SUSTAINABLE ASSESSMENT TOOL OF HISTORIC CENTERS:
The Cases of Bath and Cambridge

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Abstract
The rise in the interest of urban conservation over the past years has led to search for a more effective decision-making and appropriate assessment. Conservation of historic centers in England aims to achieve important goals with social benefits and increasingly the improving urban qualities. Despite this positive consciousness, some conservation initiatives do not deliver their goals at the right time while others do not maintain their success for longer periods. This striking phenomenon is often due to the lack of sustainable management. The aim of this study is to explore the concept of sustainable management with particular focus on the conservation of historic centers and to introduce an assessment tool to measure the degree of success in conserving historic centers. The study focuses on two English case studies: Bath and Cambridge City Centers; investigating their visions, policies and strategies with relevance to the feedback of local communities and responsible authorities. The study utilizes the assessment tool to clarify the crucial need for an effective management framework based on the relationships of the factors of ‘importance’ and ‘performance.’

Keywords: urban conservation; assessment tool; sustainable management; built heritage.

INTRODUCTION
Conservation is a contemporary trend committed to sustain the heritage assets, applying economic investments to serve the community and maintain the cultural identity of historic centers. The conservation of historic centers plays an important role in the enhancement of the urban continuity and fabric cohesion. Needless to say, the conservation process produces multi-visions of regeneration; yet, this requires effective and well-regulated management. In addition, the conservation process requires a developmental approach that includes community development and a sensible attitude toward the urban potentials.

Kevin Lynch (1972; p.33) stated that, “if change is inevitable, then it should be moderated and controlled so as to prevent violent dislocation and preserve a maximum of continuity with the past.” Based on Fairclough (2001), sustainable development assumes that inherited built heritages cannot stay stagnant, yet they require change to accommodate adaptation and ensure continuation of history. Other scholars even added that, to achieve an energetic public realm, the idea of managing ‘change’ in urban design is essential with the same importance as design (Carmona, et al, 2003; Pickard, 2001). Therefore, there is a crucial need to apply sensible framework of conservation as being the fundamental controlling aspect in the development process, and to decrease any damage that may occur. On the other hand, conservation includes the involvement of the community, policy-makers and implementers; eventually, to reinforce the various outcomes and tangible or intangible deliverables.
The Crux

The most important threat facing historic centers is the haphazard demands pressured by modern life needs: as population increases, new employment opportunities and residential units are required. For many decades now, UK policies have been developing their historic centers to accomplish the needs of communities and modern lives. It is noticeable that conservation models were changed dramatically from a ‘clean-sweeping’ approach to more sensitive preservation options, up to flexible conservation approaches in the 1980’s, respecting the heritage and maximizing its utilization.

Therefore, it is essential to design conservation solutions to accommodate the increasing needs without destroying the local distinctiveness. Actually, this will raise the fact that conserving local distinctiveness covers different aspects such as urban diversity, architectural identity, place-making, and community enhancement (Carmona et al, 2003), through sustainable measures of urban design and proper assessment tools. Thus, in order to achieve this goal; a sustainable conservation framework is required with effective components and elements, appropriate, and flexible in all situations needed of the development process.

Most of the conservation of historic centers in the UK is oriented toward achieving high urban qualities. Despite this consciousness, some conservation projects do not achieve their goals in the right time while others do not maintain their success. This striking phenomenon mandates that more conservation frameworks and effective assessment tools are required. Responsively, the primary objective of this research paper is to introduce a sustainable assessment tool for a comprehensive and sustainable conservation process.

Meanwhile, managing urban conservation is a wide process taking into consideration the present resources and applying them into new interventions. This ought to lead to a more strategic model of urban conservation with sustainable emphases. Nevertheless, democratizing the conservation process widens the number of key players to cover both the initiators and end users. In addition, it enhances cultural ownership, protects the local values against interferences of regulatory mechanisms (Fairclough, 2001; Carmona et al, 2003). Stubbs (2004; p.289) even added that, “the principles of sustainable development can be applied in a new way that adopts a more integrated approach to the environmental consequences of planning decisions. Such holistic approach is vital.” Therefore, sustainable conservation should be objective, practical and economic, and this is a goal the study will highlight and deliver.

SUSTAINABLE CONSERVATION OF HISTORIC CENTERS

Specifically, the study focuses on delivering a sustainable framework tool serves the qualities of built heritage, economic values and enhancing social conditions, with assertive control and implementation. The tool proposed in this study is based on five fundamental principles; Effective Control and Policy, Economic Prosperity, Social Enhancements, Revitalization Design, and Environmental Awareness. The goal is to provide an inclusive framework combining the five principles at the same time and yet operate individually (Figure 1). The conservation framework should be flexible and transparent to endorse development and to manufacture a continual regenerative scope. However, the assessment tool is decisive and built on more quantitative measures with less qualitative, opposing the statement of Tiesdell et al, whom said that conservation can only be defined qualitatively including aesthetics matters and personal intuitions (1996; p.207).

The core is to provide a monitoring tool that simplifies the evaluation process. Agreeing with the government visualizations of “structure, local, and unitary development plans are the main vehicles for ensuring that conservation policies are coordinated and integrated with other planning policies affecting the historic environment” in the PPG 15 (DoE, 1994; p. 3). The principles detailed through minor criteria; each is responsible for achieving the objectives and solves any obstructions with the respect toward other principles. The following section will expand on the five integrating principles.
First Principle: Effective Control and Policy

The aim of effective control and policy principle is to guarantee objectives of national and local authorities are implemented properly and applying a sustainable approach. The UK land use planning system has a strong National and Local Policies relationship based on a chain of commands for decision making, starting with the central government applying a set of generic rules and policies, then passed to the regional and local agencies. Both are supposed to complete each other to provide a consistent approach within the conservation process (EH, 2005). The national policies state the major objectives and support the implementation phases. Nevertheless, allow more autonomy to local authorities and sub-agencies to prepare detailed plans. English Heritage (2005; p. 5) justified the local authorities aim as “managing their conservation areas, whilst recognizing that resources are limited and have to be prioritized.” The regulative polices should be strong to ensure conservation area’s protection, set up priorities for development, coordinate the activities, and offer opportunities for successful change (EHTF, 1998).

In case of historic centers, it is advised to establish local management agencies under supervision of local authorities to assist in coordinating the process of urban conservation. These minor management agencies would help in to supply day-to-day services to users, connect the local authorities with the retailers and investors (Foster, 2004; Carmona et al, 2003). On the other end, local authorities should produce development plans and guidance to control the conservation procedures, to sets out standards of community involvement if possible. Such policies and guidance must be periodically updated to reflect the continuous change occurring in historic centers, with cyclic feedback by the end user (Figure 2). Actually, the proposed assessment tool fulfills this gap by providing a quantitative monitoring and feedback.
Figure 2: The sustainable process merges all key players in the process of conservation and mandates a systematic feedback system (Source: Author).

**Second Principle: Economic Prosperity**

Through time historic centers declined, suffered neglect and abandonee by decision makers; especially, ones that lost their importance and economic edge, such as a special industry or business concentration. Consequently, the property value fell and unemployment increased, to result in degradation of the urban fabric and loss of the ‘sense of place.’ Strange (1999) mentioned that, “evidently sustainability allows for and even positively promotes integration between environmental concerns and economic development.” In urban conservation initiatives, the economic investments are a crucial factor leading into urban regeneration and gentrification. The qualities inherited of these centers encourage preservation and reshaping for future benefits, either aesthetic or economic. Yet, this only occurs through proper strategic vision and a sustainable urban conservation framework.

In order to achieve full economic prosperity some aspects need consideration within the sustainable urban conservation framework, such as, the development of funding and efficiency in expenditure. Others would be the increase of life quality and increase employment opportunities. Altogether, would increase the number of visitors and tourists, thus, enhance the property markets and extravagate the financial revenues.
Third Principle: Revitalization Design Actions
The aim is to formulate simple design guides and parameters drawn clearly to assist the decision-making process. Due to the high number of inherited qualities, the new designs must respect and sensitively contrast with the existing built environment. The design parameters reflect the sustainable approach of conservation not only the aesthetic dimension but also the economic and socio-cultural potentials. In addition, categorize the design actions into groups to be persistent, ease the management process and post operational evaluations systems. First, the revitalization design actions should reflect the importance of surrounding spaces through enhancing public spaces. The aim is to provide natural sequences of open spaces functioning as cultural gathering points and to keep the historic center intact together; this is called ‘the healing approach’ (Tiesdell et al, 1996). Secondly, is to acknowledge that adaptive re-use of the built heritage, in order to secure the historic scenery against deterioration, accommodating them with active uses and frequently match the old uses to match the present or future ones.

The respect of present scenes and visual features of the center are the major challenge. Thus, it is preferred that the new design solutions within any historic center should preserve and enhance the scale and sizes of the existing physical features but with new sensitive appearances to allow harmony and continuity between old and new buildings.

Fourth Principle: Social Enhancement
English Heritage (2002) declared that, “sustainability is more than just about physical resources. It is also about community and culture.” The social dimension of urban conservation complements the physical dimension, yet to ensure that users will invest their efforts and emotions. It is important to satisfy the people’s needs, and to increase the public understanding of the historic center. If the revitalization design actions enhance the people to live and work this will create a sense of civic responsibility, eventually, will provide long-term blend between the people and guarantee that the quality of living is well preserved (Shankland, 1975). Moreover, decrease the anti-social behavior and provide a safe transparent environment for all communities to live and experience.

Fifth Principle: Environmental Awareness
According to the Local Government Management Board - LGMB in 1995, the major issue that needs recognition in developing the historic built environment is to protect and enhance the natural surroundings, thus, designing the development schemes, such as the use of energy, water and other natural resources efficiently and with absolute care. Promote the re-use and recycling methods of the tangible inheritance, in order to decrease the use of energy in the construction of new structures. Increase the green area to limit the pollution emitted by the use of cars and other polluting activities. Decrease the possibility of contaminating the land to safeguard the soil’s quality for future usage. Environmental awareness should also cover the urban form to sustain the existing physical footprint. Environmental Awareness principle needs more emphasis and studies but the study prefers to tackle this principle deeply in further research work and recognize it in the upcoming evaluations and examinations.

ASSESSMENT METHODOLOGY AND RESULTS
The Root of the Examination
The investigation proposes an experiment of procedural evaluation technique facilitated by the researcher toward the conservation officials and users (i.e. initiators/implementers and recipients). It is an attempt to place a mirror in front of urban conservation of historic centers, and synthesize the different outcomes. The examination guided by the impulse to understand and to produce formal judgments and choices (Kemimis, 1982). The examination procedure observes the continual upgrade and retains the high standards of conservation, its methodology monitors the work implemented and its performance. According to the Commission of Architecture and
Built Environment (CABE) vision, evaluation is indeed important to ensure best quality. Hall et al., (1998; p.193) justified the use of evaluation in conservation and heritage management by it secures, reviewing performance indicators considering whether the original objectives remain realistic and appropriate. Automatically, this provides two main kinds of evaluation, target the conservation officials to demonstrate the potentials gained by the built heritage and the other is by the community to review the performances toward of conservation principles.

**Sustainable Conservation Framework Assessment Kit**
The study exploited the Importance-Performance Analysis (IPA) adapted from ‘Integrated Heritage Management’ by Hall et al. (1998). The advantage of using this evaluation tool is it provides the understanding of conservation officers; secondly, it demonstrates the lay public opinions toward the urban conservation efforts poured. Consequently, the appraisal is designed in two versions. A version for the conservation officer testing the importance of the five principles with details parameters to investigate the officials’ understanding and support. The other version designed is to evaluate the performance of each principle by the users, to investigate the recipients’ satisfaction. Both versions demonstrates few statements adopted from CABE’s – ‘Design Review: How CABE evaluates quality in architecture and urban design’ – and provided by a Likert-scale type questionnaires by a scale from 1 – 5. The quantitative average scores will provide a cumulative score for each principle. Thus, each principle will have two cumulative scores, one for the importance value and the other for the performance value.

![Figure 3: The structural system of the Importance-Performance Evaluation Methodology utilized (Source: Author).](image)

The second part of the evaluation is to carry out an action grid (Figure 3), the vertical axis represents the ‘Importance Value,’ as for the horizontal axis, it represents the ‘Performance Value.’ The average cumulative scores by all interviews are inserted in the graph to indicate an optimum average-cross scale. The placement of the optimum average-cross on the grid will break the graph into four quarters. The top-left quadrant demonstrate a – CONCENTRATE HERE ZONE - the most important one for altering the need for more management attention, because it’s important but with low performance value. The top-right quadrant is the goal for any of the principles to reach to, because it scores high importance value and a high performance value, and called – KEEP UP THE GOOD WORK. The bottom-right quadrant represents the less importance with high performance, as achieving the goals with minimal efforts and this called –
POSSIBLE OVERKILL. The last quadrant is the bottom-left quadrant and this represents the less importance and less performance to conclude as the LOW PRIORITY in the overall strategy (Guadagnolo, 1985 & Henderson and Bialeschki, 1995). Later in the study, a comparison action grid will took place to compare the two case studies and demonstrates the different reactions of officials and users toward the five principles of Sustainable Conservation Framework.

Figure 4: The Action-Grid is the concluding part of the Importance-Performance Analysis, integrating the scores of the officials and the users’ satisfaction ratings (Source: McArthur, 1994).

COMPARATIVE ANALYSIS OF THE EXAMINATION RESULTS
The systematic examination took place at the city centers of Cambridge and Bath, to understand the different historic centers and their urban conservation efforts. Some meetings held with the conservation officer of each city council; both officers were very helpful and clarified some issues regarding their city councils’ policies by fully answering the importance appraisals. In addition, a total number of 39 (21 Bath City user and 18 Cambridge City Center user) users and local communities completed the performance appraisals, stating their views and feedback. The results achieved from the analysis were slightly similar, most of the importance averages scores were high, because the principles and facts stated were extremely objective and high ambitioned. Therefore, both conservation officers stated that most of the sub-principles included were crucial in the conservation process.

Importance - Performance Comparative Analysis
The total averages reveal that the City of Bath officials considered the principles were very important even more than Cambridge City, because the Importance average value was 4.1/5 but Cambridge City score was 3.7/5. In contradiction, the Performance average score conveyed by the users and the community did not reflect the council’s Importance values as expected, but for the City of Bath the Performance value was 2.8/5 but Cambridge City’s performance value was 3.25/5 that is close to its Importance value.

Cambridge City’s scores were more rational, in general, the users and community members seem to be satisfied toward the different principles. The following comparative analysis is acknowledged in two forms; first is quantitatively and then qualitatively addressing the five different principles suggested in the Sustainable Conservation Framework. The following tables will show the principles’ values and their placement on the grid analysis tool of each city:
Table 1: The Importance – Performance Analysis results of the City of Bath including the graph analysis tool (Source: Author).

Table 2: The Importance – Performance Analysis results of Cambridge City including the graph analysis tool (Source: Author).

Qualitative Reflections on the Importance - Performance Analysis

First Principle: Effective Control & Policy
The results of this principle were very complicated; Cambridge’s officer classified this principle as less importance, nevertheless, users identified a close value of satisfaction. The graph demonstrates that the Cambridge city council should not do much on developing this principle,
because the results demonstrates that the local community are being satisfied with the current quality of policies. As for the City of Bath center, the Importance score was placed at the ‘Low Priority’ quadrant; some stated that to decrease peripheral housing developments and instead develop the inner city with affordable housing solution. Another aspect concerning Cambridge City is that the visitors were missing the outdoor recreational life found in Bath city center; therefore, the Cambridge city council should work on developing this aspect, by updating the current policies to introduce grounds that are more open.

**Second Principle: Economic Prosperity**

As for this principle, both city centers targeted the same grid quadrant ‘Possible Overkill.’ Personally, both achieved good economic performances with fewer efforts done by the city council because the historic significance and the precious character perceived within these quarters are remarkable. However, Bath’s officer revealed a very important issue, that to reconsider the aspect of tourism; the city should not depend completely on the tourism-led conservation methodology, because future threats of terrorist attacks and violence, will affect the tourism industry and the only source economy. Carefully, this is unprofitable and unadvisable because the city will lose the efforts forced in the development for a period of time without any revenue. Even though, tourism activities are important at these centers, therefore, other economic investments are required, such as the educational industry in Cambridge City, to work side by side with the tourism-led conservation. As for the users at both centers, they were not satisfied with the recent renting rates, because as the economic prosperity increases the renting rates tend to rise-up too. It is evident that the city councils were focusing more into commercializing streets and eventually losing the historical interest. On the other hand, interviewees of Cambridge City wanted to find more useful activities that could take place on the dispersed beautiful green fields between colleges, same as in the case of Bath were the city council successfully planted recreational and meditation activities to enjoy all day long.

**Third Principle: Revitalization Design Actions**

This is the best principle both case studies achieved; the results demonstrated that each had high importance and high performance values, which reveal that both city councils exploited that precise principle and that both centers developed their physical conservation policies properly, scores of both cases were located at the ‘Keep Up Good Work’ quadrant. However, according to the visits conducted, the study revealed that the ‘sense of place’ was conserved and was enhanced in Bath more than in Cambridge. The visual observations revealed that the ‘special architectural character’ and scenery with natural surroundings are very intact and flourishing with the various activities in Bath, but in Cambridge the observation perceived was that the city is improperly structured due to the Buchanan and 1960’s development plans which relied primarily on the functional and zoning theories of that period.

The major similarities between both case studies were that both conservation officers stated that the councils were working to update the local revitalization guidance through monitoring and continuous evaluation of the built environment; because the current are not corresponding to the recent physical conditions and that the loose policies cannot help to protect the built heritage appropriately. Meanwhile, the users should be more involved in the evaluation procedures to achieve precise feedback to produce proper visions.

**Fourth Principle: Social Enhancements**

According to the social enhancements principle, the City of Bath scored the ‘Concentrate Here’ quadrant; however, Cambridge City principle was located on the ‘Optimum Average Cross’ quadrant. Both cases are similar in the situation, but unfortunately, there are some issues that need clarification especially concerning the community participation and consultation in the decision-making process. First at City of Bath, the conservation officer agreed that community consultation is indeed important. Yet, the community gave less attention to the meetings and to
the public announcements published until the beginning of the implementation process, up till then they started to take actions toward the overall scheme. Secondly, at Cambridge City; the conservation officer also agreed that the community consultation is essential, but since Cambridge University owns most of the buildings at the historical center, the university gives less attention to community opinions and thoughts, under the authority of private ownership. In my opinion, this underestimates the rights of local communities, and the city council should increase their efforts to serve their communities and hold more effective management solutions to obtain the communities feedback in the right time. In contradiction to the city councils, the local communities wanted to be more involved and that the city councils should establish a social center in one of the historic buildings for low and middle class residents to use for meetings and cultural activities.

**Fifth Principle: Environmental Awareness**
Cambridge City acknowledged the environmental awareness issues and produced some guidance to provide regulations. In contrast, City of Bath less and relies in the national directives. Both officials ensured that the environmental issues are important nowadays to face the climatic challenges. This could be perceived even from the performances values produced by the local communities, especially demonstrated in the Cambridge values are higher than Bath to prove that the city council’s intentions of importance and efforts in this matter. As for the local communities, some were against the restrictions in building construction; yet without these solid restrictions many old historic buildings were mistreated with inappropriate materials, such as old asbestos. Generally, there were some attempts by Cambridge City, yet, needs more attention to address this challenge. However, City of Bath graph scores revealed that the city council did not give any attention and kept the environmental issues low, and requires total reconsideration.

**CONCLUSIONS**
Generally, it is important to preserve, conserve and revitalize the historic centers. The crux of the study is to provide a clear understanding of how to assess conservation of historic centers, including conservation principles, policies, and actors involvement. The study introduces a methodology of assessment and investigation through a sustainable form. As a major ingredient in the methodology, the study focused on emphasizing the community participation and their attributes to the historic urban centers from five different conservation principles. The main essence of the study is to offer a sustainable conservation framework that fulfills the sociocultural, economic, political, and physical dimensions of urban conservation. The goal was achieved by analyzing the relation between conservation principles and the importance and performance comparison by a quantitative methodology.

**The essence of assessing sustainable conservation at historic centers**
Sustainable conservation of historic centers integrates the built heritage, economic potentials and existing social being, to comply an active developing strategy broad enough to fit surrounding quarters. The sustainable conservation methodology proposed consists of five fundamental principles: Effective Control and Policy, Economic Prosperity, Revitalization Design Actions, Social Enhancements, and Environmental Awareness. The objective of Sustainable Conservation is to supply an inclusive framework of the five principles; be flexible and transparent, afford a sense of updating, and manufacture a continual regenerative framework. The main principles were broken down into effective sub-principles to provide a controllable assessing tool. The sub-principles were used later to evaluate and observe the different case studies by the Importance-Performance Analysis.

**Lessons learned from the British experiences via Sustainable Conservation**
In relation to the research objective, major lessons and recommendations gained from the case studies investigation:
• Extensive utilization of adaptive re-use buildings, this was noticeable at both case studies; at Cambridge City center, the colleges and the students’ accommodation occupied historic building. As for Bath City center, new developments were located at the surrounding historic buildings, such as, the Bath Therma Spa.

• Another important physical outcome is that any urban conservation development should start by defining the area or quarter and to be in an appropriate size. In order to develop the built environment, we should keep track of the land-use and the activities growth. Bath City had this policy within their developing strategy, the council kept on developing piece by piece within one center. However, as for Cambridge City, officials need to start on breaking down the historic center to smaller zones to manage change systematically.

• From an urban perspective, historic centers should enhance the network of opens spaces by vital streets and mixed land-use developments. These open spaces should act as gathering points for people to enjoy, nevertheless, formed by proportional human scale environment, green elements, landmarks and proper furniture as in the City of Bath.

• From the social point of view, the Importance-Performance tool has revealed that no urban conservation development could work unless it follows a democratic methodology, which should involve the communities, eventually supplying enriched economy toward local residents and workers.

• Once again, economic regeneration is the main thread to offer a successful urban conservation of historic centers. Economic regeneration should start first by understanding the potentials, and then accommodate them into a strategic economic plan.

• Tourism is a must in any historic center development to help enriching the economy, but it is not the only, it requires backup with other economic strategies in case any falls down.

• Lastly, is to infuse more environmental concerns and actions within the urban conservation process, same as in Cambridge City. Sustainable conservation was partially practiced in Cambridge due to the guides published earlier to protect the environment and ecology. Environmental aspects should include management of the resources, increase use of local and renewable resources, and efficient as much as possible.

**Reflections on the Importance-Performance tool in future urban interventions**

Nevertheless, within the British mainstream, conservation of historic centers is itself a matter of sustainability because it preserves the existing assets, but managing this process of development adds more sustainable influence. The aim is to develop what is present and to add more to the built environment, then considered later by the future generations as new historic forms. Another aspect that could affect the future interventions is to discover a methodology of producing more remarkable and valuable entities to serve the present community priorities for better life quality. Finally, sustainable conservation of historic centers is essential to protect the heritage, to ensure democratic approach of decision-making, and to upgrade the economic conditions of the historic setting. As for future efforts, it is time when all heritage investments are also subject to cost-benefit analysis, to solve problems deterioration and increase the national economic growth. All such aspects require urgency especially in developing countries, to escape spending enormous funds and efforts and pour innovative strategies rather than the paralyzed preservation techniques of the sixties.

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