city terminology and sustainable territorial communities ISO 37100 (2016) and performance

indicators of urban services and quality of life in cities ISO37120 (2014-2017) as well as sustainable tourism ISO / TC228 (2005), tourism of ISO 20611 adventure (planned for 2019) and the sustainable management of accommodation premises ISO 21401 (planned for 2019)

These International Standards encourage the adoption of a process approach in the development, implementation and improvement of the effectiveness of a quality management system, in order to integrate safety and security. 'environment. This QSE integrated management system ensures the resilience of the intelligent and sustainable urban tourism system in a participatory governance approach involving all stakeholders towards a consensus.

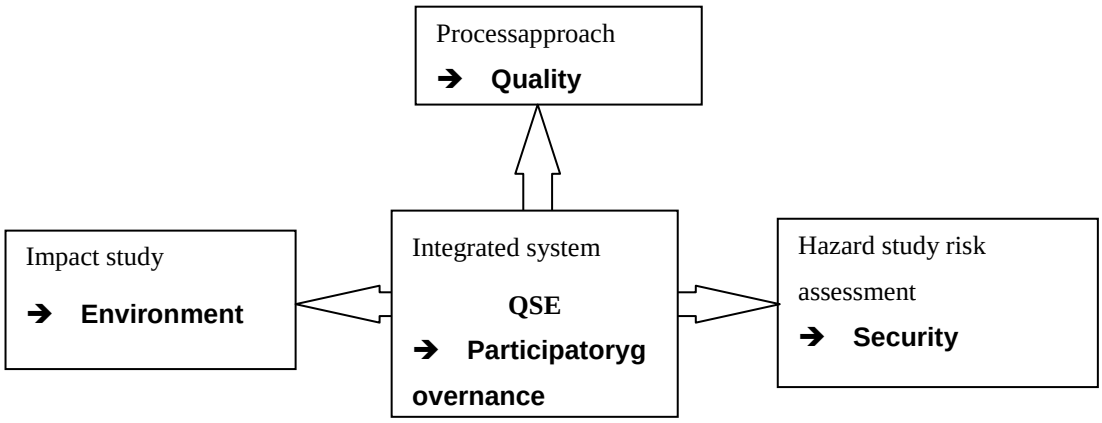

Fig.1. Presentation of The Integrated Management System (QSE)

This fact concretized the concept of territorial engineering, a first definition of which was proposed in 2004 by the Committee of Directors for Urban Development (CODIRDU): "all the professional know-how needed by public authorities and local actors to lead the territorial development or the sustainable development of the territories ". This development leads to the idea of territorial engineering chain proposed by Lardon et al. (2007), which is defined in the first approach as "the way in which the actors organize themselves, throughout the course of the [territorial] project, according to different temporalities and modalities". This network is at the heart of problematic multi-stakeholder and multi-level governance whose challenge is the "collective capacity to act and innovate on a given space", and whose framework and horizon are the territorial project [3].

With the emergence of the concept of territorial intelligence - which consists of multiple approaches including the systemic consideration of a territory through the networking of its actors for its sustainable development, the improvement of its human or entrepreneurial attractiveness. , the relations between engineering and territorial intelligence are debates.

Some authors and practitioners favor the notion of intelligence [4]. Others, developing the notion of territorial engineering chain, see intelligence as a set of capabilities mobilized by engineering. Still, territorial engineering is defined as an effective tool for the evaluation, design and management of urban systems. And since cities must adapt their governance to the new sustainability challenges they face, we are talking about smart governance, which must be studied as a complex process of institutional change and taking into account the political nature of the seductive visions of social governance. technological [5].

Thus the approach to the concept of spatial control has evolved from a simple management, towards centralized or decentralized proactive planning, then towards development management, as if the city were a business, to succeed today the recognition of the need for shared governance, integrated into the sustainable development approach [6]. Recall that in the ISO 20400 (2017) standard of social responsibility, governance is both a central issue that sparks action from organizations and a means to increase their ability to behave responsibly towards other central issues.

This article is therefore an implementation of a method of assessing the quality of a tourist urban system (LallaSettiPlateau,Tlemcen) through an integrated QSE approach that helps all stakeholders in an initial phase of the decision process to build a representation of the territorial system perceived as complex [7], and to lead to a unique model of diagnosis based on several models specific to each of them separately. This phase of diagnosis development based on a method of cross-referencing the urban sustainability objectives of the HQE2R (CSTB 2004) approach with those of sustainable tourism - introduced by the World Tourism Organization in 2015- as well as those of the intelligence project - under the United Nations agenda for the 2030 deadline for new approaches to innovation to achieve the Sustainable Development Goals, 2017- will draw up a real need statement based on a grid of criteria and evaluation indicators and will be decisive in establishing an intelligent and sustainable urban tourism system.

2. INTEGRATED QSE METHOD FOR EVALUATING A TOURIST URBAN SYSTEM)

The means and tools of control of urban development are obsolete over time, the understanding of the notion of space has indeed evolved, to integrate today that of the urban ecosystem considered as an urban body, organization living with intelligence [8].

The evolution of research on sustainable urban development has four main stages [9]. At the end of the 1980s, the research was mainly conceptual in order to project the concept of

sustainable development - initially conceived at the international level - to the context of regional and local issues. Towards the mid-1990s, research interests became mainly descriptive and centered on methodological debates in the search for operational content for sustainable development, notably through the development of indicators. This descriptive orientation of the research continued around the evaluation and characterization strategies of the sustainable city. In the end, the current research interests tend towards the study of the explanatory factors of the results obtained by the cities by means of a process of successive evaluations (a priori, path making, a posteriori) to ensure an ideal quality over time at different phases of the life cycle of the urban system.

The tools for evaluating urban systems are numerous and different in terms of form, the results they produce or the means to implement, from the simplest to the most complex. These include indicators [10], analysis and evaluation grids [11], consultation and consultation tools [12], environmental assessments [13] and dashboards [14].

About that, Gasparatos and Scolobig (2012) consider indicator-based approaches to be among the most appropriate given their ability to grasp the multi-dimensionality of sustainable development. Indeed, assessing the sustainability and intelligence of a tourist urban system remains a multi-criteria and multi-stakeholder decision-making process. As a result, a participatory approach is needed because urban operations must now meet many, sometimes contradictory, criteria.

As such, indicator evaluation practices are multiplying in urban sustainability projects. Based on the analysis of 27 indicator systems [15] as well as the research work of the CSTB Scientific and Technical Center for Building [16]. It is customary to distinguish the types evaluation in terms of its temporality [17]: ex-ante evaluation (a priori), carried out before project design (prior diagnosis), ex-post evaluation (a posteriori), carried out after project completion (impacts on the field), and evaluation in itinere (pathway), carried out throughout the design and implementation of the project (progression and comparison with the initial objectives [18]. In reality, we find the Most of the time, in hybrid forms to the three types of evaluation mentioned above, because many actions and activities never stop but change.

Several formatting quantitative evaluation systems are possible [19] ranging from battery or indicator system with a large number of indicators (from 50 to 250). The tool then takes on the appearance of "Prévert lists" [20] and can be difficult to appropriate and use, with a limited selection of flagship indicators, whose representative dimension is redoubled. Or so-called synthetic indicators (composite or aggregated), which pose the problem of weighting

choices and can be difficult to calculate. Nevertheless, the latter have some success with the general public [21]. The most famous is the ecological footprint [22].

In this article and for a double evaluation (ex ante, in itinere), we limit ourselves to indicator systems, more relevant at local scales. The integrated approach used is the multicriteria method (QSE).

The project must respond to the concept of an intelligent and sustainable urban tourism system driven through participatory governance in an integrated Quality-Safety-Environment management approach. On this basis, the different dimensions (objectives) that constitute the concept are identified, knowing that it is most often multidimensional. These dimensions are broken down into a grid of criteria, some of which will be retained as indicators that must be measured. The last operation consists in aggregating and weighting the various indicators in a synthetic index. The dimensions and indicators constituting an index can be represented in the form of a tree structure. The process will therefore be based on five steps:

1. Determining the "objective" dimensions of the system that will lead to a grid of criteria
2. Translation of criteria into measurable and quantifiable indicators.
3. Standardization of indicators by assigning a value.
4. Weighted aggregation of indicators into synthetic indices
5. Method of representing the results

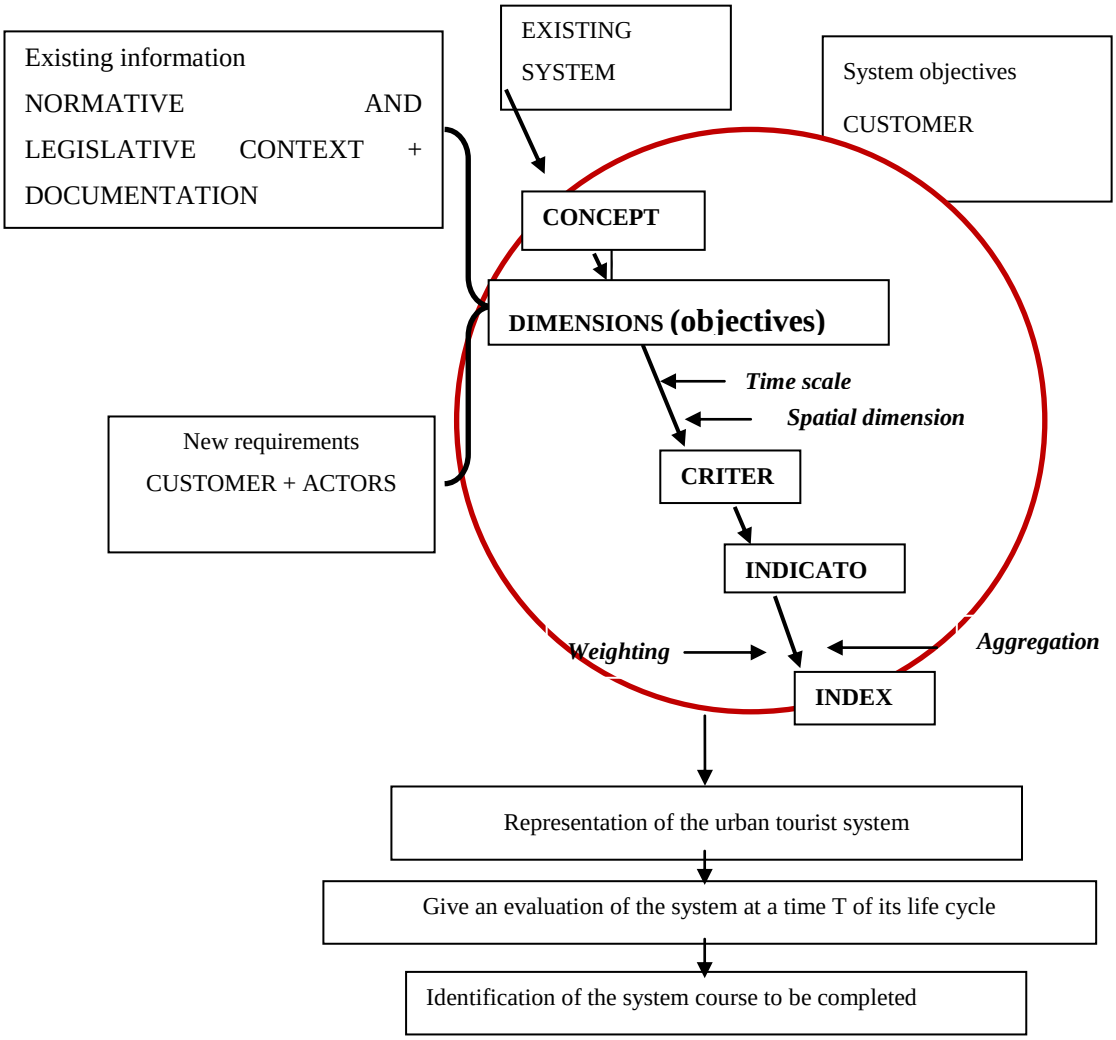

Fig.2. QSE Evaluation Method For Evaluating a Tourist Urban System

Source: The Author

3. APPLICATION OF THE METHOD TO A DEVELOPMENT PROJECT: EVALUATION OF THE QUALITY OF THE PERI-URBAN TOURIST SYSTEM OF THE LALLASETTIPLATEAU, TLEMCEN

3.1. Presentation of the context of the current system

The plateau of "LallaSetti", is part of the perimeter of the national park of the wilaya of Tlemcen, created by Executive Decree No. 93-117 of 12/05/1993 covering an area of 8225 hectares. It is located near the urban limits about 2.5km south of the city of Tlemcen from the CW55.Il dominates the entire city until the end of sight. It is situated at 1000m altitude while the city is only 800m. The total area of the tray is 160ha. It is bordered to the north by the cliffs, to the east and west by farmland and to the south by the Tlemcen Forest. The plateau as a tourist pole welcoming a large audience is accessible in addition to the cable car that the two main lands from Mansourah and Birouana, the latter sinuous given the topography of the territory should be supported in the framework of works affecting the improvement of their functionality.

Fig.3. Location of The LallaSetti PlateauTlemcen
Source: the author

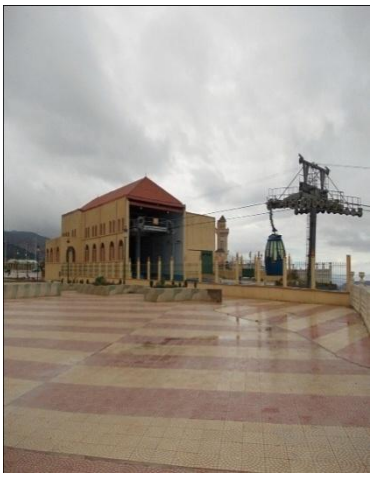

Fig.4. Cable car lift to the plateau
Source: the author

However, the establishment of large-scale structures such as the Renaissance hotel, the group with several sports facilities, the reception facilities, the park house, the wilaya V museum, the cable car station, ... Energy and transmitting GHGs close to the strong mechanical circulation, especially during the holiday periods induced by the new vocation of the site, requires immediate action in order not to alter the exceptional natural forest site of which the plateau is an integral part.

In addition, the site contains undeniable renewable natural resources; solar energy, wind power, energy from water and biomass, all renewable and untapped, hence the need for a retrofit of the latter at the expense of perishable fossil fuels and source of pollution and inconvenience.

During the 80s, in order to revalue the plateau, the public authorities launched studies of amenities for the theme park, but following the crisis situation caused by the insecurity experienced by Algeria during the decade, the project could not be fully realized. During the year 2005, a land use plan covering the sector was launched but it was interrupted, in favor of studies of embellishment of the plateau for the event: Tlemcen, Capital of Islamic Culture 2011. The works, undertaken in a hurry, were almost completed during the 2006-2011 timeframe. The facilities included very rich and diversified programs, facilities designed to accommodate a growing audience, in a desire to give the plateau a tourist and cultural cachet to make LALLA SETTI a real tourist pole with regional influence, see national.

The various structures realized, were at the origin of serious polemics between the actors having contradictory positions with respect to the objectives of the system, from where an opposition to the urban project. Such being the position of partisan environmental associations of urban choices enhancing the preservation of the specific environment of the plateau.

These types of complex and conflicting situations related to land use planning and environmental management are becoming more frequent. "The divergent and contradictory evolutions of the frameworks of social life, economic life, and political life underline the complexity of territorial dynamics [23]. The acceleration of these evolutions makes it difficult to assimilate and appropriate them. by the groups of actors, which leads to an almost systematic opposition to the urban project.

These conflicts are explained by a divergence of values and individual or collective representations of the same system of the environment [24]. In order to unblock these complex situations of conflict between territorial system actors, participatory decision-making processes are gaining importance.

In this context, we are looking for a territorial managerial study requested by the Ministry of the Environment and Regional Planning as a client, requesting a sustainable and intelligent periurban tourist system on the plateau site. Response to the aspirations and trends of the various actors involved in the system as part of a national strategic vision for city management; Algeria has been a signatory to the Kyoto Protocol since 05 February 2005 Initially, it will be a matter of determining the scope of the system materialized by its spatial

limit as well as its temporal scale in the same way as its stakeholders. These different actors, whose number is five, present, by means of a questionnaire and according to their priority order, their strategic objectives as well as their choices towards the development project as formulated by the client according to their relative perceptions; their status, role and level of responsibility.

3.2. Determining the objectives of the system and a criteria grid

From the state of the art of existing evaluation methods and considering the different experiences already carried out in this field, we can define the general principles. Our research methodology is therefore based on the cross-analysis of the sustainable development indicator evaluation systems for the three axes mentioned above. The objectives of the system are obtained from the crossing of those relating to:

Axis 1: Urban sustainability

Several approaches have addressed the application of sustainable development to the urban. The state of the art of existing projects reveals [25]: The CSTB method "rehabilitate or demolish and build?", The English method "regeneration balance sheet", the evaluation of environmental impacts (EIA) , the method proposed by the SETUR, the HQE²R method (coordinated by the CSTB tested in 14 cities of the 7 member countries of the European Union) and the Environmental Approach on Urbanism (AEU). These approaches are distinguished from each other by their fields of application and their respective objectives.

The HQE2R approach seems very close to our theme, because of its punctual intervention scale (neighborhood-entity) that its goal is to implement a precise and quantifiable evaluation and a shared diagnosis of the urban system in the context of sustainable development to undertake rehabilitation. Its Integrated Sustainable Development Indicators System (ISDIS) is based on 61 indicators, 21 targets and 5 objectives.

Axis 2: Sustainable tourism

Tourism occupies a special position in relation to the contribution it can make to sustainable development and the challenges it poses: on the one hand, because it is a dynamic and growing sector, which makes a major contribution to the economy of many countries and local destinations; on the other hand, because it is an activity that creates a special relationship between consumers (visitors), professionals, the environment and local communities [26]

As part of the evaluation of sustainable tourism, several indicator systems have been developed to date [27]. International Organizations: UNWTO: Indicators of Sustainable Development for Tourism Destinations A Guidebook, European Tourism Indicators System (ETIS), Global Sustainable Tourism Council (GSTC), Global Reporting Initiative (GRI),

Swiss Confederation: SWEDEN, MONET, in theory, HwanSuk&Ercan: Sustainability indicators for managing community tourism

Each indicator of the seven systems listed above has been listed according to the pillar of sustainability being addressed. The management dimension has been added to the three pillars usually used (economic viability, ecological sustainability and social equity). The objectives supported by the various systems meet the objectives of sustainable tourism integrated by the United Nations in 2015 and modified in 2017. The crossing of the aforementioned systems allowed us to split our objectives of sustainable tourism.

Axis 3: Urban intelligence

The term "smart city" was born in the 1990s. Three phenomena are often identified to explain its origin and popularity. First, it is an expression popularized by private firms such as IBM, Cisco Systems, Siemens AG, Nokia, Veolia, Dassault, General Electric, Philips etc. for which technology remains the key element of their conceptions and visions of a "smart city" [28], then, it is an expression that fits into the lineage of other terms to grasp the emergence of new technologies within urban spaces. If the terms "future cities", "eco city", "smart cities", "compact cities", "innovative cities", "green" cities ", compact cities" are used stably to characterize the cities of tomorrow, the term "smart cities" is becoming increasingly popular [29]. Also, it is the continuation of the already old reflections on the city of the future. According to cybernetics, a complex system can maintain its functioning by automatically adjusting its inputs using sensors that participate in the feedback of information through the feedback process. The development of algorithms at the beginning of the 21st century makes the smart city the new avatar of the cybernetic city [30].

In sum, there is no consensus as to what or what a smart city should be. The definitions vary according to context and there is no consensus definition[31], this variety is explained in particular by the fact that the "smart city", because of the diversity of the fields it touches, is a subject of multidisciplinary research [32]. However, there is a common assumption for all these different meanings: the "smart city" is a data-driven city. In this sense, "big data is [...] the indispensable tool to allow the emergence of real smart cities, structured by a knowledge of the city updated in real time and a form of permanent ubiquity" [33]. The "hard" domains versus the "soft" domains.

Indeed, the intelligent transformation of cities under the impetus of new technologies has gradually integrated aspects of urban life as varied as the economy, education, democracy, infrastructure, transport, environment, security and quality of life [34]. Urban intelligence thus encompasses several areas that divide different objectives in the service of urban

sustainability. Moreover, with the irruption of participatory and partnership approaches, management has transformed into governance. But we cannot govern responsibly, effectively, strategically and prospectively, without the contribution of innovation and accompanying engineering. Thus, the aggregation of the modes of control of space ultimately leads to the construction of a new vision, that of urban intelligence [35].

In the literature, and Facing the growing variety of the components of the intelligence of the cities, were determined objectives of the urban intelligence by field, according to six dimensions: smart economy (competitiveness); smart people (social and human capital); smart governance (participation); smart mobility (transport and ICT); smart environment (natural resources and smart living [36].

In order to inform the three objectives axes on which the intelligent and sustainable tourism system of the plateau is based, were crossed the criteria resulting from the approaches and referential raised:

- Entry by normative, legislative and theoretical references of the concepts of urban sustainability, urban intelligence and sustainable tourism.
- Entry by the actors (managers, users, designers, owner) of the system on the basis of a questionnaire developed on the basis of the objectives set in advance by the client.
- Entry by the local objectives collected mainly from the client, as well as a reading of the orientations of the urban planning instruments in force. It should be noted, however, that some land use and development laws are being revised.

OBJECTIVES / CRITERIA **URBAN SUSTAINABILITY** **(HQE2R approach, ISDIS integrated system, 2004)**	***OBJECTIVES / CRITERIA*** ***SUSTAINABLE TOURISM*** ***(Crossover of integrated systems UNWTO, ETIS, GSTC, GRI, SWEDEN, MONET)***	**Ojectives / CRITERIA** **URBAN INTELLIGENCE** **(AdaptedfromGriffinger et al., 2007, Caragliu et al., 2011, Nam &Pardo, 2011, Lombardi, 2012, Chourabi et al., 2012, Lee et al., 2014, Neirotti, 2014, Vanolo, 2014, Anthopoulos , 2015, Gil-Garcia et al., 2014, Bolivar &Meijer, 2015, Ojo et al, 2015)**
Preserve and value heritage and conserve resources: **1**. Energy 2. Water 3. Urban sprawl 4. Materials 5. Built and natural heritage **Improve the quality of the local environment** **1.** Landscape and visual quality 2. Quality of housing and buildings 3. Cleanliness, hygiene and health 4. Security and risk management 5. Air quality 6. Noise nuisance. 7. Waste management **Improve diversity** **1**. Diversity of the population 2. Diversity of functions (economic and social) 3. Diversity of housing supply **Improve integration** **1.** Education and professional qualification 2. Employment, 3. Attractiveness 4. infrastructure for gentle modes of travel **Strengthen the social bond:** 1. Social cohesion and participation 2. Networks of solidarity and social capital	**Ecological sustainability** 1. Spatial planning 2. Waste 3. Energy 4. Climate impact 5. Landscape, biodiversity and natural resources **Management** **1**. Public policy of sustainable tourism Social equity 1. Quality of the habitat 2. Community / Social Impact 3. Employment 4. Cultural Heritage & Local Identity 5. Mobility **Economic viability** 1. Public-Private Partnership / Government Support 2. Continuing Education 3. Employment 4. Local / organic / fair trade products **5**. Average daily expenses per tourist 6. Total number of arrivals 7. Visitor satisfaction 8. Seasonality of tourism	Infrastructure, technologies and data 1. Telecommunications Infrastructure 2. Data Center 3. Digital platforms Economy 1. High-tech enterprises and digital transformation of enterprises 2. Innovation, entrepreneurship and creativity 3. Universities, research centers 4. Territorial Marketing and International Partnerships Population 1. Human and social capital 2. Attractiveness 3. Cohesion and social inclusion 4. Pro activity of citizens Transport and mobility 1. Logistics 2. User information 3. Sustainable mobility and local accessibility Quality of life and environment 1. Public services 2. Smart networks 3. Renewable energy 4. Buildings and quality housing 5. Density and fight against urban sprawl Touristic destination 1.Tourist Experience 2. Co-creation activities 3. Visibility Governance 1. E-Government 2. e-Democracy 3. Interoperability and partnerships 4. Transparency 5. Citizen engagement and participation in decision-making 6. Protection

Table 1. Objectives / System Criteria

Source : the author

On the crossing of the analysis criteria basis split by all the actors involved and the frequency of appearance of the latter in the different sources has been developed a short list of criteria:

Objective retained	**criterion**	**Objective retained**	**criterion**
1. **Intelligent ecologicalsustainability**		**4.Economy**	
1.1.Inheritance and resources	1.1.1. Energetic efficiency	4.1. Economicviability	4.1.1. Private public partnership
	1.1.2. Saving water		4.1.2. Average daily expenses per tourist
	1.1.3. Reduction of urban sprawl		
	1.1.4. Protection of built and natural heritage		4.1. 3. Visitor satisfaction
	1.1.5. renewableenergy		
1.2. Quality of the environment	1.2.1. Landscape and visual quality		
	1.2.2. Quality and intelligence of buildings	4.2. Clevereconomy	4.2.1. High-tech companies
	1.2.3. Cleanliness, hygiene and health		4.2.2. Innovation, entrepreneurship
	1.2.4. Security and risk management		
	1.2.5. Air quality		
	1.2.6. Noise	**5. Infrastructure, technologies**	5.1. Telecommunications Infrastructure
	1.2.7. Waste management		
	1.2.8. Smart networks		
2. Social equity	2.1. Employment		
	2.2. Transport and accessibility		
	2.3. Smart mobility		
	2.4. Social inclusion cohesion		
	2.5. attractiveness		
3. Governance	3.1. eGovernment		
	3.2. Interoperability and partnerships		
	3.3. Data protection		
	3.4. TouristExperience		
	3.5. Visibility		

Table 2. Objectives / System Criteria, Source: the author

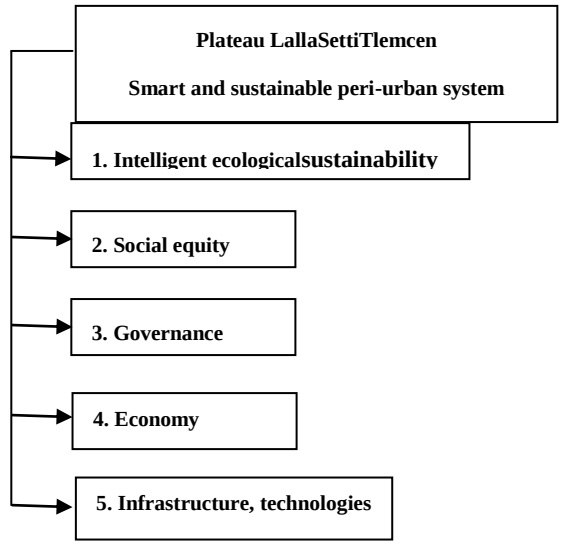

Fig.5. Components of the system, Source: the author

3.3. Translation of criteria into indicators

Indicators make it possible to measure the evolution of the system over time and to make the necessary modifications by the actor concerned thereby ensuring the resilience of the system during its life cycle. Indeed, sustainable development indicators serve to show measure or appreciate a phenomenon: they represent a phenomenon [37], [37'] at least as subjective as a qualitative approach [38]. In fact, based on raw data presented on the phenomenon, there is construction of an indicator, resulting from a more or less biased and conscious choice of available data.

In order to assess the sustainability of the "LallaSetti Plateau" urban tourism project, the indicator tool is used to report on one of its multiple dimensions. It is important to distinguish between a criterion relating to the phenomenon of concern and an indicator that is supposed to represent the criterion in question. The latter can be a measurement tool, indicating the variations of the phenomenon measured according to certain dimensions, a marker or a sentinel indicating the presence or the absence of something, a decision-making tool allowing the action or a combination of these last three [39]. During this stage, it is a question of translating the five quality objectives of the peri-urban tourist system, previously expressed by 24 synthetic criteria, into 68 measurable indicators.

3.4. Standardization of indicators by assigning a value

System objective	Criterion retained	Standardized indicators
1. Intelligent ecologicalsustainability		
1.1. Inheritance and resources	1.1.1. Reduce energy consumption and improve energy management	**- Quantity of energy consumed / inhabitant / year** **- Energy expenditure index of buildings**
	1.1.2. Improve the management of the water resource and its quality	**- Efficiency index** **- Average consumption of water / pers / j** **- Waters via wastewater treatment plant; Hydraulic loads /inh / d** **- Nitrate content (drinking water) (quality objective ≤25 mg / l)**
	1.1.3. Avoid urban sprawl and improve the management of space	**- Population index: area of infrastructure /inhabitant** **-% Natural area of value** **- Degree of artificialisation (watercourse)** **- Average number of transition from one type of land use to another / km²)** **-% of the ecological compensation area** **- Policy for density of the city and reduction of urban sprawl**
	1.1.4. Protect built and natural heritage	**- Level of decrease of vegetation, cutting of wood, state of protective forests** **- Degree of exposure to tourism activities and impacts**
	1.1.5. Renewableenergy	**- Share of renewable energies in final consumption** **- Exploitation of regenerative or inexhaustible natural resources (heat, water, wind energy)**

Table 3. Standardization of System Indicators

Objective 1.1: Heritage and Resources, Source: the author

Once the indicators are defined, they must be measured. It remains to decide at what level of precision, accuracy, spatial and temporal scale, as well as in which units they should be performed. To carry out the evaluations, each indicator has a qualitative and quantitative unit of measurement, in order to rate the development project according to a common rating scale between 1 and 3 chosen according to the context of action or evaluation (1 is attributed to the poor performance and 3 to the very good performance). The adoption of such a simple scale makes it possible to give a common qualitative value to all the indicators based on a value judgment relating to each one of them. This step facilitates the use of the method by all the actors.

1. Low performance level, bad, poor
2. Performance threshold, good, average
3. High performance level, very good, strong

It is clear that the choice of the method as well as the maximum and minimum limits used for standardization is not without consequence. The more or less arbitrary character of the choice of min and max values even in the case of empirical standardization argues for the adoption of a normative approach and therefore for the maximum values retained to correspond to objectives to be attained [40].

Criterion	Indicator	Performancelevel (Score ≤ 03)
1. Intelligent ecological sustainability		
1.1.1. Reduce energy consumption and improve energy management	**- Quantity of energy consumed / inhabitant / year**	**2**
	- Energy expenditure index of buildings	**2**
1.1.2. Improve the management of the water resource and its quality	**- Average water consumption / person / day**	**1**
	-Waters via wastewater treatment plant; Hydraulic loads /inh / d	**1**
	- Nitrate content (drinking water) (quality objective ≤25 mg / l)	**2**
1.1.3. Avoid urban sprawl and improve the management of space	**- Population index: area of infrastructure / inhabited**	**3**
	-% Natural area of value	**2**
	-Degree of artificialisation (watercourse)	**1**
	-No. of transition from one type of land use to another / km²)	**2**
	-% of ecological compensation area	**1**
	- Policy for density of the city and reduction of urban sprawl	**3**
1.1.4. Preserve and enhance the built and natural heritage	**-Average number of species by location**	**2**
	- Number of species on a red list	**1**
	- Biotope value of the drills	**2**
	- Volume of timber harvested by assortment in m3	**1**
	- Surface of public forests certified in Ha	**3**
1.1.5.Renewableenergy	**- Share of renewable energies in final consumption**	**1**
	Exploitation of regenerative or inexhaustible natural resources (heat, water, wind energy)	**1**

Table 4. Attribution of a Value by Ex System Indicator

Source: the author

The notation remains subjective because it is imperatively based on the observation, the study of the documents and the contact with the professionals. This is why the rated value of the indicators must be compared to a reference value (ratios, norms, standards, examples, benchmarks ...)[41] .To do this, we need a multi-purpose repository source from bibliographic research, which will serve as a quality guide for public spaces according to the criteria and indicators selected.

3.5. Weighted aggregation of indicators into synthetic indices

Aggregation is a particular mode of multicriteria analysis characterized by its simplicity compared to other modes [42]. It is a step of simplification of multiple variables (indicators) in a more synthetic variable representative of its object (index synthetic).

The weighting of the indicators has a great influence on the result. The latter explicit and transparent must be based on a prior standardization according to a clear unit specific to the parameter to be evaluated. The weighting of criteria and indicators has given rise to much debate in the Hajkowicz and Prato literature [43-47]. There are the so-called "objective" methods such as the entropy method [48], the direct evaluation methods by the simple classification like the fixed point scoring method or the method of successive comparisons [49] or by indirect methods such as the paired comparison (AHP method (Saaty, 1977) [50]and the Macbeth method [51] and the fuzzy sets theory [52].

It is clear that the choice of the method as well as the maximum and minimum limits used for standardization are not without consequence. The more or less arbitrary character of the choice of min and max values, even in the case of empirical standardization, calls for the adoption of a normative approach and therefore for the maximum values retained to correspond to objectives to be attained.

The operation will be done for a weighting tree of 24 criteria with a number of indicators ranging from 01 to 8 per criterion of a total of 68. The maximum score assigned to the criterion is 1. For the indicator, the maximum score will be 8.The maximum cumulative score will be 8X1 = 8.The maximum score will be 3. The maximum weighted value of the indicator will be Vimax = 3X8 = 24 .The maximum value of the index: VImax

$$\mathbf{VI}= \frac{1}{n}\sum_{i=1}^{n} Vi = \frac{1}{n}\sum_{i=1}^{n}(SCixNi) = \mathbf{8.24}$$

$$VImax = \frac{(1X5.33)3 + (1X5.33)3 + \cdots \ldots \ldots \ldots \ldots + 3(1X2.33)}{47} = 13$$

A "performance threshold" defined as 2/3 of this maximum value [53]. It is considered that the performance of a project in terms of the quality of its public spaces cannot exceed 2/3 of the maximum value because several factors come into play: the context, the resources made available for the realization of the project , technical constraints, costs, etc. A project satisfying 2/3 of the maximum score will therefore be considered as very efficient.

The Performance Threshold = 2/3 VImax = 8.66

Qualitycriterionretained	Score Criterion	**Indicator**	Indicator score	Rating performance indicator	Weighted indicator value	Quality index	Index value	Index performance threshold
1. Intelligent ecological sustainability								
1.1.1. Reduce energy consumption and improve energy management	**1**	**- Quantity of energy consumed / inhabitant / year**	**5.33**	**2**	**10.66**	**Energeticefficiency**	**10.66**	**15.99X 2/3= 10.66**
		- Energy expenditure index of buildings	**5.33**	**2**	**10.66**			
1.1.2. Improve the management of the water resource and its quality	**1**	**- Average water consumption / person / day**	**2.66**	**1**	**2.66**	**Saving water**	**5.32**	**10.65X 2/3= 7.1**
		-Waters via wastewater treatment plant; Hydraulic loads /inh / d	**2.66**	**1**	**2.66**			
		- Nitrate content (drinking water) (quality objective ≤25 mg / l)	**5.33**	**2**	**10.66**			
1.1.3. Avoid urban sprawl and improve the management of space	**1**	**- Population index: area of infrastructure / inhabited**	**8**	**3**	**24**	**Efficiency land use**	**12.44**	**15.99X 2/3= 10.66**
		-% Natural area of value	**5.33**	**2**	**10.66**			
		-Degree of artificialisation (watercourse)	**2.66**	**1**	**2.66**			
		-No. of transition from one type of land use to another / km²)	**5.33**	**2**	**10.66**			
		-% of ecological compensation area	**2.66**	**1**	**2.66**			
		- Policy for density of the city and reduction of urban sprawl	**8**	**3**	**24**			
1.1.4. Preserve and enhance the built and natural	**1**	**-Average number of species by location**	**5.33**	**2**	**10.66**	**Biodiversity**	**10.13**	**14.39X 2/3=9.59**
		- Number of species on a red list	**2.66**	**1**	**2.66**			
		- Biotope value of the	**5.33**	**2**	**10.66**			

heritage		**drills**						
		- Volume of timber harvested by assortment in m3	**2.66**	**1**	**2.66**			
		- Surface of public forests certified in Ha	**8**	**3**	**24**			
1.1.5. Renewablee nergy	**1**	**- Share of renewable energies in final consumption**	**2.66**	**1**	**2.66**	**Renewab leenergie s**	**2.66**	**7.98X2 /3= 5.32**
		Exploitation of regenerative or inexhaustible natural resources (heat, water, wind energy)	**2.66**	**1**	**2.66**			

Table 5. Weighted Aggregation of System Criteria and Indicators

Objective 1.1: Heritage and Resources

Source: the author

4. REPRESENTATION OF RESULTS

The results are represented by a radar diagram in order to position the index values in relation to their performance thresholds and to evaluate the impact on the system at all phases of its life cycle. In terms of temporalities, two timeframes have been taken into account for achieving the 2020 and 2030 targets. Following this, corrective or preventive measures will be taken. The system is therefore qualified as resilient.

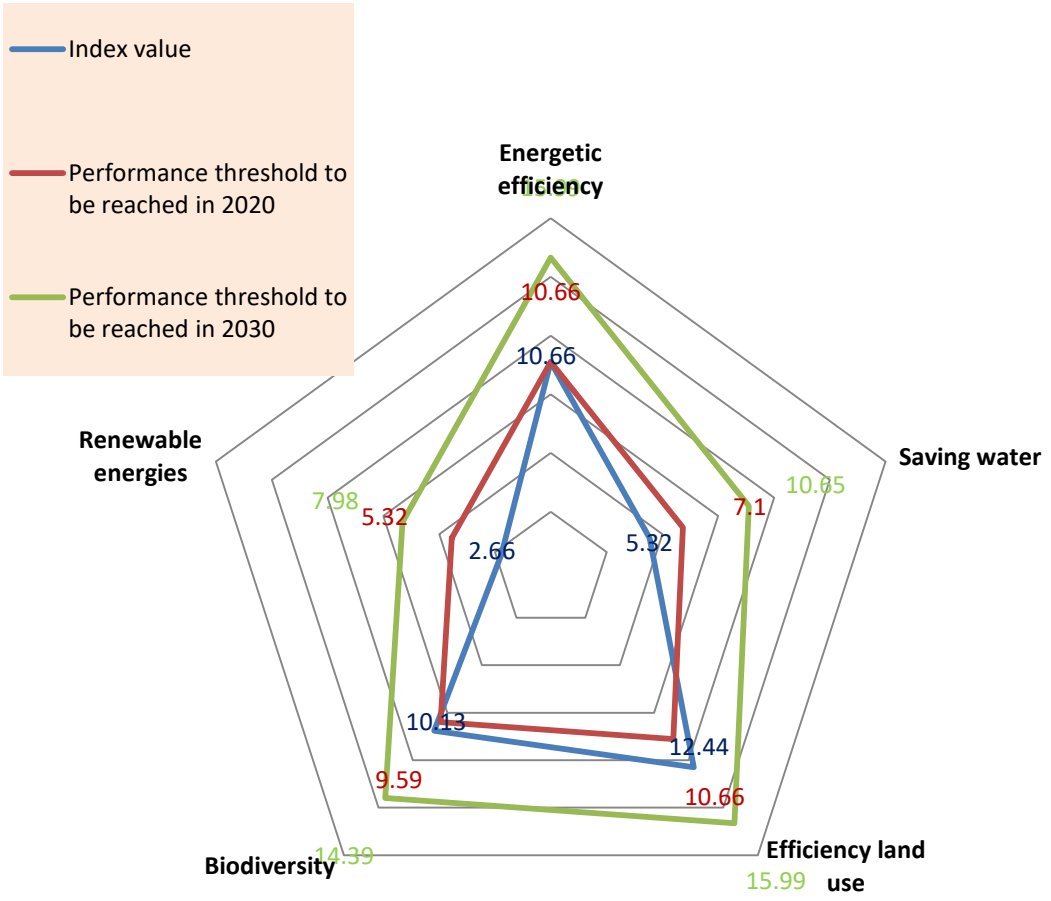

Fig.6. Representation of Results for the Objective 1.1: Inheritance and resources

Source : the author

5. DISCUSSION

The performance threshold is 8.66, so all the indices whose value is lower are considered as not performing for the system objective 1.1, such as: "saving water".

Those whose value is slightly above the performance threshold such as: "biodiversity" and "energy efficiency" are considered to be underperforming and require immediate corrective actions by the 2020 deadline (temporal objective).

On the other hand, the very low value of the "renewable energies" index, testifies to the indifference of the actors of the system to the concepts of intelligence and sustainable development hence the need for an awareness of these to promote a powerful, resilient, intelligent and sustainable system

The indices whose value are appreciable such as "biodiversity preservation", "land use efficiency", demonstrate that the actors consider only the spatial dimensions of the site without dwelling on its functional aspect which must imperatively be the object a common strategic vision of sustainability, towards which any particular interest will converge.

After assessing the quality of the LallaSetti Plateau's peri-urban tourism system, Tlemcen, analyzing its strengths and weaknesses, it summarizes that the current system is not to be restarted from scratch, however, corrective measures are needed.To undertake as a first step, in terms of legislation governing sustainable urban design and management. Then, the management of the system will have to be done in the transparency of a participative governance.

6. CONCLUSION

Thanks to this integrated QSE evaluation method, which consists of determining the performance threshold of each index relating to the indicators stemming from criteria of the existing system by the quantification of the latter based on an approach of assessment of the environmental impacts integrating the thought "cycle of life ", through shared evaluation in consultation (ex ante, in itinere), it will be possible to integrate as much as necessary the temporal dimension of these impacts and to ensure the resilience of the system in corrective or preventive measures undertaken before and after during the design of the urban system to precise temporalities of its life cycle. The approach is interesting because it is simple to apply in the case of several actors. This will lead to relevant guidance that can be taken into account in the design and management of urban systems through the development of terms of reference ensuring:

- Greater flexibility and speed of execution during the conceptual and preliminary phases of urban system development.

- Better alignment of regulations and urban planning tools with the development of a sustainable system.

- A better response to the concepts of energy optimization, preservation of natural resources and respect for the environment.

- Better management of the urban system through the inter-connectivity of its structures.

- A better appropriation of the urban space by its users as a full participant in the future of the latter through effective participation in the decision-making process.

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