

Article

Impacts of Common Urban Development Factors on Cultural Conservation in World Heritage Cities: An Indicators-Based Analysis

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Abstract: Within the urban context, heritage conservation has been acknowledged as fundamental for sustainable development. This paper address the need to develop methodologies that enable understanding of the dynamics between these two fields that for long were regarded as opposing practices. The research crosses disciplinary boundaries through a mixed methodology that identifies 27 urban development common indicators as factors that are affecting the conservation of 69 World Heritage Cities (WHC). Indicators, which were selected from global urban monitoring tools, were analyzed within UNESCO State-of-Conservation reporting system. Results reveal key trends on urban factors assessed as a SWOT analysis in relation to the management of WHC. We argue that urban indicators can facilitate the understanding of development impacts in cultural heritage conservation, across the social, economic, and environmental dimensions. This paper contributes to the debate on the ability of indicators to bridge interdisciplinary and methodological issues that were related to common conceptualizations between urban development and heritage conservation and sustainability. The conceptual approach that is presented has proven to offer an empirical basis for a monitoring practice that fosters the sustainable management of urban heritage, which in the light of the New Development Agenda and the gaps in the state-of-the-art, is very much needed.

Keywords: sustainable development; historic urban landscape; indicators; systematic review; world heritage cities

1. Introduction

In the last twenty years, the cultural heritage's role in urban management has evolved from institutionalizing conservation efforts to placing heritage at the focus of strategic planning. Consequently, urban indicator frameworks quantify cultural heritage as "cultural capital and urban phenomena, requiring tailored urban management" [1]. Most of the recent urban policy discourses increasingly highlight the potential of integrated landscape approaches and the social-economic value of heritage conservation for urban development. The analysis of the quality of the interactions between urban development themes and heritage conservation has been driven by beneficial relationships referenced and proven in best practices [2], whereas conflicting relationships have fostered an understanding of development as a threat in the field of World Heritage conservation [3,4]. In both of the cases, standardized measuring criteria that lead the quantitative and qualitative analysis of such interactions are still very much underexplored within urban phenomena [5,6]. Further exploration is much needed, when considering that cultural heritage management, at the global level, is simultaneously moving towards a landscape-based approach. UNESCO's recommendation on the Historic Urban Landscape (HUL) advocates sustainable practices through multidisciplinary analysis of the urban heritage in order to include its processes in the modern city's planning and

development [7,8]. Conversely, the HUL entails specific tools for managing change, and new tools for evaluating different alternatives based on their multidimensional impacts; new systemic approaches and new indicators are being requested [7,9,10].

According to Musacchio [11], “the most thought-provoking debates and contributions in landscape ecology have occurred when crossing scientific boundaries through interdisciplinary and transdisciplinary activities”. This research aims at setting the base for collaboration between existing monitoring tools towards the inclusion of heritage as fundamental for sustainable urban development (SUD). This article presents a methodology, developed, and tested, which integrates quantitative and qualitative data analysis on common urban factors targeted by urban development common indicators (UDCI) and cultural heritage management at a global level. This article starts with a literature review that discusses the potential of urban indicators to assess sustainable development whilst bridging these two scientific disciplines. A state of the practice discusses the current limitations of global monitoring tools, from the heritage perspective, to assess urban development. Then, the quantitative and qualitative methodology based on content analysis of current global monitoring tools for urban development and heritage conservation is introduced. The analysis produced a database that allows for a clearer understanding of interactive and/or mediating relationships, between urban development factors and the management of cultural heritage, but also in terms of social, economic, and environmental dimensions. Results present a general overview on the potentials of this database to bridge conceptual and practical gaps for the monitoring of the sustainable development of World Heritage Cities (WHC). The article ends with a discussion on the advantages and limitations of the methodology that is presented to bridge these two fields and conclude with the main lessons extracted from this empirical approach.

1.1. Trends on the Assessment of Cultural Heritage Management in the Urban Context

A paradigm shift in heritage conservation towards a heritage management with a landscape-based approach is becoming a model for reconciling the urban multi-layered functions and development agendas [12]. This approach broadens the understanding of heritage to include notions of attributes and values, (urban) setting and context, accompanied by a greater consideration for the social and economic role of (historic) cities [13]. The management of urban resources is becoming the nexus for cross-disciplinary inquiries on biodiversity, ecosystem services, and human well-being challenges in changing social, economic, and environmental conditions [11,12,14]. Therefore, the fact that appropriate (landscape) management is integrally linked to well-designed monitoring and evaluation systems is not only increasingly acknowledged among conservationists (natural and cultural), but is also being put forward within the context of sustainability and the efficient use of resources [6,12,15–18].

The literature review evidenced two main trends in theory concerning the assessment and monitoring of the interactions of cultural heritage and the urban context. The first, and the most widespread, evidences a conflicting relationship between development and conservation. Pendlebury [19] affirms that “in the urbaneness of World Heritage (WH) properties, there are fundamental tensions between the desire to preserve a sense of the past and recognizing that heritage cities are the product of layers of development and habitation [. . .] The development pressures that were experienced by urban WH properties have increasingly become an issue preoccupying the international regulatory bodies”. In fact, various literature highlights unplanned development factors, as well as management deficiencies, as the most common threat to cultural heritage in urban contexts [4,20,21]. However, research leaves unconsidered multiple situational influences, as well as positive effects of urban development on heritage and its conservation.

The second trend in literature discusses standardized criteria to assess and compare WH properties and management practices [22–25]. Impacts of conservation actions, such as regeneration, redevelopment, and other top-down urban interventions are commonly evaluated in terms of their economic advantages [26–28]. Patry et al. [29] mention that such methodologies remain useful for their context specificities. However, Gravagnuolo and Girard [6], highlight that recent assessments

of HULs mainly focus on their characters and values, the involvement of local communities and specific groups of stakeholder for vulnerability assessment, and the proposal of strategic action. In all these cases, the impacts of conservation/regeneration have not been addressed, particularly within the wider urban context. Therefore, most of monitoring and assessment studies remain anecdotic, based upon case studies in which researchers adopt customized evaluation criteria based on their own conceptualizations, rather than a systematic appraisal of evidence [5,30–32].

1.2. The Use of Common Sustainable Development Indicators

In order to approach sustainability within an urban landscape context, urban indicators have been proven appropriate to improve understanding of systemic interactions [33]. Indicators are the most common tool for evaluating urban planning and development, due to “their simple character and their analytical effectiveness in that quantitative data generally fall within the three pillars of sustainable development” (Figure 1) [34]. However, a wide range of sustainability indicators are in use, as a consequence of the lack of consensus on the notion of sustainability [35,36]. Consequently, only a few methodologies are considered to be integral approaches, taking into account environmental, economic, and social aspects, and these are not commonly used [34,37]. This challenges their conceptual and scientific validation, as well as ensuring that they meet the most urgent management concerns [35,38].

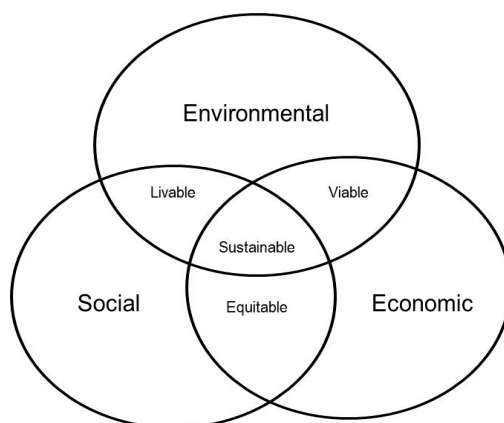


Figure 1. Dimensions of sustainability and their interactions.

Efforts to harmonize methodologies through common indicators respond to the need to improve credibility, the assessment towards sustainable development, whilst contributing to the analysis of relevant and common urban challenges that were identified at local level, municipal level, and at higher level; [36,39]. However, their benefits and constraints have been highly contested. Standardize methodologies have been criticized for their restrictive quantitative analysis, their inefficiency to impact decision-making and promoting action based on trends taking little consideration of context specificities [40,41]. Yet, many scholars argue that common indicators are useful for communicating comparative results on SUD policies, problem-solving, contexts while easily communicate progress to a wider public [35,36,40]. Moreover, at the local level, common indicators are beneficial for “the provision of sound procedures to collect and organize internal information in a systematic way” [40]. However, following a systemic approach to sustainability, it is important to clearly understand interactions between indicators and how these influence policy decisions in order to mitigate undesired effects and avoid undermining long-term results [42].

The frequency of use of a concept, in this case, indicators, can contradict or support the [common] view of a [SUD] phenomenon, whilst further refine, extend, and enrich the theory [35,38,43]. “sustainability indicators research can only shed light on how human societies can move towards sustainable conditions [. . .]” [42]. In this regard, urban monitoring tools that include heritage within

their themes of analysis correspond to a development view that places heritage as an important urban resource. Therefore, common indicators among such frameworks can contribute to the understanding of those urban synergies between the conservation of heritage as a cultural resource and wider factors for development that aim to thrive whilst achieving sustainability.

1.3. Current Monitoring Tools for World Cultural Heritage in the Urban Context

At the global level, there are two databases that are available reporting on the relationship between heritage conservation and [urban] development. The first corresponds to UNESCO's standard procedures for the monitoring of WH properties: the State of Conservation reports and the Reactive Monitoring Reports (RMR) for emergency cases. On a yearly basis, the World Heritage Centre and the Advisory Bodies (ICCROM, ICOMOS, and IUCN) report on conservation issues of selected natural and cultural heritage worldwide on an individual basis. More than 3000 SoC reports (concerning 536 WH properties, available online) represent the most detailed and systematic documentation on heritage at a global scale. The UNESCO World Heritage system recognizes World Heritage Cities as a category, including their historic centers and ensembles of monuments. However, a formal definition of heritage categories is not provided. The SoC information system enables global statistics that are based on information, such as the distribution of WH properties per region and category, geographical visualization on the conservation of WH, and a standard list of threats to WH properties. A list of 14 primary factors are listed as threats affecting the conservation of natural and cultural heritage, each encompassing a number of secondary factors [44]. "Development" stands on its own as a threat category. Nevertheless, other urban development factors can be found across different categories; for example, "new development, infrastructure construction and development, tourism pressures and associated development, informal/illegal settlements or construction, temporary events (and associated structures)", etc. Moreover, there is no insight into the categories of threats, definitions and methods for classification, nor on what exactly makes development constitute a threat.

A second database created by the Organization of World Heritage Cities (OWHC) gives access to both city members and the general public. By 2016, the database reported on 65 development projects in 59 cities (5.5% of total WH properties) and solving problems propositions that were undertaken or were experienced by cities with cultural heritage [45]. Based on good practices and individual case studies, the database covers a range of 19 relevant urban factors, classified in six themes addressing conservation, such as rehabilitation, renovation, and other intervention projects. Reports are elaborated in the structured format of a Synthetic Data Sheet, providing comprehensive descriptions of synergies between urban development and conservation strategies. The city governments select the best practices; reports are submitted on a voluntary basis and by OWHC members only (fee-dependent). Thus, it is still limited on the identification of heritage located within urban context.

According to Stem et al. [17], "organizations committed to the conservation of resources, have implemented monitoring and evaluation systems, often with mixed results". In this regard, the SoC reports database offers a complete overview of factors negatively affecting the conservation of World Heritage. Whereas, the OWHC platform shares the positive impacts of urban development models that integrate cultural heritage management within planning strategies. These databases are not originally designed for providing insights on the sustainability of the most pressing and common urban issues interacting—positively and negatively—with heritage management. Therefore, the systematic evaluation and comparison between urban development priorities and cultural heritage management goals are of existent urban projects that are necessary to provide information on their impacts of interactions between the development of urban resources. The understanding of such dynamics and a common monitoring methodology that sheds light on as well as on what constitutes a good practice of development and conservation, have not been enabled.

In the light of sustainable development, and because of their interdisciplinary nature, urban development and heritage management approaches should be required to enhance their collaboration, and thus their communication. But, current evaluation systems tend to "overlook lessons learned from

the many efforts to develop useful and practical monitoring and evaluation approaches in conservation and other fields" [17]. This can also be attributed to the fact that the inherent complexity and problems within landscapes are "in contrast to the disciplinary organization of science" [46]. Consequently, similar concepts are not always strongly formalized, especially those related to the field of urban development [47], but also in the heritage conservation field. This means that the same concepts are given different terminologies, as noticed in the UNESCO list of threats and in the development of indicators monitoring the sustainable conservation of heritage. The inconsistent use of concepts often causes confusion among urban and heritage management components, particularly affecting the efficiency of the monitoring and evaluation practice. This can lead to misallocation of management and evaluation resources, set unreasonable expectations of assessment activities, produce inaccurate assessments of conservation interventions, and so on [17,47–49]. To avoid difficulties, an increasing number of scholars encourage collaborations that cross disciplinary boundaries with wider scientific fields, particularly for the assessment of (urban) landscapes [11,12,50–52].

2. Methodology

This research aims to demonstrate the ability of existing monitoring tools for urban development and heritage conservation to provide insights on the correlations between these two fields in order to strengthen the sustainability of practices. When considering that current monitoring practices from both fields differ in their methodologies, a multi-method [53] approach, using both qualitative and quantitative methods, is proposed to reveal common urban phenomena being frequently monitored in both disciplines. The analysis consists on a systematic identification, classification, and quantification of a short list of UDCI referenced as urban factors impacting the conservation of cultural heritage and was carried out in three stages (a) Compilation of a list of UDCI from global urban indicator frameworks; (b) Semi-automated search for the UDCI within UNESCO SoC reports as factors affecting the conservation of WHC; and, (c) Systematic classification of identified urban factors as strengths, weaknesses, opportunities, and threats (SWOT) to the conservation of WHC. The SWOT analysis helps to devise a strategic agenda by isolating key issues that need to be prioritized in furthering a suitable and sustainable approach to the management of urban resources [8,54–56]. Thus, the analysis of UDCI referenced in UNESCO SoC reports is expected to identify global trends on the most common monitored synergies, pressing issues, and development approaches to the conservation of cultural heritage in the urban context. It is also expected to evidence methodological gaps and challenges for the monitoring of the sustainable development of WHC. A detailed description of the aforementioned steps follows.

2.1. The Shortlist of Urban Development Common Indicators

As part of a wider research on monitoring tools and the mutual inclusion of SUD and cultural heritage management [1], a selection of global urban reports was previously carried out on the following basis: (a) reports should propose indicators across different urban themes, including cultural heritage within their themes of analysis; (b) the assessment of cities from varied countries to maintain a global overview; and (c) the coverage of social, economic, and environmental dimensions as defined relevant for a systemic approach to sustainability [9,27,57,58].

Eight international urban reports on urban management and global competitiveness (Table 1) were found enabling the debate on the mutual inclusion of monitoring tools for urban development and cultural heritage management for sustainable practices (Guzman, 2017). By adapting a methodology used by Tanguay et al. [35] and directed content analysis [43] we gathered a total of 476 indicators, from which we shortlisted the most frequently used indicators among reports. A list of UDCI was classified according to the three dimensions of sustainability, and their possible combinations (see Figure 1), remaining faithful to the original definitions provided by the reports.

Table 1. List of selected reports (from Guzman et al. 2017).

Type of Reports	Focus	Sources	No. of Ind.
City Rankings	Hierarchical listing of cities according to their economic sustainability, competitiveness, and positioning within the global urban market.	1. "Cities of Opportunities 2012" PWC	59
		2. Global Cities Index	27
		3. Global City Competitiveness Index	36
Global Cities' Cultural Supply	Cultural policies strategies.	4. World Cities Culture Report	60
		5. Indicadores urbanos para LAC	76
City Management Performance	Holistic overview of sustainability progresses, trends and the establishing urban strategies and policies.	6. European Common Indicators	39
		7. Urban Indicators for Managing Cities ADB	143
		8. Global City Indicators Facility	36

2.2. Analysis of Urban Factors within the UNESCO SoC Reporting System

To maintain a global overview, we selected the UNESCO SoC reporting system as the sample of analysis, as it is the most standardized global monitoring tool for cultural heritage [59]. SoC reports provide information that can enable the monitoring of quantitative and qualitative effects of urban factors affecting the conservation of cultural heritage. However, limitations of this reporting system consist on a text-based description of conservation issues open to the reporter's interpretation. Also, these often lack a systematic methodology and the use of quantitative data that supports the diagnosis. For instance, yearly reports would only discuss those natural, mixed (natural and cultural) and cultural sites with pressing development issues without further classification on sites' categories or conservation issues. Reports are structured according to the three mentioned heritage categories and their geographical location. The analysis started with gathering all of the reports available online in PDF format. The sample of analysis was reduced from 802 cultural heritage properties (by 2016) to target 193 properties that come under the category of "cities", as listed by the UNESCO World Heritage Center online search. However, this number is expected to be reduced as the analysis focused only on those WHC discussed within SoC reports. Further on, the analysis chose for a summative content analysis in which words or content (in this case the list of UDCI) are identified and quantified in a text with the purpose of understanding their contextual use [43]. A first semi-automatic search of references to the list of UDCI evidenced the need to adapt UDCI into keywords that are related to customary terms of UNESCO's monitoring system [59]. In order to bridge this conceptualization gap, we correlated the list of identified threats with the description of the UDCI. For instance, the indicator Natural disaster was extended into keywords, such as *natural disaster*, *natural risk*, but also as words that are used in the UNESCO list of threats, such as *flooding*, *earthquake*, *fire*, and *storms*.

2.3. Systematic Classification of Factors Affecting the Conservation of World Heritage Cities

A database of references in SoC reports was compiled to facilitate the classification of UDCI and the corresponding keywords. The classification of gathered references consisted on a coding system shown in Table 2, which is designed as follows. **Step 1:** A pre-coding classification was applied according to the SoC report system. This includes the name of the city, its geographical location and year of the report; **Step 2:** Post-coding was applied based on Management situation analysis and an Impact analysis, differentiating the references in semantics [43]. The first qualitative classification is adapted from Agarwal et al. [60] in which references to UDCI and keywords within SoC reports are classified as external or internal issues to the management of the property adapted. The second classification aims to identify the "negative and positive (intended and unintended) causal effects of interventions" (and/or development) [49]. Both classifications remain to some extent subjective to both the researcher's interpretation (when insights not clearly described in the texts) and/or the reporters' descriptions (when insights are provided in the texts).

Table 2. Coding Table.

Coding Dimension	Coding Items and Definitions
41 UDCI	1. Indicator generic name 2. Keywords
Property Description	3. Name of the property 4. Geographical Region 5. Africa (AFR) 6. Arab States (ARB) 7. Asia and the Pacific (APA) 8. Europe and North America (EUR) 9. Latin America and the Caribbean (LAC) 10. Report year
Management Situation Analysis	11. External Factor 12. Internal Factor
Impact Analysis	13. Positively affecting conservation actions 14. Negatively affecting conservation actions
Sustainability Dimensions	15. Economic: Permitting continuing compatible land uses or economic activity, such as tourism revenues, reuse of buildings, management capabilities [55], i.e., when the economic benefits or threats are mentioned (costs of conservation actions, funding, expenses or references to economic activities and functions, etc.)
	16. Environmental: When related to protecting the natural environment (particular ecosystems in and around properties), gradual changes due to geological, climatic or other environmental factors, threats, and protection from natural hazards, pollution, efficiency and improvement of natural resources, environmental friendly interventions, etc. [55]
	17. Social: When related to social equity, by maintaining strong links with communities and contributing to society, professional creation, reception or participation activities but also actions related to government will, consultation processes, human resources, local population or civil society participation, improvement of life quality. Protecting less tangible assets within properties (communities, cultures, and knowledge) [55].

Step 3: Correlations between the management and impact analysis allows for a SWOT analysis on the basis of common urban factors (referenced UDCI) affecting the conservation of WHC. Strengths are represented by urban factors that have a positive impact on the conservation of the WHC and are competences of the local heritage management. Weaknesses are represented as those urban factors that have a negative impact on the conservation of the WHC, and are actions that are directly related to the local heritage management. Opportunities represent urban factors that have a positive impact on the conservation of the WHC but external competences to the local heritage management. Threats are represented by urban factors that have a negative impact on the conservation of the WHC and are external competences to local heritage management. **Step 4:** Factors are also classified by sustainability dimensions according to those previously defined in selected urban monitoring tools, but also adding the coverage of dimensions by applying the definitions of UNESCO [55] (see Table 2)—social, economic, and environmental. This classification, often neglected in SUD indicator studies, intends to raise awareness of the need for development to foster a systemic approach in which implications across the different dimensions need to be assessed in order to be considered sustainable. The cultural dimension is always included as factors are found affecting the conservation of WHC.

3. Results

3.1. The Shortlist of Urban Development Common Indicators

From a total of 476 indicators gathered from eight reports, it was found that the frequency of usage of indicators ranged from one to four times among the eight reports analyzed. To define the list of UDCI, 41 indicators within the higher frequencies (3 and 4) were retained (See Table 3). The shortlist shows that 88% of the indicators were used three times, whilst only 12% of the indicators could be found in the maximum number of four reports. These frequencies of use exemplify the lack of consensus around monitoring methodologies for urban development, but also a significant

disagreement on the definition of concepts commonly handled in the discipline, as highlighted by other studies.

In terms of the coverage of sustainability dimensions, according to the original classification per urban reports, it was found that 59% of UDCI (24 indicators) were mainly associated with the *equitable* dimension. This is not surprising considering that the reports analyzed place a strong emphasis on cities' economic strengths. However, a considerable proportion, 16 of the indicators (39%), were classified in the sustainability dimension in both urban management and competitiveness reports. These assess five urban factors relating the management and state of natural-territorial resources with the quality of life in a city: access and availability of natural resources, sources of pollution, natural disasters, transportation, and urbanization rate.

Table 3. Classification of urban development common indicators (UDCI) per sustainability dimensions and frequency of use.

	Indicator	Dimensions	Freq.
1.	Air Pollution	Sustainable	4
2.	% Public Green Space (Parks And Gardens)	Sustainable	4
3.	Population With Higher Education	Equitable	4
4.	Aircraft Movements	Equitable	4
5.	No. Of Performing-Arts Venues	Equitable	4
6.	Km Of High Capacity Public Transit System Per 100,000 Population	Sustainable	3
7.	Relating To The Different Modes Of Transport Considered	Sustainable	3
8.	Urbanized Land	Sustainable	3
9.	Electricity/Household Connections	Sustainable	3
10.	Disasters In The Last 10 Years	Sustainable	3
11.	Consumption Of Water Per Capita	Sustainable	3
12.	Percentage Of City Population With Potable Water Supply Service	Sustainable	3
13.	Percentage Of City Population Served By Wastewater Collection	Sustainable	3
14.	Wastewater Treated	Sustainable	3
15.	Percentage Of City's Solid Waste That Is Recycled	Sustainable	3
16.	Percentage Of City Population With Regular Solid Waste Collection	Sustainable	3
17.	Median Travel Time	Sustainable	3
18.	Automobile Ownership	Sustainable	3
19.	Km Of Light Passenger Transit System Per 100,000 Population	Sustainable	3
20.	Adult Literacy Rate	Equitable	3
21.	School Enrollment Rates	Equitable	3
22.	Cost Of Rent	Equitable	3
23.	A Real Size Of Informal Settlements As A Percent Of City Area	Equitable	3
24.	Number Of In-Patient Hospital Beds Per 100,000 Population	Equitable	3
25.	Health System Performance	Equitable	3
26.	Average Life Expectancy	Equitable	3
27.	Percentage Of City Population Living In Poverty	Equitable	3
28.	Population Growth	Equitable	3
29.	Foreign-Born Population	Equitable	3
30.	Freedom Of Expression And Human Rights	Equitable	3
31.	Corporate Headquarters	Economic	3
32.	Cost Of Business Occupancy	Equitable	3
33.	No Of International Conferences And Conventions	Equitable	3
34.	International Tourists	Equitable	3
35.	Crime	Equitable	3
36.	Financial And Business Services Employment	Equitable	3
37.	Flow Of Goods Through Ports And Airports	Equitable	3
38.	No. Of International Travelers	Equitable	3
39.	No Of Museums	Equitable	3
40.	Availability Of Quality Restaurants	Equitable	3
41.	Elected And Nominated Councilors	Equitable	3

Out of the 41 UDCI, only 27 were found referenced as urban factors affecting the conservation of WHC. The list of UDCI was adapted to 52 keywords using the possibility of expressing indicators as urban factors as defined by the UNESCO list of threats (Figure 2). For instance, the UDCI natural

disaster risk has the highest number of keywords (nine): earthquake (25 references), flood (17 references), and fire (20 references) being the urban factor most frequently referenced. Modes of transport and Kilometers of public transport follow, both with five related keywords. The first includes transport system (five references), and the word “transport”, followed by node, network, and center (1 reference each). The second includes the following keywords: extension (seven references), connection (three references), and expansion (one reference). Next, comes the factor Public park space, with four keywords: park (16 references), green area (nine references), green space (four references), and public garden (one reference). Other UDCI, such as elected councilors, were not found with their original description but rather with context-related keywords such as political (25 references) and elections (one reference). For instance, “some deficiencies have been identified in the existing legislative framework, especially in four areas . . . Public management of the site has to be made more stable, and less dependent on political cycles”. In this example, the interpretation of the reference is that political cycles or the process of electing/changing councilors are identified as external factors affecting the management of a site. The list of UDCI and the number of related keywords is shown in Figure 3.

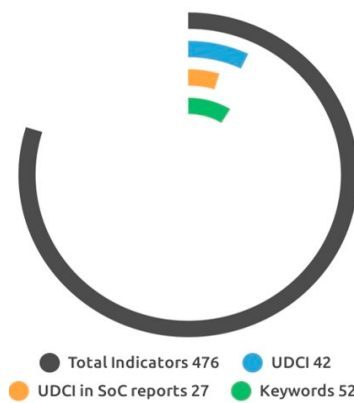


Figure 2. Indicators analyzed.

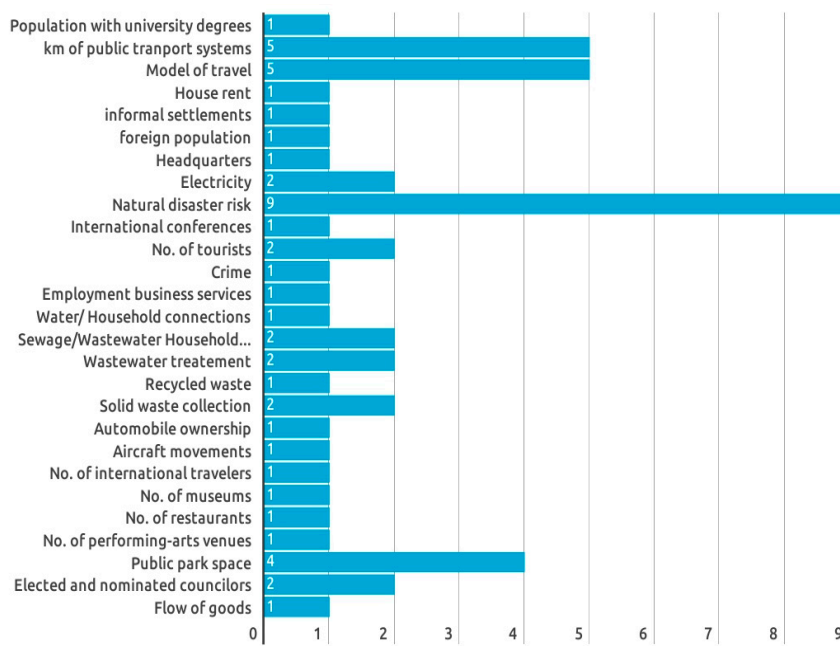


Figure 3. Referenced UDCI and number of keywords.

It was observed that when matching UDCI with keywords related to UNESCO list of threats, some indicators were not found referenced in the sample of WHC discussed by SoC reports. This indicates that either consistency on standardized criteria and/or quantitative data on those threats are rarely used when discussing the state of conservation of properties categorized as WHC. However, such factors were found present in other categories of WH properties, for example, in natural properties. Examples of such factors are Impacts of tourism, number of visitors, km of roads, modes of public transport, among others.

3.2. Systematic Classification of Urban Factors Affecting the Conservation of World Heritage Cities

3.2.1. Classification According to Properties' Description

The classification of urban factors according to the properties' category showed 301 references to urban factors discussed in 69 WHC (from a total of 193 WHC) in SoC reports dating from 2000 to 2015 (See Figure 4). The distribution of percentages of both factors discussed and WHC across the geographical regions presented similar proportions (Figure 5). The largest group of references and cities analyzed are located in EUR (37.5% and 42% respectively), followed by LAC with 27.6% of references and 23.2% of cities, and ARB with 13.3% of references, and 16% of cities. Slight differences were found in the distribution between the AFR and APA regions. The AFR region was found discussing more urban factors (13%) in fewer cities (8.7%). Whereas APA, having a higher number of cities (10.1%), is the region with the fewest urban factors discussed (8.6%).

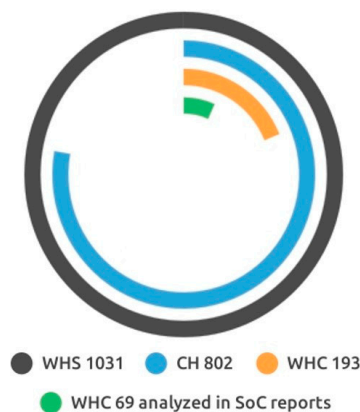


Figure 4. Sample of World Heritage Cities (WHC) analyzed.

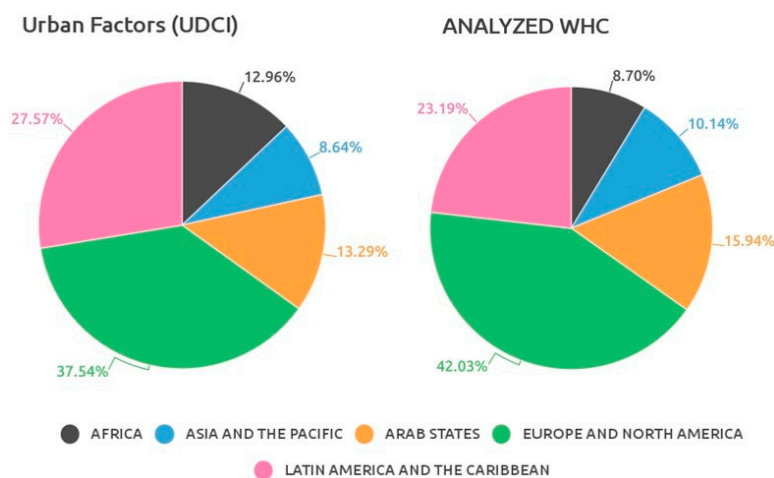


Figure 5. Classification by Property description.

3.2.2. Management Situation and Impact Analysis

The management situation showed that the majority of urban factors affecting the conservation of WHC are considered as internal issues to the management of cultural heritage (56.15%). Urban factors classified within this group are represented by the following UDCI: sewage systems, electricity, employment business services, housing, restaurants, and museums. Actions that were related to these factors are typically part of development and management plans and strategies aiming at the improvement and/or modernization of WHC, particularly through tourism and related services. External factors make up the remaining 43.85%. The majority are related to environmental phenomena or activities that are undertaken at higher management levels (such as national, regional or metropolitan authorities), and urban dynamics that are created by stakeholders, such as the private sector. Related UDCI are natural disasters, transport systems (km), modes of transport, public parks, and recycled waste.

The impact analysis showed that negative impacts are in the majority (52.82%). When considering that SoC reports mainly focus on negatives, it is remarkable that positive aspects reached a near-balanced share of 47.18%. Among the evident UDCI with negative impacts are found natural disaster risk, elected and nominated councilors, km of public transport, and automobile ownership. Urban factors identified as having positive impacts are no. of museums, sewage systems, house rent, international conferences, and employment in business and services. Correlations between management and impact analysis allowed for a SWOT analysis. For instance, an urban factor, such as house rent has a positive impact in that a social program can encourage local communities to invest in the conservation of protected buildings. But, house rent rises as a result of gentrification can have negative consequences by displacing traditional functions in a protected urban area. In a similar way, a natural disaster risk is seen as positive when local authorities have developed a risk management plan and have implemented it successfully.

3.2.3. SWOT Analysis

We observed that strengths (internal-positive factors), with 99 references, make up the largest group (33% of the total of 301, including 21 urban factors). The most referenced factors are the opening of site museums (27.4% of the total strengths), followed by the implementation of natural disaster risk plans (19.18%). Other positive factors mentioned include rehabilitation projects and/or conservation strategies, such as the restoration of heritage buildings for (social) housing (12.33%); the establishment of parks (10.96%); and, the improvement of urban facilities, which contributes to the property's development, for example sewage (10.96%), energy connections (3.51%), wastewater treatment (1.75%), and water connections (1.75%). Elected and nominated councilors (4.39%) are also influential as they offer their political support and commitment to conservation. Other less referenced strengths (less than 1%) include the promotion of actions that enable employment, including that of heritage professionals; the organization of international conferences on management issues affecting a city; and, education, with training programs for graduates. Figure 6 shows the distribution of SWOT analysis, and Figure 7 shows the SWOT classification by indicators.

Weaknesses (internal-negative factors) represent 23% (70) of the 301 references and include 13 UDCI. The most common urban factor referenced is the absence of natural disaster risk plans (32.86% of the 70 references), which contributes to the property's vulnerability to identified threats; for example, fire-protection, earthquakes, flooding, etc. Elected councilors follows (15.71%); this reflects upon the local political will and situation, and the likelihood of their implementing appropriate legislative protection and management plans. No. of museums is the third most referenced factor (12.86%). Examples include inappropriate approaches to the use of historic buildings as museums, the use of intrusive architecture in the heritage context, and the lack of impact assessments. The lack of sewage systems (10%) is the most referenced infrastructure problem, whilst housing (7.14%) is found related to eviction regulations, lack of social housing, and degraded housing.

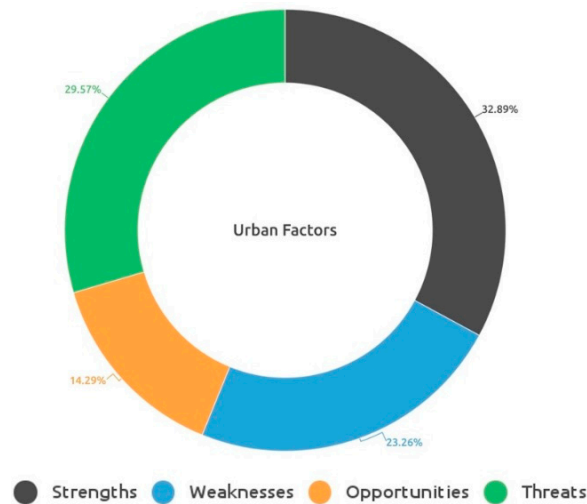


Figure 6. Strengths, weaknesses, opportunities, and threats (SWOT) analysis.

Opportunities (external-positive factors) represent the smallest share of the SWOT analysis with 14% of the total references (43 references), including 14 UDCI. Museums represent the most frequently referenced factor (23.26% of all opportunities) ranging from international cooperation programs led by institutional museums to the rehabilitation of local museums. Public spaces (16.28%) are seen as opportunities when contributing to heritage’s protection as buffer zones or transition areas. Also mentioned are improvements of urban services, such as sewage systems (13.95%), water supply (4.65%), and the extension of km of transport systems (9.30%) and the diversity of modes of travel (6.98%).

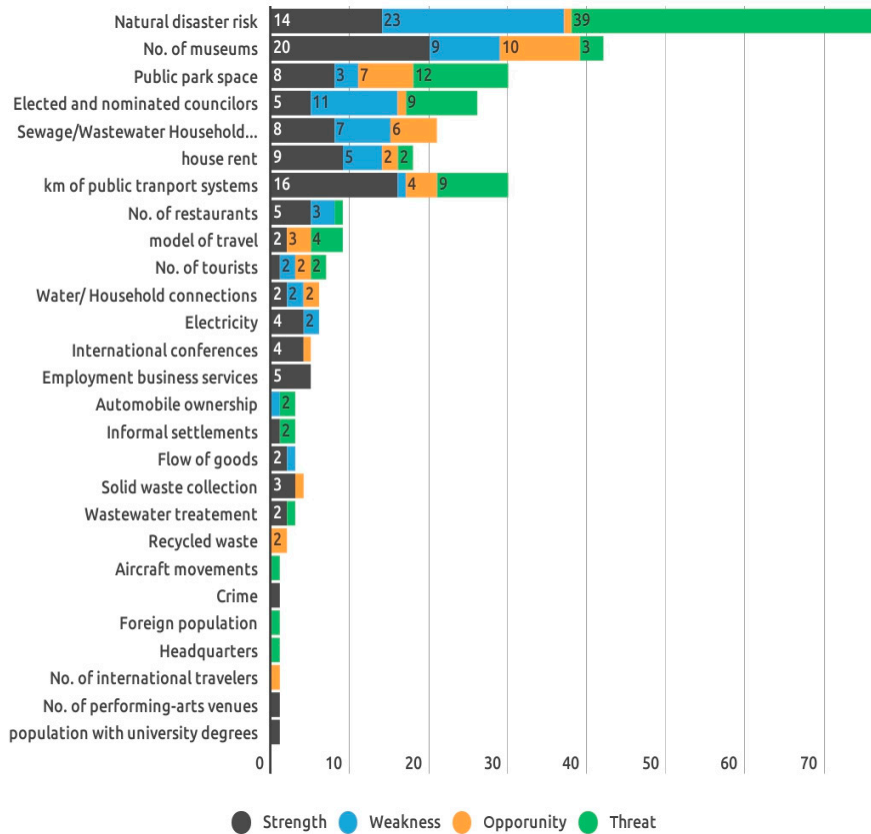


Figure 7. SWOT classification per UDCI.

Finally, threats (external-negative factors) represent 30% (89 references) of the total and include 15 UDCI. The largest group in this classification consists of issues related to risks from environmental phenomena (43.2% of the total threats), such as climate change effects or other disasters. Urban development projects undertaken at a higher authority level that introduce incompatible new dynamics, or disregard the local cultural heritage management office, are represented in the categories of public spaces (13.48%), km of transport systems (10.11%), and museums (3.37%). Additionally, the continuity of conservation actions and projects was identified as being closely related to the continuity of the elected and nominated councilors. In most cases, changes at the local government level are seen as threats (10.11%).

3.2.4. Sustainability Dimensions

The classification of factors according to sustainability dimensions reveals that 46.18% of the 301 references were found to be discussing the factors impacts across the three dimensions (economic, social, and environmental). In other words, urban development factors when discussed according to their impacts on the conservation of WHC tend to be assessed more holistically when compared to the UDCI original coverage of sustainability dimension. That is, the classification provided from the urban report’s perspective. A total of 32.56% of the factors were found to be discussed according to two sustainability dimensions. Out of these, most factors focused on the equitable dimension (26.58%), followed by the livable dimension (4.65%), and the least discussed, the viable dimension (1.4%). The smallest group, 21.26% of the urban factors, were found to be performing in one dimension. From these, most of the factors covered the environmental dimension (9.97%), followed by the social dimension (9.3%), and lastly, the economic dimension (1.99%).

Some trends were observed in correlation with sustainability dimensions and the SWOT analysis. When discussing internal factors, a plurality of strengths (45%) are discussed in terms of sustainability, but references tend to prioritize the economic and social dimensions (39% equitable and 9% social dimensions). Strengths are the category with the fewest urban factors discussing the environmental dimension (1% environmental, 3.5% livable, and 2% viable dimensions). Weaknesses have a higher share of references discussing the equitable impacts of urban factors (36%) than in sustainable terms (30%). Environmental factors constitute 14% of the references, and they have the highest share of all the SWOT categories on livable-related factors (9%), but viable factors only make up 1% of the total.

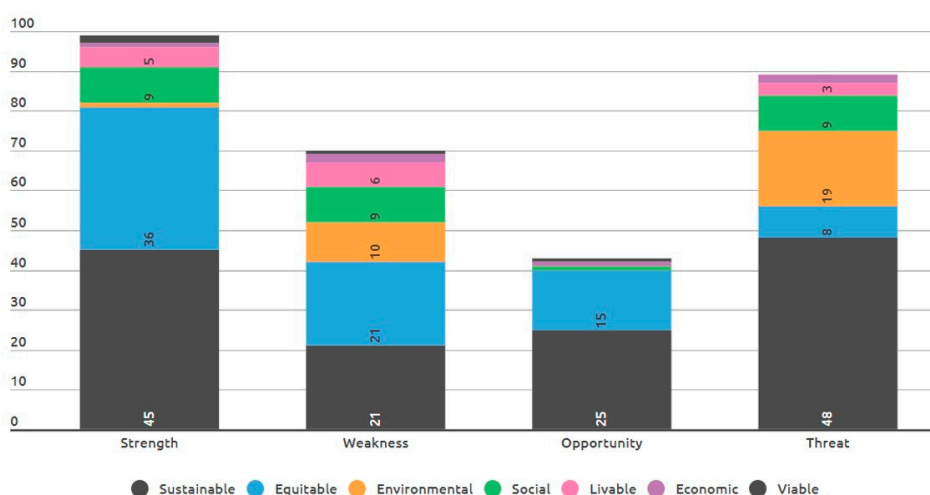


Figure 8. Coverage of the sustainability dimensions in correlation with the SWOT analysis.

The correlations of sustainability dimensions with the external factors showed that opportunities have a similar coverage to those of strengths, being widely discussed in sustainability terms (58%), with a tendency towards the equitable dimension (35%). This category was found to be performing the

poorest in relation to environmental factors, with only 2% covering the viable dimension; it also has the lowest rate in the social and economic dimensions (2% apiece). However, threats are mostly discussed in sustainability terms (48%), and have the strongest tendency towards the environmental factors of all the SWOT categories (29% environmental and 3% livable dimensions). This is because natural disaster and other climate-related threats are the most pressing conservation issue discussed within SoC reports. The social and equitable dimensions, respectively, make up 10% and 9% of references. Figure 8 shows the coverage of the sustainability dimensions in correlation with the SWOT analysis.

4. Discussion and Conclusions

This article proposed a methodology that used a list of 21 frequently used indicators across eight reports for urban management and competitiveness explored as referenced urban factors affecting the conservation of WHCs within UNESCO SoC report systems. Rather than pretending to show the most relevant measuring criteria, the UDCI aim to set the base on relevant urban dynamics that were identified by both fields under a common conceptualization of development, in which heritage is understood as a competitive resource requiring tailored management. Additionally, this research raises awareness of those overlooked factors that perhaps are relevant for a discipline in relation to the other. Therefore, while still subjective, this research opens a debate on how a more relevant categorization of urban phenomena affecting the management of WH properties would facilitate its monitoring process, as well as how more appropriate measurements of impacts could enable clearer correlations between both fields. The results confirmed that the interdisciplinary analysis could provide insights on the dynamics between urban development factors and heritage conservation in correlation with local management practices, desired and undesired impacts, but also on the extent practices promote a systemic approach to sustainability. That is to say, considering urban development impacts on social, economic, and environmental dimensions.

It was found that most urban factors were referenced as having both qualities. However, natural risk and elected and nominated councilors are mostly monitored as negative factors, whilst museums and km of public transport represent the most common positive factors. Although development aspects are largely reported as threats by UNESCO WH system, our SWOT analysis showed that urban factors with negative impacts, encompassed in weaknesses and threats, represent a slight majority in this study. The largest number of discrete factors is correlated with positive impacts, largely evidenced by strengths rather than opportunities. Strengths of WHC are based on the consolidation and enhancement of their habitability, urban infrastructure, transportation systems and networks, job creation, etc.; as long as these are supported by local political will. Such benefits are mainly related to the satisfaction of social and economic needs [1]. Whereas, factors that are classified as opportunities suggest that the benefits of development and heritage synergies can be potentiated when heritage conservation becomes a fundamental aspect of local urban development and planning.

In the process of identifying UDCI, this research confirmed the lack of common conceptualizations on development themes between the two fields. The wide selection of urban indicators (few of them commonly used) has been attributed to ambiguous definitions of sustainable development and the objectives for their use [35]. The need to identify keywords to adapt UDCI has shown this situation to be persistent in the heritage field. Consequently, the identification process is not considered exhaustive, as the choice of terminology is dependent on a consultant's interpretation of a reporting system with methodological flaws. Although comparison with natural heritage properties was not part of the scope of this research, it was observed that the search for indicators, as originally described, was more likely to be successful in natural heritage properties. This is due to the fact that "the natural heritage sector has made much progress in monitoring approaches, particularly in the relationship between processes and general management effectiveness" [55] (p. 97). Natural heritage reports make use of monitoring protocols and existing data sources, and thus tend to be more consistent in the use of terminology and the quantification of perceived conflicts between resource use, development, and conservation goals [61].

This study supports SUD through the integration of conservation into urban planning policies and strategies that are facilitated by a landscape-based approach for the management of cultural heritage. However, such understanding of urban heritage remains theoretical, particularly in the monitoring and assessment practices. The SoC reports have proven to be a key source for providing useful insights on WHC and development factors. However, it was noted that the current categorization of WHC is limited as urban heritage is broader than the properties matching this category. This can be exemplified with urban properties from the Asia and Pacific region, which is placed second in terms of the number of cultural heritage properties. Despite its high urbanization rate, particularly in Eastern Asian countries, this study presents the region as the least represented in the discussion of urban factors affecting the conservation of WHC. Whereas, Zhang et al. [21] and Yu et al. [62] make relevant observations on the urban-rural challenges mainly posed to WH landscapes in China. Arguably, a greater number of properties could have been included in the analysis, and hence, more reliable information on the state of urban heritage could have been provided if the classification of WH had been set according to the HUL approach. Challenges identified in the process of application of the methodology should encourage the SoC system to improve the use of more consistent terminology, and, at all levels, to pursue reporting methods which are objective and sourced in information. As the future of heritage management is expected to become more integrative, gradually working towards common ambitions through innovation, integration, and co-evolution, the use of indicators and their references could be further explored in terms of useful data and sources able to improve the assessment of identified urban factors.

Although this article does not fully explore the compiled database, it has the potential to provide an overview of the status of global urban heritage, per UNESCO's geographical regions, trends, and evolution of trends by year, etc.; as well as insights on how local actions lead to good or unsustainable practices. The methodology presented can contribute to consolidating UNESCO's debate on heritage as fundamental for sustainable development as it systematically considers heritage within the synergies of complex urban systems. Therefore, it can become a valuable resource for scholars and practitioners in cultural heritage and urban development to elaborate multidisciplinary planning strategies and policies, as well as finding some common ground for the comparison of practices. Further research can provide an in-depth analysis of identified factors and the possible correlations among the results. The classification of positive/negative and internal/external factors can bring new approaches to what constitute the strengths, weakness, opportunities, and threats to the sustainable urban development of world heritage cities. Especially, at the local level, a closer look at this classification of factors can provide insights into local governance and managerial skills on how these align with global trends. The application of this methodology at the local level can also indicate the level of integration of cultural heritage into cities' approaches to sustainable development.

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References

1. Guzmán, P.C.; Pereira Roders, A.R.; Colenbrander, B.J.F. Measuring links between cultural heritage management and sustainable urban development: An overview of global monitoring tools. *Cities* **2017**, *60*, 192–201. [[CrossRef](#)]

2. Van Oers, R.; Pereira Roders, A. Aligning agendas for sustainable development in the post 2015 world. *J. Cult. Herit. Manag. Sustain. Dev.* **2014**, *4*, 122–132. [CrossRef]
3. ICOMOS. Threats to World Heritage Sites 1994–2004: An Analysis. May 2005. Available online: http://www.icomos.org/world_heritage/AnalysisofThreats1994-2004final.pdf (accessed on 9 March 2018).
4. Turner, M.; Roders, A.P.; Patry, M. Revealing the Level of Tension Between Cultural Heritage and Development in World Heritage Cities. *Probl. Ekorozw.* **2012**, *7*, 23–31.
5. Tanguay, G.A.; Berthold, E.; Rajaonson, J. A Comprehensive Strategy to Identify Indicators of Sustainable Heritage Conservation. Available online: https://www.researchgate.net/publication/266343477_A_Comprehensive_Strategy_to_Identify_Indicators_of_Sustainable_Heritage_Conservation (accessed on 9 March 2018).
6. Gravagnuolo, A.; Girard, L.F. Multicriteria tools for the implementation of historic urban landscape. *Qual. Innov. Prosper.* **2017**, *21*, 186–201. [CrossRef]
7. Bandarin, F.; Van Oers, R. (Eds.) *Reconnecting the City: The Historic Urban Landscape Approach and the Future of Urban Heritage*; Wiley-Blackwell: Oxford, UK, 2014.
8. Veldpaus, L.; Pereira Roders, A.; Colenbrander, B.J.F. Urban Heritage: Putting the Past into the Future. *Hist. Environ.* **2013**, *4*, 18–33. [CrossRef]
9. Fusco Girard, L. Toward a smart sustainable development of port cities/areas: The role of the “Historic Urban Landscape” approach. *Sustainability* **2013**, *5*, 4329–4348. [CrossRef]
10. Veldpaus, L. *Historic Urban Landscapes, Framing the Integration of Urban and Heritage Planning in Multilevel Governance*; Eindhoven University of Technology: Eindhoven, The Netherlands, 2015.
11. Musacchio, L.R. Key concepts and research priorities for landscape sustainability. *Landsc. Ecol.* **2013**, *28*, 995–998. [CrossRef]
12. Reed, J.; Van Vianen, J.; Deakin, E.L.; Barlow, J.; Sunderland, T. Integrated landscape approaches to managing social and environmental issues in the tropics: Learning from the past to guide the future. *Glob. Chang. Biol.* **2016**, *22*, 2540–2554. [CrossRef] [PubMed]
13. UNESCO. *UNESCO Recommendation on the Historic Urban Landscape*; UNESCO: Paris, France, 2011.
14. Wu, J. Landscape sustainability science: Ecosystem services and human well-being in changing landscapes. *Landsc. Ecol.* **2013**, *28*, 999–1023. [CrossRef]
15. Axelsson, R.; Angelstam, P.; Degerman, E.; Teitelbaum, S.; Andersson, K.; Elbakidze, M.; Drotz, M.K. Social and cultural sustainability: Criteria, indicators, verifier variables for measurement and maps for visualization to support planning. *Ambio* **2013**, *42*, 215–228. [CrossRef] [PubMed]
16. Musacchio, L.R. The ecology and culture of landscape sustainability: Emerging knowledge and innovation in landscape research and practice. *Landsc. Ecol.* **2009**, *24*, 989–992. [CrossRef]
17. Stem, C.; Margoluis, R.; Salafsky, N.; Brown, M. Monitoring and evaluation in conservation: A review of trends and approaches. *Conserv. Biol.* **2005**, *19*, 295–309. [CrossRef]
18. Pereira Roders, A. How can urbanization be sustainable? A reflection on the role of city resources in global sustainable development. *BDC. Bollettino Del Centro Calza Bini* **2013**, *13*, 79–90.
19. Pendlebury, J.; Short, M.; While, A. Urban World Heritage Sites and the problem of authenticity. *Cities* **2009**, *26*, 349–358. [CrossRef]
20. Bandarin, F.; Van Oers, R. *The Historic Urban Landscape: Managing Heritage in An Urban Century*; Wiley-Blackwell: Oxford, UK, 2012; Volume 3. [CrossRef]
21. Zhang, X.; Zhou, L.; Wu, Y.; Skitmore, M.; Deng, Z. Resolving the conflicts of sustainable world heritage landscapes in cities: Fully open or limited access for visitors? *Habitat Int.* **2015**, *46*, 91–100. [CrossRef]
22. Monteiro, V.; Painho, M.; Vaz, E. Is the heritage really important? A theoretical framework for heritage reputation using citizen sensing. *Habitat Int.* **2015**, *45*, 156–162. [CrossRef]
23. Svuum, K.K.; Lisa, T.L.; Mdx, R.H. Assessment of Air Pollution Effects on Cultural Heritage—Management Strategies. In *Specific Targeted Research Project (STREP), Priority 8.1 Policy-Oriented Research*; Swerea KIMAB: Kista, Sweden, 2007.
24. Chen, C.F.; Chen, F.S. Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists. *Tour. Manag.* **2010**, *31*, 29–35. [CrossRef]
25. Zancheti, S.M.; Hidaka, L.T.F. An indicator for measuring the state of conservation of urban heritage sites. In *Proceedings of the 6th International Seminar on Urban Conservation: Measuring Heritage Conservation Performance*, Recife, Brazil, 29–31 March 2011; pp. 252–264.

26. Hampton, M. Heritage, local communities and economic development. *Ann. Tour. Res.* **2005**, *32*, 735–759. [[CrossRef](#)]
27. Angrisano, M.; Biancamano, P.F.; Bosone, M.; Carone, P.; Daldanise, G.; De Rosa, F.; Franciosa, A.; Gravagnuolo, A.; Iodice, S.; et al. Towards operationalizing UNESCO Recommendations on “Historic Urban Landscape”: A position paper. *Aestimum* **2016**, 165–210. [[CrossRef](#)]
28. Nijkamp, P. Economic Valuation of Cultural Heritage. In *The Economics of Uniqueness*; Licciardi, G., Amirtahmasebi, R., Eds.; The World Bank: Washington, DC, USA, 2012.
29. Patry, M.; Bassett, C.; Leclercq, B. The State of Conservation of the World Heritage Forest Network. In Proceedings of the 2nd World Heritage Forest Meeting, Nancy, France, 11–13 March 2005.
30. Sutherland, W.J.; Pullin, A.S.; Dolman, P.M.; Knight, T.M. The need for evidence-based conservation. *Trends Ecol. Evol.* **2004**, *19*, 305–308. [[CrossRef](#)] [[PubMed](#)]
31. Zheng, H.W.; Shen, G.Q.; Wang, H. A review of recent studies on sustainable urban renewal. *Habitat Int.* **2014**, *41*, 272–279. [[CrossRef](#)]
32. Tweed, C.; Sutherland, M. Built cultural heritage and sustainable urban development. *Landsc. Urban Plan.* **2007**, *83*, 62–69. [[CrossRef](#)]
33. Lyytimäki, J. Evaluation of sustainable development strategies and policies: The need for more timely indicators. *Nat. Resour. Forum* **2012**, *36*, 101–108. [[CrossRef](#)]
34. Ness, B.; Urbel-Piirsalu, E.; Anderberg, S.; Olsson, L. Categorising tools for sustainability assessment. *Ecol. Econ.* **2007**, *60*, 498–508. [[CrossRef](#)]
35. Tanguay, G.A.; Rajaonson, J.; Lefebvre, J.F.; Lanoie, P. Measuring the sustainability of cities: An analysis of the use of local indicators. *Ecol. Indic.* **2010**, *10*, 407–418. [[CrossRef](#)]
36. Mascarenhas, A.; Coelho, P.; Subtil, E.; Ramos, T.B. The role of common local indicators in regional sustainability assessment. *Ecol. Indic.* **2010**, *10*, 646–656. [[CrossRef](#)]
37. Singh, R.K.; Murty, H.R.; Gupta, S.K.; Dikshit, A.K. An overview of sustainability assessment methodologies. *Ecol. Indic.* **2012**, *15*, 281–299. [[CrossRef](#)]
38. Niemeijer, D.; de Groot, R.S. A conceptual framework for selecting environmental indicator sets. *Ecol. Indic.* **2008**, *8*, 14–25. [[CrossRef](#)]
39. Shen, L.Y.; Ochoa, J.; Shah, M.N.; Zhang, X. The application of urban sustainability indicators—A comparison between various practices. *Habitat Int.* **2001**, *35*, 17–29. [[CrossRef](#)]
40. Moreno Pires, S.; Fidélis, T.; Ramos, T.B. Measuring and comparing local sustainable development through common indicators: Constraints and achievements in practice. *Cities* **2014**, *39*, 1–9. [[CrossRef](#)]
41. Holden, M. Sustainability indicator systems within urban governance: Usability analysis of sustainability indicator systems as boundary objects. *Ecol. Indic.* **2013**, *32*, 89–96. [[CrossRef](#)]
42. Mayer, A.L. Strengths and weaknesses of common sustainability indices for multidimensional systems. *Environ. Int.* **2008**, *34*, 277–291. [[CrossRef](#)] [[PubMed](#)]
43. Hsieh, H.-F.; Shannon, S.E. Three Approaches to Qualitative Content Analysis. *Qual. Health Res.* **2005**, *15*, 1277–1288. [[CrossRef](#)] [[PubMed](#)]
44. UNESCO WHC/UNESCO. World Heritage Centre—List of Factors Affecting the Properties. 2008. Available online: <http://whc.unesco.org/en/factors/> (accessed on 20 January 2017).
45. OWHC. Projects Database Organization of World Heritage Cities. 2016. Available online: <http://www.ovpm.org/en/projects?qt-projects=2#qt-projects> (accessed on 15 September 2016).
46. Tress, B.; Tress, G.; Décamps, H.; d’Hauteserre, A.-M. Bridging human and natural sciences in landscape research. *Landsc. Urban Plan.* **2001**, *57*, 137–141. [[CrossRef](#)]
47. Teller, J.; Keita, A.K.; Roussey, C.; Laurini, R. Urban Ontologies for an improved communication in urban civil engineering projects. *CyberGeo* **2007**, *2007*, 1–14. [[CrossRef](#)]
48. Redford, K.H.; Coppolillo, P.; Sanderson, E.W.; Da Fonseca, G.A.B.; Dinerstein, E.; Groves, C.; Mace, G.; Maginnis, S.; Mittermeier, R.A.; Noss, R.; et al. Mapping the conservation landscape. *Conserv. Biol.* **2003**, *17*, 647. [[CrossRef](#)]
49. Mascia, M.B.; Pailler, S.; Thieme, M.L.; Rowe, A.; Bottrill, M.C.; Danielsen, F.; Geldmann, J.; Naidoo, R.; Pullin, A.S.; Burgess, N.D. Commonalities and complementarities among approaches to conservation monitoring and evaluation. *Biol. Conserv.* **2014**, *169*, 258–267. [[CrossRef](#)]
50. Cassatella, C.; Peano, A. Indicators for the Assessment of Historic Landscape Features. In *Landscape Indicators*; Cassatella, C., Peano, A., Eds.; Springer: Dordrecht, The Netherlands, 2011; Volume 53, pp. 1–30. [[CrossRef](#)]

51. Westfall, M.S.; de Villa, V. *Cities Data Book Indicators for Managing Cities*; Westfall, V., de Villa, M.S., Eds.; Asian Development Bank: Manila, Philippines, 2001.
52. Dramstad, W.E.; Fry, G.; Fjellstad, W.J.; Skar, B.; Helliksen, W.; Sollund, M.L.B.; Tveit, M.S.; Geelmuyden, A.K.; et al. Integrating landscape-based values—Norwegian monitoring of agricultural landscapes. *Landsc. Urban Plan.* **2001**, *57*, 257–268. [[CrossRef](#)]
53. Bryman, A. *Integrating Quantitative and Qualitative Research: How Is It Done? In Mixed Methods*; SAGE: Thought Oaks, CA, USA, 2006; Volume II, pp. 93–111.
54. Lombardi, P.; Stanghellini, S. Assessment methods underlying the planning and development of Modena City's CSR. *Sustain. Urban Dev.* **2009**, *3*, 211.
55. UNESCO WHC. *Managing Cultural World Heritage*; UNESCO: Paris, France, 2013.
56. Helms, M.M.; Nixon, J. Exploring SWOT analysis—Where are we now? *J. Strategy Manag.* **2010**, *3*, 215–251. [[CrossRef](#)]
57. Soini, K.; Birkeland, I. Exploring the scientific discourse on cultural sustainability. *Geoforum* **2014**, *51*, 213–223. [[CrossRef](#)]
58. Lyytimäki, J.; Rosenström, U. Skeletons out of the closet: Effectiveness of conceptual frameworks for communicating sustainable development indicators. *Sustain. Dev.* **2008**, *16*, 301–313. [[CrossRef](#)]
59. Veillon, R. *State of Conservation of World Heritage Properties, A Statistical Analysis (1979–2013)*; UNESCO World Heritage Centre: Paris, France, 2014. Available online: <http://whc.unesco.org/en/soc/> (accessed on 9 March 2018).
60. Agarwal, R.; Grassl, W.; Pahl, J. Meta-SWOT: Introducing a new strategic planning tool. *J. Bus. Strategy* **2012**, *33*, 12–21. [[CrossRef](#)]
61. UNESCO WHC. *Managing Natural World Heritage*; UNESCO: Paris, France, 2012.
62. Yu, A.T.W.; Wu, Y.; Zheng, B.; Zhang, X.; Shen, L. Identifying risk factors of urban-rural conflict in urbanization: A case of China. *Habitat Int.* **2014**, *44*, 177–185. [[CrossRef](#)]



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