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Assessing sustainability within territorial and urban heritage: an indicator-based evaluation in the case of medium-sized cities in inner Andalusia

Abstract

The purpose of this study is to develop a methodology to assess urban sustainability within built, urban, territorial, and landscape heritage, considering that cultural heritage has recently emerged as one of the keys of urban and territorial sustainability due to its inherent properties of durability and adaptability to changes over time. The implementation pivots on a case study based on medium-sized historical cities. Both academic and official documents consider this urban category as particularly likely to demographic, environmental, and economic sustainability. The methodology used begins with a theoretical approach, case study delimitation, and presentation of existing indicator-based systems that include heritage concerns. Then, the criteria for the selection and creation of indicators are settled to create an ad hoc system. This is tested for the case study of medium-sized historical cities in inner Andalusia, Spain. The results obtained are merged and represented for further discussion. First, this methodology states the need of including cultural heritage aspects within sustainability assessment, especially when urban and territorial historic fabrics are involved. Second, a correlation between heritage preservation and the general level of sustainability is revealed. Finally, the results provide the basis for decisions to academic, technical, and administrative spheres regarding urban and territorial sustainability, especially when dealing with the incorporation of cultural heritage factors and the assessment of medium-sized cities-based case studies.

Keywords: sustainability assessment, cultural sustainability, medium-sized cities, indicators system, territorial heritage, urban heritage.

Article classification: Research paper

1. Introduction

In recent times, culture has been highlighted as a potential asset to reinforce sustainability, generally associated with the notion of creativity that could help involve society in the renewal of the ways in which we think, produce and inhabit cities (Tweed and Sutherland, 2007:63). Within this framework, heritage constitute a factual basis from where notions of adaptation to the territory, changes, and evolution could be extracted with the aim of facing a more sustainable future. To set a starting point, we will establish a conceptual framework for the understanding of this point of view.

On one hand, the concept of heritage is enounced, originally referred to as the patricians' proprieties that were transmitted, from generation to generation, to all family members (Engels, 2008). Lately, its use has been generalised and has covered different semantic fields (Vecco, 2010:321), considering that it constitutes cultural assets of communities and individuals' proprieties. On the other hand, the concept of sustainability emerged from the Brundtland Report in 1987, which describes it as the *development that meets the needs of the present*

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without compromising the ability of future generations to meet their own needs (Brundtland *et al*., 1987).

Therefore, the relationship between heritage and sustainability is based on not just a matter of practical considerations but, even more, it should be conceived as a source of knowledge (Blandy and Fenn, 2015) and proved experience of sustainable development that has maintained itself over the centuries. This matter has been gradually introduced in official and academic discourses and was ratified in 2014 at the Nara+20 Conference, article 5 (ICOMOS, 2014).

It is a common practice to consider sustainability as a balance between the three fundamental pillars: environment, economy, and society (Elkington, 1998). Culture was later introduced into the sustainability discourse, firstly as a fourth pillar (Hawkes, 2001) but also as an instrument, considering its contribution to the goals of sustainability (Soini and Birkeland, 2014). Later, culture has become part of the different official document about sustainability, with a milestone in the Hangzhou declaration (United Nations Organization, 2013).

2. Determination of the case study: medium-sized cities as an example of territorial and urban sustainable heritage

To test the assessment method, a case study has been selected that meets specific sustainability criteria and holds a recognised cultural heritage character.

In this vein, medium-sized cities have been considered, even by official international guidelines, as the best urban category in terms of urban-territorial sustainability (European Union, 2011). This has favoured their increasing visibility within territorial development plans, strategies, and policy frameworks. However, this is not a recent fact. On the contrary, in the second half of the twentieth century, many European countries focused their territorial development actions on the urban territory by means of the dynamization of medium-sized cities (Vandermotten *et al*., 2008).

This process has turned into the valorisation of a polycentric territorial structure where medium-sized cities play a key role as far as intermediation is concerned (Adam, 2007). In addition, urban systems based on medium-sized city networks have been revealed as more balanced and sustainable. Some reasons like their ability to generate agglomeration economies (Camagni *et al.*, 2015) or their potential for stablishing dynamics or creative services (Lacour and Puissant, 2008) have been identified. Nevertheless, some weak points have been associated with them: less social-cultural diversity, a certain social endogamy, worse economic competitiveness or weaker access to information and capital resources (Dijkstra *et al.*, 2013).

The terminological discussion about the definition of medium-sized cities in terms of demography and territorial functionality began in Europe in the 1970s (Bellet and Llop, 2004). Their interest has extended beyond the European context to Asia (Ness, 1987) and Latin America (Castillo and Patiño, 1999), where the concept of medium-sized cities varies considerably from the European one when speaking about the spatial dimension or population range. In this sense, a functional characterization has been concluded as more accurate (Bellet and Llop, 1999).

Nowadays, two main criteria are generally considered: on one hand, the relative scale in relation to territorial and urban context, and on the other hand, their functional role within the territory, bigger and smaller urban settlements. In this sense, they act as secondary centres for the surrounding territory in terms of services provided to a certain number of municipalities (Bellet

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and Beltrão, 2009). In terms of population within the European case, the population range has been established between the figures 20,000 and 500,000 approximately, with notable differences between different countries and regions (Rojas, 2009).

To better address the implementation of an assessment tool of sustainability in medium-sized cities with a cultural heritage basis, a network of historic medium-sized cities in inner Andalusia was selected as the case study. This urban structure is composed of 18 settlements whose population varies from 15,000 to 45,000 inhabitants (Figure 1), and it has been defined and categorised as a second-level urban system by the regional land planning document (Junta de Andalucía, 2006), which identify them as key elements in terms of urban balance achievement and rural development opportunities.

In this way, their urban sustainability is considered by surpassing the limits of the city and referred to a larger scale. This is since their territorial network incorporates not only similar medium-sized cores but also smaller towns and rural areas, which are able to satisfy their fundamental necessities without long journeys to the main regional capitals. Furthermore, they correspond in an exemplary way to the conditions given in the definition of this urban category and possess a valuable historical legacy, inherited from their position as secondary centres over many centuries (Del Espino, 2017).

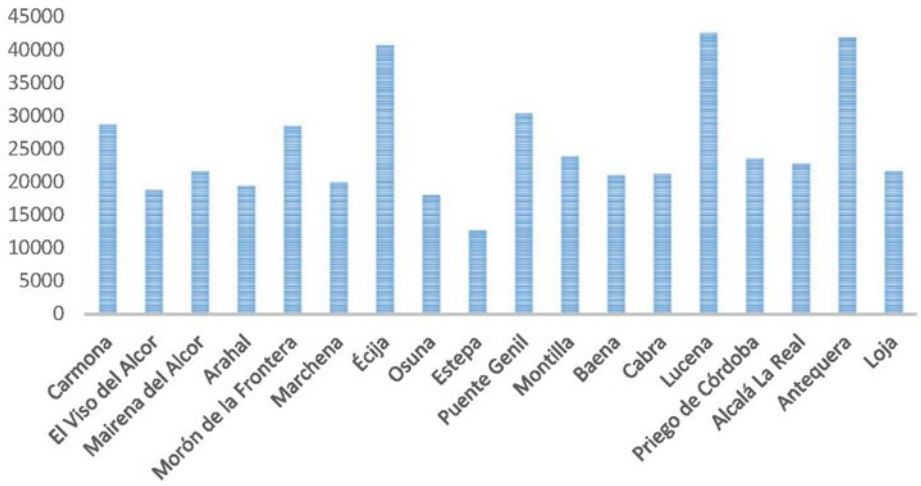

Figure 1: Number of inhabitants of the medium-sized cities in inner Andalusia, Peninsula according to the 2011 Spanish Census

In fact, their strategic positioning in the central area of Andalusia is generally associated with the existence of ancient roads as well as with their frontier status, due to their historic position between the medieval Christian and Arab kingdoms (Díaz, 2007). This has permitted the preservation of a homogeneous territorial structure in terms of the distances between the main urban cores, what has benefited their centrality or intermediary function.

Historically, Andalusian inner medium-sized cities generally proceed from old rural settlements, strongly linked with agricultural contexts and connected with relatively important communication routes. They acquired an urban scale between the nineteenth and twentieth centuries in conjunction with the first European and Mediterranean agricultural crises (Santos, 2005). This led to the conversion of their main productive basis from an agrarian economy to industries (Caravaca *et al*., 2007) and, more frequently, services, with the consequent

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modification of their urban and peri-urban landscape as well as their cultural identity (Fernández, 2007).

Nevertheless, the common territorial and historical legacy of medium-sized cities has marked their urban shape with historical fabrics inherited from medieval structures as well as big proportion between historical centres and boundaries. This has been exploited by means of the policies for encouragement of cultural tourism associated with a vast offer of heritage goods. Consequently, a good number of touristic programmes and routes have been planned (CMCA, 2005), with special significance of historical centres as expected (Richards, 2001).

Therefore, the critical relevance of this research is raised by the inclusion of territorial and urban heritage in sustainability assessment within historical medium-sized cities due to a confluence of concerns. Firstly, the statements made by academia and institutions about the sustainable nature of medium-sized cities. Secondly, as explained below, the intermediate condition and poor identification of this urban category, what has led to their absence in most of sustainability indicators compilations. Thirdly, the fact that the selected cities have been historically identified as secondary centres, whose cultural goods and territorial role remain. Fourthly, the introduction of new productive systems that not only helped prevent depopulation and assured economic sustainability but also caused an erosion of their main social, landscape, environmental, cultural, and identity values.

3. Methodology

3.1. Characterisation of the existing methods for assessing urban sustainability with respect to cultural heritage

Indicators systems have been revealed in recent years as one of the more appropriate methodologies for assessing sustainability issues. Indeed, Agenda 21 from Rio Declaration (United Nations Organization, 1992) expressed the need of developing indicators that could aid decision-making processes regarding sustainability development, while policy-makers and administrative bodies are increasingly demanding conclusive outcomes from data processing to improve management and interventions in urban areas (Walton *et al.*, 2005).

In fact, the Aalborg charter (European Conference, 1994), emphasizes the importance of measuring sustainability in cities due to two fundamental reasons: citizens' access to information and data provision to politicians and technicians who participate into decision-making processes, who requires this information to be shown and distributed in a simple, understandable way.

In this sense, considering cultural heritage as a social phenomenon, it is necessary to compile and study some of the main existing indicators systems, focusing on those that have a deep connection with this research in terms of the matter they address: urban sustainability, including heritage. It has been also highlighted the importance of incorporating a local perspective when assessing (Turcu, 2013), while BellagioSTAMPS -3rd principle- (IISD, 2008) recommends to adopt an adequate geographical scope ranging from local to global when assessing. Thus, starting with the main international references, Andalusian and Spanish sources have been incorporated as far as possible.

The main indicators systems and databases studied, from which the main principles and variables to be measured have been extracted, are the following: Reference Framework for Sustainable Cities-RFSC (RFSC, 2016); Indicators of Sustainable Development by United

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Nations Organization (2007); UNESCO Framework for Cultural Statistics-FCS (UNESCO, 2009); UNESCO Culture for Development Indicators (CDIS), supported by AECID from the Government of Spain (UNESCO, 2014); indicators proposed by the Spanish Observatory of Sustainability (OSE), (Observatorio de la Sostenibilidad en España, 2007); Environmental Sustainability Indicators proposed by the Urban Ecology Agency of Barcelona (Rueda *et al*., 2007); White Paper of Sustainability within Spanish Urban Planning (Fariña *et al*., 2010); Indicators for the conservation and management of historic urban landscape among WH cities (Fernández-Baca Casares *et al*., 2009).

Nevertheless, even if existing frameworks provide a various and complex range of indicators, most of the existing assessment tools for measuring sustainability that include cultural heritage concerns were designed for big cities, rural areas or even World Heritage Sites, but rarely for intermediate elements. As for systems of indicators that do fit the medium-sized cities scale, they are generally oriented towards environmental, spatial or economic issues, but do not include cultural heritage aspects. That is why from the list above, we concluded reformulating a system that, including the methodological bases and many of the existing indicators in other national and international frameworks, better addresses the particularities of medium-sized heritage cities.

In view of the wide range and variety of indicators provided, basic criteria for eligibility have been settled: to avoid a degree of bias derived from subjectivity, simplest variables were preferred to more complex ones. Indexes were also excluded. Inclusion of qualitative parameters has been intended to not only measure the impact of processes on sustainability but also the origin and behaviour of urban-territorial dynamics themselves (Galindo, 2010).

Availability of data has been a crucial decision-making factor, considering the limitations to accessing numerous databases or even the absence of a systematic measurement of many variables whose inclusion could have been useful.

At the same level, the following practical and scientific criteria have also been considered: independence, exclusiveness, scientific validity, representativeness, adaptability to changes, significance, reliability, authenticity, comprehensibility, predictivity, comparability, measurability and cost-efficiency, among others.

In addition, particular conditions of adaptation to this singular case and analysis object were determined. First, indicators and statistics databases which include cultural heritage-related variables were considered more relevant to the study, and indicators included in the sustainability assessment of historic urban and territorial fabric were prioritised. Second, scale was a key factor, considering the indicators system developed will be applied to medium-sized cities.

3.2. Creation of an indicators system including cultural heritage as a key factor

In this regard, a system has been evolved that is made up of 68 indicators divided into six categories, which are defined by the following descriptors.

Category: Six different categories were framed, based on Cultural Heritage, Social-economic, Urban, Infrastructural, Environmental and Landscape conditions.

Identification: Each indicator was identified with a number and a name. This name aimed at being synthetic and clearly showed the indicator’s content and willingness.

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1.Cultural Heritage Conditions	2.Social-Economic Conditions	3. Urban Conditions
1.1. Plots protected by urban planning 1.2. Plots protected by sectorial instruments 1.3. Historical Site 1.4. Diversity of heritage 1.5. Condition of the assets 1.6. Protection planning 1.7. Heritage signalling 1.8. Heritage dynamization 1.9. Rehabilitation and reuse of heritage assets 1.10 Use value 1.11. Heritage tourism 1.12. Heritage itineraries 1.13. Heritage research	2.1. Population density 2.2. Population structure 2.3. Level of education 2.4. Migration balance 2.5. Unemployment 2.6. Economic activity 2.7. Tourist activity 2.8. Associative movement 2.9. Private initiative 2.10. Cooperation, development, and heritage 2.11. Social demand 2.12. Social inclusion 2.13. Cultural dynamism 2.14. Rent promotion 2.15. Employment structure 2.16. Citizen participation	3.1. Relative size of the historical centre 3.2. Occupied housing 3.3. Free spaces 3.4. Green spaces 3.5. Pedestrianization 3.6. Accessibility 3.7. Car park 3.8. Increasing public space 3.9. Distribution of services 3.10. Strategic planning 3.11. Urban concentration 3.12. Sustainable design
4. Infrastructural Conditions	**5. Environmental Conditions**	**6. Landscape Conditions**
4.1. Mobility 4.2. Non-motorized transport 4.3. Public transportation 4.4. Motorization index 4.5. High-Speed Train 4.6. Dismantling of the railway network 4.7. High-speed tracks	5.1. Environment 5.2. Environmental degradation 5.3. Noise pollution 5.4. Waste management 5.5. Water management 5.6. Bioclimatic protection 5.7. Protected natural areas 5.8. Implementation of Local Agenda 21 5.9. Agricultural and forestry energy production 5.10. Solar and wind energy production	6.1. Urban landscape care 6.2. Landscape richness 6.3. Landscape diversity 6.4. Landscape nature 6.5. Natural land reduction 6.6. Agricultural land reduction 6.7. Urban land increase 6.8. Artificial land increase 6.9. Heritage elements with landscape impact 6.10. Patrimonialization of landscapes

Table 1: List of indicators within the established categories

Definition: The calculation method or evaluation and measurement system was indicated. It could either be a quantitative (quotient, number, percent, ratio) or qualitative value.

Possible sources: It includes the documents, databases and statistics sources to be checked, and the procedures or calculations to be carried out to obtain the result.

Valuation: To allow comparisons with and further operations on indicators' results, a range consisting of three possible values was constructed. The way of translating both the numerical (with reference values) and qualitative results (with the identification of concrete parameters) to the three tranches was set for each indicator on its corresponding definition factsheet (Del

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Espino, 2018). In this sense, a 3 (maximum) score corresponds to a desirable result, a 2 (medium) score to an acceptable result and a 1 (low) score to a poor or undesirable result, all of them according with existent indicators system, legal standards or specialised literature. This range is also adaptive to the nature of the primary result of the indicator's application: numerical, percentage or even qualitative.

Relevance: It includes the reasons as to why the indicator was included and its possible relations.

Area of study: It indicates the physical influence area in which the indicator is applied to. For instance, the historic centre, the complete urban fabric or the whole municipal territory.

A complete list of the indicator system defined is shown in Table 1.

3.3. Application of the indicator system developed for a set of medium-sized historic cities in inner Andalusia

A second factsheet, like the one described for the indicators' definition, was designed for their application, including changes and substitution of some descriptors.

Sources: The origin of the data and the procedure finally followed were registered.

Result: The result of the application of each indicator for each case study was shown.

Assigned range: Based on the three ranges previously defined for each indicator, a result was given to simplify comparison and further representation of the results.

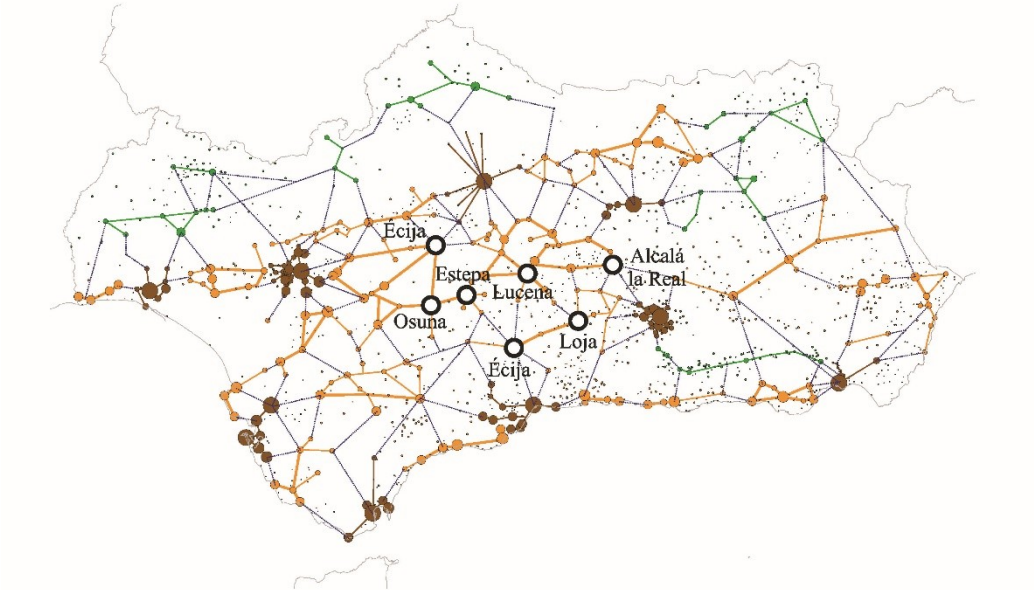

Figure 2: Location of the seven case studies selected in the Andalusian territory

Prior to the application of the indicators system to the defined urban-territorial system, a set of seven case studies (Del Espino Hidalgo, 2018) was selected (Figure 2).

The eligibility of the cases was conditioned by a basis of uniformity in terms of their territorial role of centralization, their historical and patrimonial character and their functioning as a network. Afterwards, diversity among them was sought based on historical origin, heritage

profile, surrounding landscape, number of inhabitants, functional role in the territory, urban and economic development processes. Cities and their profiles are defined as following.

Alcalá la Real (22,758 inhabitants in 2011 (INE), as it is in the centre of a unique defensive system with a strong presence in the territory of eastern Andalusia. It is also a gateway to western Andalusia, its landscape units, and the walled historic centre of exceptional values.

Antequera (41,854), because it is located at the confluence of the two main articulating roads of the territory and in a transition zone between the landscape of the fertile plain and the mountain ranges. It is also recognised as one of the articulation points of the Andalusian territory and has a remarkable heritage that practically covers all the important periods of the Andalusian history.

Écija (40,718), as it was an important regional centre in Roman times – which is rare in most of the medium-sized Andalusian cities – as well as a former Crown city whose urban and historic vigour was closely related to its agrarian work.

Estepa (12,637), the least populated of the medium-sized cities considered, because of its development of a local production system based on food industry. Furthermore, its unique rugged landscape and medieval urban fabric qualities.

Loja (21,618), as it stands out among the middle cities of eastern Andalusia, given its centralising role in a good number of secondary centres. Also, because it is acknowledged as one of the key border cities in the fights during the Middle Ages.

Lucena (42,560), as a unique case of social-economic growth in the selected area that caused an enormous impact on its cultural heritage. It was also a historical territorial centre for rare cultures -Semitic- in other Andalusian locations. Besides, it is the most populated of all the medium-sized cities in central Andalusia.

Osuna (17,973 inhabitants in 2011), due to the enclave between the lands of cereal and olive trees, the strength of its cultural heritage assets, and the legacy of its historical presence as a territorial centre. Besides, it constitutes one of the historic urban landscapes with a better degree of conservation.

In any case, the selection of a sample of cities for the application does not invalidate the possibility of extending the methodology used and the proposed system of indicators to other cases of comparable medium-sized cities. In fact, similar cases have been reported in the south of Portugal (Algarve and Alentejo regions) and Spain (Extremadura, Valencia and Murcia regions), where historical medium-sized cities with a similar territorial and demographic profile are common (Del Espino Hidalgo, 2018). Outside the Iberian Peninsula, similar systems have been identified in European regions -France, Italy and Southern Germany– (Bellet and Llop, 1999).

4. Results

The indicators system described above was applied in the seven study cases indicated. The results were summarised in the shape of radar charts (Figure 3).

The analysis of case studies showed notably different outcomes between the areas: cultural heritage (1) obtained better results generally, what is expectable considering it was a common condition for the cases' selection. In fact, the existence and use of patrimonial assets resulted in a positive balance (1.2 to 1.11). On the other hand, the most negative scores were registered in landscape (6) and social-economic (2), and to a lesser extent, the infrastructural areas (4), what

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reflects the great pressure that the growth of the cities has exerted on the sustainability of their landscapes and territories.

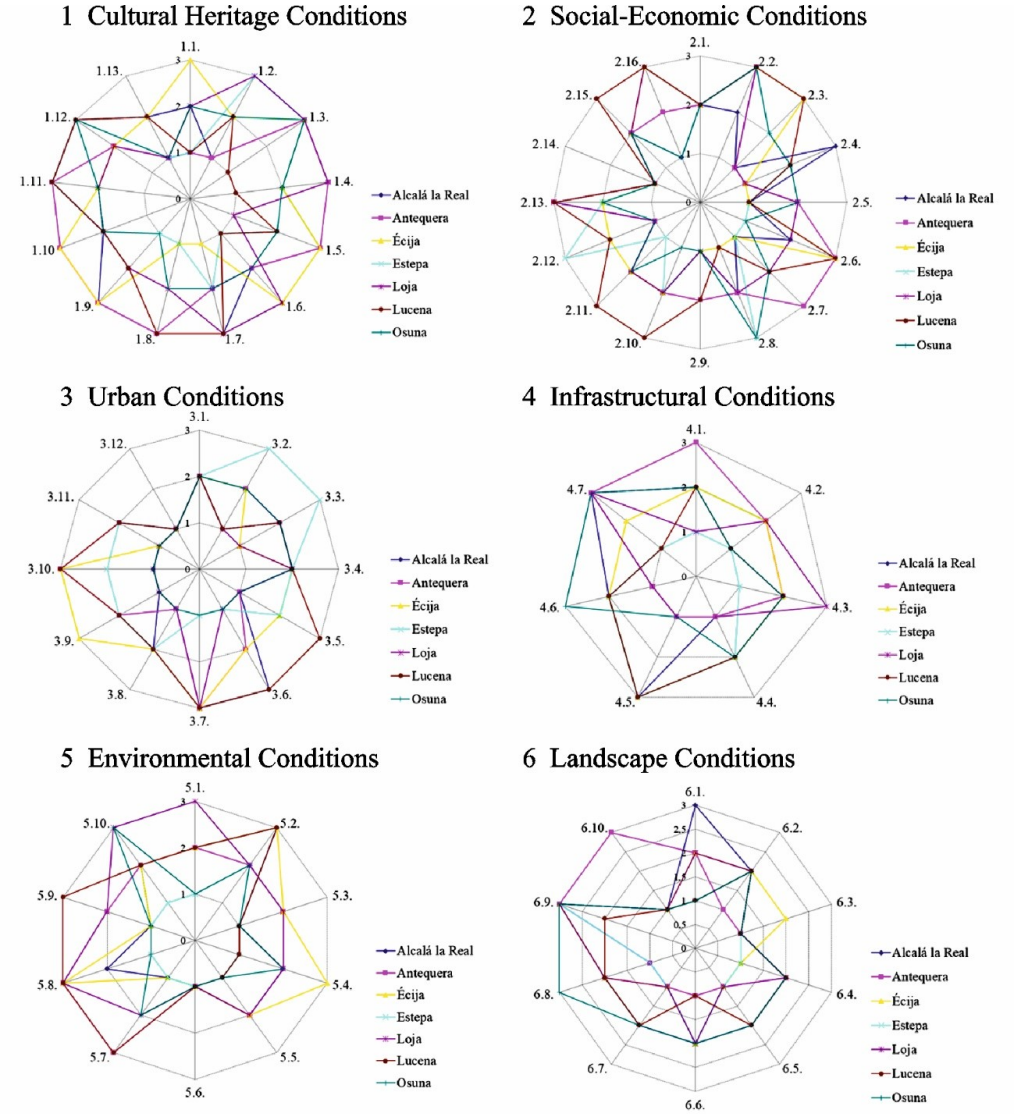

Figure 3: Application of the indicators system in the seven study cases selected

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The city with the general best results was Lucena, followed by Antequera and Écija, which are the most populated cities and, consequently, those with the greater recent development. This may lead to doubt the widespread belief that the growth experienced over the past decades has caused a loss of overall sustainability, even in historic cities.

Smaller cities presented better results in terms of landscape transformation, reduction of natural and agricultural soils (6.5 to 6.8). This is probably due to a lower rate of urban economic activity and a softer increase in urban-altered land and implies the idea of a relation between economic progressivism and landscape sustainability.

Some indicators presented a negative output for the entire sample: rent and sustainable design promotion (2.14, 3.12), landscape diversity (6.3), or patrimonialization of landscape (6.10). This shows a certain reluctance to apply contemporary measures to promote sustainability in consolidated urban networks. On the contrary, population structure (2.2) resulted always positive, what states medium-sized cities demographic sustainability despite their status as historic cities.

Environmental parameters tended to be negative (5.2 to 5.5), which may give an idea of the lack of efficiency of the environmental measures as well as the fact that cultural heritage enhancement and protection does not guarantee similar conditions to natural heritage.

Some singularities were observed such as Osuna's one in terms of infrastructure (4) and landscape (6), what can be understood given its strong relation with primary sector and shows a relation among good infrastructural planning and landscape preservation. Antequera stood out regarding cultural heritage conditions (1), probably due to the continuous relevancy of the city from prehistory to the modern age. Lucena's developmentalism could have been supplied by good valuation in environmental practices (5), what has not happened in Estepa, the other industrial case. As for Écija, the best urban results (3) were about parking, services and strategic planning (3.7, 3.8 and 3.10), not directly related to its heritage quality. Likewise, Loja stood out in environmental and energy matters (5) but not for reasons of culture. Estepa, otherwise, did it in occupied houses and free spaces (3.2, 3.3). This may be caused by the medieval origin of its urban fabric adapted to rugged orography, what preserved its original sustainable qualities.

In general terms, we can observe how cultural contexts of the medium-sized cities studied have generally marked the inclinations of the results, but also policies for the preservation of cultural property and urban-territorial planning have done so. Other key components that have conditioned the valuation were their demographic size, developmental tendency and productive profile.

5. Conclusion

Cultural heritage has resulted to be a key aspect in the consideration of urban sustainability. Therefore, aspects related to it should be considered in the development of evaluation tools, particularly indicators.

About the assessment of sustainability in medium-sized inner Andalusian cities, we attend to a diverse panorama with certain behavioural patterns, in which landscape, urban and infrastructure issues are particularly critical points, partially supplemented by a wealth of heritage values and a strong socio-economic situation.

Regarding transference to society, this work could serve as a base to help technicians and politicians within decision making regarding medium-sized cities, as well as to enhance citizen's awareness. This constitutes an added value to the research given that, in addition to its contribution to the generation of knowledge, it shows its transferable value to society, but also leads to the need of reinforcing statistical data collection in medium-sized and small settlements. Indeed, lack of data has led to the discarding of some methodologically adequate indicators and potentially would affect to the quality of the results and their applicability in further research.

Finally, we can conclude the research carried out has resulted in the achievement of its main goals, even if technical and methodological limitations suggest and open further lines to work on. Thus, the major innovations of the work have been addressed on the connection between cultural heritage and sustainability indicator-based assessment as well as on the choice of a system of medium-sized historic cities as an object of evaluation.

6. References

Adam, B. (2007), "Medium-sized cities in urban regions", *European Planning Studies*, Vol. 14(4), pp. 547-555.

Bellet Sanfeliu, C. and Beltrão Sposito, M. E. (2009), *Las ciudades medias o intermedias en un mundo globalizado,* Universitat de Lleida, Lleida.

Bellet Sanfeliu, C. and Llop Torné, J. M. (1999), *Ciudades Intermedias y Urbanización Mundial,* UNESCO-Ayuntament de Lleida-UIA-Ministerio de Asuntos Exteriores, Lleida.

Bellet Sanfeliu, C. and Llop Torné, J. M. (2004), "Miradas a otros espacios urbanos: las ciudades intermedias", *Geo Crítica Scripta Nova. Revista Electrónica de Geografía y Ciencias Sociales*, Vol. VIII No. 165.

Blandy, D. and Fenn, J. (2015), "Sustainability: Sustaining Cities and Community Cultural Development", Studies in Art Education, No. 53(4), pp. 270-282.

Brundtland, G. H. *et al.* (1987), *Our common future,* Oxford University Press, Oxford.

Camagni, R., Capello, R. and Caragliu, A. (2015), "The Rise of Second-Rank Cities: What Role for Agglomeration Economies?", *European Planning Studies,* Vol. 23(6), pp. 1069-1089.

Caravaca, I., González, G. and Mendoza, A. (2007), "Indicadores de dinamismo, innovación y desarrollo. Su aplicación en ciudades pequeñas y media de Andalucía", *Boletín de la AGE*, No. 47, pp. 131-154.

Castillo Palma, J. and Patiño Tovar, E. (1999), "Ciudades medias", *Elementos, Ciencia y Cultura*, No. 34, Vol. 6., pp. 29-34.

CMCA (2005), *Memoria del Plan Turístico de Ciudades Medias del Centro de Andalucía*, CMCA, Lucena.

Del Espino Hidalgo, B. (2017), "Las ciudades medias del centro de Andalucía. Aproximación a un fenómeno territorial sostenible", *Revista de Estudios Regionales*, No. 108, pp. 165-181.

Del Espino Hidalgo, B. (2018), *Las ciudades medias del centro de Andalucía Análisis territorial y evaluación de su sostenibilidad, Editorial Universidad de Sevilla, Sevilla.*

Díaz Quidiello, J.L. (2007), "Las ciudades medias interiores en el Plan de Ordenación del Territorio de Andalucía", *PH Boletín Andaluz del Patrimonio Histórico*, No. 63, pp. 42-91.

Dijkstra, L., Garcilazo, E. and McCann, P. (2013), "The economic performance of European cities and city regions: Myths and realities", *European Planning Studies*, No. 21(3), pp. 334–354.

Elkington, J. (1998), C*annibals with Forks: The Triple Bottom Line of 21st Century Business*, NSP, London.

Engels, F. (2008), *El origen de la familia, la propiedad privada y el estado*, Alianza Editorial, Madrid.

European Conference on Sustainable Cities & Towns (1994), *Charter of European Sustainable Cities and Towns Towards Sustainability*.

European Union (2011), *Cities of tomorrow: Challenges, visions, ways forward*.

Fariña Tojo, J. *et al.* (2010), *Libro Blanco de la Sostenibilidad en el Planeamiento Urbanístico Español,* Ministerio de Vivienda, Madrid.

Fernández-Baca Casares, R., Salmerón Escobar, P. and Sanz, N. (2009), *El paisaje histórico urbano en las ciudades históricas patrimonio mundial: indicadores para su conservación y gestión*, Junta de Andalucía, Sevilla.

Fernández Salinas, V. (2007), "Paisaje urbano en las ciudades medias", *Ph. Boletín del Instituto Andaluz del Patrimonio Histórico*, No. 63, pp. 54-61.

Galindo, J. (2010), "Indicadores urbanos (I): la dimensión cualitativa", *La Ciudad Viva*, available at: http://www.laciudadviva.org/blogs/?p=7204 (accessed 31 January 2018).

Hawkes, J. (2001), *The fourth pillar of sustainability: Culture's Essential Role in Public Planning*, Common Ground, Melbourne.

ICOMOS Japan (2014), *Nara + 20: on heritage practices, cultural values, and the concept of authenticity*.

IISD (2008), *BellagioSTAMP Brochure*, IISD, Manitoba.

INE (2011), *Censo de Población y Viviendas 2011*, Instituto Nacional de Estadística, Madrid.

Junta de Andalucía (2006), *Plan de Ordenación del Territorio de Andalucía*, BOJA, Sevilla.

Lacour, C. and Puissant, S. (2008), "Medium-Sized Cities and the Dynamics of Creative Services", *Cahiers du GREThA*, No. 8.

Ness, G.D. (1987), "Medium-sized cities in Asia: new areas of concern in population and development planning", *Populi*, No. 14(4), pp. 46-52.

Observatorio de la Sostenibilidad de España (2007), *Sostenibilidad Local. Una aproximación urbana y rural*, Mundiprensa, Madrid.

RFSC (2016), "*RFSC Newsletter. First issue*" available at: http://us13.campaign-archive2.com/?u=ff81151cb19b1864f66ec38d2&id=94b76e0143 (accessed 10 July 2017).

Richards, G. (2001), "El desarrollo del turismo cultural en Europa", *Estudios Turísticos*, No. 150, pp. 3-13.

Rojas, A. (2009), "Las ciudades medias y la expansión territorial", *La Ciudad Viva,* available at: http://www.laciudadviva.org/blogs/?p=2895 (accessed 31 January 2018).

Rueda, S. *et al.* (2007), *Avance Plan Especial de Indicadores de Sostenibilidad Ambiental de la Actividad Urbanística de Sevilla*, Ayuntamiento de Sevilla, Sevilla.

Santos Carrillo, F. (2005), "La transformación productiva: objetivo de las ciudades medias del interior de Andalucía", in *Congreso Asociación Andaluza de Ciencia Regional*, ETEA, Córdoba.

Soini, K. and Birkeland, I. (2014), "Exploring the scientific discourse on cultural sustainability", *Geoforum*, No. 51, 213-223.

Turcu, C. (2013), "Re-thinking sustainability indicators: local perspectives of urban sustainability", *Journal of Environmental Planning and Management*, Vol. 56(5), pp. 695-719.

Tweed, C. and Sutherland, M. (2007), "Built cultural heritage and sustainable urban development", *Landscape and Urban Planning*, Vol. 83 (1), pp. 62-69.

UNESCO (2009), *Framework for Cultural Statistics*, UNESCO, Paris.

UNESCO (2014), *Culture for Development Indicators (CDIS)–Methodology*, UNESCO-AECID, Paris.

United Nations Organization (1992), *Local Agenda 21 from the United Nations Conference on Environment and Development*, United Nations Organization, Rio de Janeiro.

United Nations Organization (2007), *Indicators of Sustainable Development: Guidelines and Methodologies,* United Nations Organization, New York.

United Nations Organization (2013), *The Hangzhou Declaration. Placing Culture at the Heart of Sustainable Development Policies,* United Nations Organization, Hangzhou.

Vandermotten, C., Roelandts, M.G., Ornut, P. and Halbert, L. (2008), "European planning and the polycentric consensus: wishful thinking?" *Regional Studies*, Vol. 42 No. 08, pp.1205-1217.

Vecco, Marilena (2010), "A definition of cultural heritage: From the tangible to the intangible", *Journal of Cultural Heritage*, Vol. 11 (3), pp. 321-324.

Walton, J.S., El-Haran, M., Castillo, N.H., Horner, R.M.W., Price, A.D.F. and Hardcastle, C. (2005), "Integrated assessment of urban sustainability", *Engineering Sustainability*, No. 158(2), pp. 57-65.