A CONCEPTUAL FRAMEWORK FOR EVALUATING SUSTAINABILITY OF URBAN PARKS IN SCOTLAND

GURUGE S.P.P.G.D.K.[1]* & ONYAGO V.[2]
[1,2] University of Dundee, Scotland, UK
[1]dilyakethakiguruge@gmail.com, [2] vonyago@dundee.ac.uk

Abstract: Urban parks play an important role in helping cities achieve their sustainability goals, since they contribute to the environmental well-being, economic prosperity, and social well-being. Nevertheless, in Scotland, the long-term viability of these parks is progressively threatened by causes such as urbanization. This project seeks to fill a notable deficiency in existing sustainability evaluations by creating and implementing a conceptual framework to assess the sustainability of urban parks. The study is organized around three primary goals: (1) to examine current understanding and methodologies concerning the environmental, social, and economic sustainability of urban parks; (2) to develop a customized framework for evaluating the sustainability of urban parks in Scotland; and (3) to validate the framework by applying it to specific case studies in the selected cities. Upon doing a thorough analysis of the literature on Sustainability, Development stages of an Urban Park, Urban parks and current frameworks, it became evident that there is a significant interdisciplinary link between these areas. Also, these frameworks frequently have a limited scope, prioritizing sustainability in park maintenance. A new framework, specifically designed for larger size urban parks, was developed by integrating the Planning and Design stage into the sustainable frameworks. This new framework is characterized by its scalability, flexibility, and replicability. The study used a mixed-methods approach, using qualitative data from park reports, as well as quantitative data from systematic field observations and GIS analysis. By choosing bigger urban parks as case studies, this research assures that the sustainability framework it develops is implemented in contexts where it may have the most impact, considering the current constraints of existing frameworks. Furthermore, this research is in line with global sustainability objectives, such as those specified in the United Nations' Sustainable Development Goals (SDGs), specifically Goal 11. After the assessment, the report discusses the results and considers the Scotland's Urban parks efforts in sustainability. The main conclusions are highlighted in the closing section along with suggestions for improving the park sustainability even further with the suggestions for future research possibilities.

Keywords: *Urban Parks, Sustainability, Sustainable Urban Design, Sustainable Urban Planning, Sustainable frameworks, Sustainable cities*

1. Introduction

The world's population is predicted to grow by about 2 billion people over the next 30 years, from 8 billion today to 9.7 billion in 2050, with a peak of nearly 10.4 billion in the mid-2080s. (UN, No date). On Census Data, 20 March 2022, the population of Scotland was estimated to be 5,436,600. This was the largest population ever recorded by Scotland's Census (Scotland's Census, 2022). The United Nations predicts that between 2009 and 2050, 70% of the world's population will reside in the world's major cities. (Calka *et al*, 2022)

It is evident that urban parks are essential when it comes to sustainability and urban development. Their significance is increasing as global urbanization gains up speed. Significant population increase and migration over the past century have resulted in a noticeable urban shift, a trend that is anticipated to continue. (Shiyin *et al.*, 2022)

Urban parks are essential components of sustainable urban planning, providing numerous environmental, social, and economic benefits (Chiesura.,2004). These benefits include improving air quality, offering recreational spaces, and supporting biodiversity (Chiesura, 2004). Despite their importance, the rapid pace of urbanization in cities such as Dundee, Glassgow and Edinburgh possess significant challenges to the sustainable maintenance and development of these green spaces. As urban populations grow, the pressure on available land and resources intensifies, making it increasingly difficult to balance development with the preservation of urban parks (UN-Habitat., 2011, cited in Yehua.*et al*., 2018)

Current research highlights that only a small number of frameworks exist for evaluating the sustainability of urban parks, and those that do exist often do not fully integrate environmental, social and economic dimensions in ways that are tailored to specific urban contexts. Moreover, there is limited empirical work that addresses the combined design, management and contextual challenges faced by urban parks in large to mid-sized Scottish cities such as Dundee, Glasgow and Edinburgh (Chiesura, 2004; Oliveira et al., 2022).

This research responds to these gaps by developing and applying a conceptual framework that evaluates thesustainability of urban parks in three Scottish cities, with a particular emphasis on planning and design-stage criteria alongside operational factors. By systematically assessing the case study parks through this framework, the study provides

*Corresponding author: Tel: +447412325471 Email Address: dilyakethakiguruge@gmail.com
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policymakers, urban planners and stakeholders with a practical tool to support context-sensitive decisions that can enhance urban sustainability, promote public health and advance wider environmental and social goals under conditions of ongoing urbanisation.

In addition to their social and sprawl characteristics, these cities represent diverse urban settings in Scotland. Edinburgh, with its historical significance and tourism driven economy (UNESCO,2024), Glasgow, as an industrial and cultural hub (Britanica, 2024), and Dundee, recognized for its recent urban redevelopment efforts (Dundee City Council,2023), all contribute to a thorough grasp of urban park sustainability in a variety of settings.

How can a conceptual framework that integrates planning, design and management criteria be developed and applied to evaluate the environmental, social and economic sustainability of urban parks in the Scottish cities of Dundee, Glasgow and Edinburgh?

The main aim of this study is to develop and apply a conceptual framework for evaluating the sustainability of urban parks in Scotland. This will be achieved by assessing urban parks in Dundee, Glasgow and Edinburgh using a set of integrated planning, design and management criteria covering environmental, social and economic dimensions. The ultimate objective is to provide guidance for future sustainability initiatives in the design and management of urban parks in Scottish cities.

The objectives of the study are,

1. To study existing knowledge and practices of park design and management for environmental, social, and economic sustainability.
2. To develop a conceptual framework that evaluates the sustainability of urban parks by integrating planning, design and management criteria across the three sustainability pillars.
3. To validate the framework through applying it into case studies.

The sustainability of urban parks is crucial for both the mental and physical health of urban communities, as these green areas greatly improve the quality of the environment, contribute to economic prosperity, and promote cohesiveness in society (Cilliers *et al*., 2013; Chiesura., 2004).

Furthermore, this research is in line with global sustainability objectives, such as those specified in the United Nations' Sustainable Development Goals (SDGs), specifically Goal 11, which seeks to create inclusive, safe, resilient, and sustainable cities and human settlements. Along with Goal 3, which ensures healthy lives and promote well-being for all at all ages, and Goal 9, which build resilient infrastructure. Goal 15, This goal emphasizes the need of protecting, restoring, and promoting the Sustainable use of terrestrial ecosystems. Studying Park management and design strategies is in line with the goal of preserving biodiversity and effectively managing urban ecosystems in a sustainable manner. SDG 13, sustainable management and design of parks can help enhance climate resilience in urban settings by reducing the impact of urban heat island effects and promoting carbon sequestration through the presence of green spaces. SDG 4, this study enhances educational outcomes by using case studies and applying the framework. It also serves as a model for future studies and informs best practices in sustainable urban planning. According to NPF 4, it sets number of important objectives to give priority for sustainability of Urban green space (NPF4, 2023).

2. Literature Review

This study's literature review focuses on three interconnected themes:

1. **Development stages of urban parks**
2. **Urban parks and sustainability pillars**
3. **Evaluation frameworks**

Urban parks are essential for ensuring the sustainability and quality of life in cities, as they provide a wide range of advantages in terms of the environment, society, and economy. The establishment of an urban park often follows a series of crucial phases, each necessary to ensure that the park fulfills its intended objectives. The stages included in this process consist of Planning and design, Park Development (Construction), Management and Maintenance.

People frequently frame urban parks as inherently sustainable elements of the city, yet this assumption is overly simplistic and can be misleading. Urban parks only generate tangible environmental, social, and economic benefits when their design, distribution, and management are tailored to local conditions and user needs. For example, Ayala-Azcárraga et al. show that specific park characteristics such as accessibility, vegetation structure, and maintenance quality shape who uses these spaces and how strongly they contribute to well-being, which means that poorly located or neglected parks may deliver limited benefits despite their green appearance.

From an environmental perspective, parks can support climate adaptation, biodiversity, and stormwater management, but these outcomes depend on factors such as habitat quality, connectivity, and multifunctional design rather than the mere presence of green space. Socially, parks are often associated with recreation, health, and social cohesion, yet recent work also highlights issues of unequal access, environmental injustice, and the risk that high profile greening projects can reinforce exclusion or trigger green gentrification. Economically, investments in urban parks can contribute to local vitality and property values, but they may also intensify affordability pressures and create long-term maintenance burdens for municipalities if not aligned with wider housing and budget policies.

For this research, “urban parks” are therefore understood not as universally beneficial green spaces, but as contested, context dependent infrastructures whose contributions to sustainability must be critically evaluated across environmental performance, social equity, and economic viability in specific urban settings. This perspective positions the literature on park characteristics, user well-being, multifunctional green infrastructure, and environmental justice as directly relevant to assessing whether, and under what conditions, the case study parks actually advance the sustainability objectives of the wider urban area.

Three Pillars of Sustainability and Indicators by González, et al. (2023). These three pillars contain 50 criteria and 19 indicators that are used to characterize and gather information from day-to-day operations. Using our methodology, park managers can plan short-, medium-, and long-term environmental, social, and financial actions while tracking their progress.

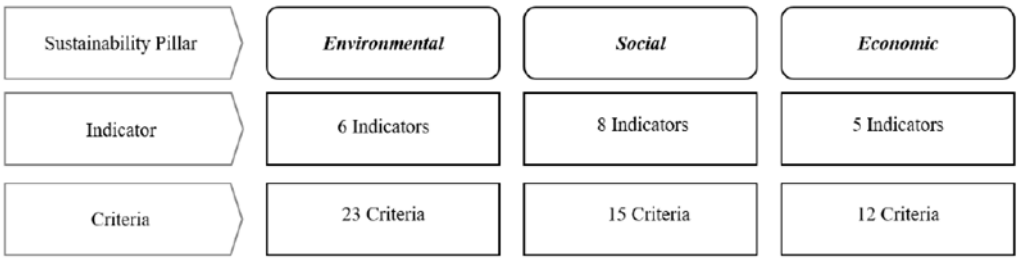


Figure 1 - Sustainability scheme.
Source- González, T et al (2023)

According to Powell, et al. (2016) evaluation encompasses different uses. Firstly, evaluation assists an organization in determining whether it is successfully accomplishing its objective. The Sustainable Evaluation Framework (SEF) based evaluation systems view evaluation as an ongoing process of assessing an organization's programs. This is done by systematically gathering data from various methods and sources. The collected data is then used to evaluate, enhance, and realign programs to ensure the achievement of the organization's goals and mission.

The SEF encompasses multiple complementary evaluation methodologies (Powell, et al., 2016). These can be, 1. a utilization-focused. 2.a Participatory approach 3.a theory-driven approach and 4.a consumer-based approach.

Urban parks serve as vital for improving sustainability in cities by enhancing environmental health, social well-being, and economic stability (Chiesura, 2004). Sustainable SITES., (2009) Initiative have established thorough guidelines for designing and managing parks in a sustainable manner. Sustainable SITES Initiative highlights 10 sections, as1. Site Context 2: Pre-Design Assessment + Planning, Section 3: Site Design- Water, Section 4: Site Design-Soil + Vegetation, Section 5: Site Design-Materials Selection, Section 6: Site Design-Human Health + Well-Being, Section 7: Construction, Section 8: Operations + Maintenance, Section 9: Education + Performance Monitoring, Section 10: Innovation or Exemplary Performance. (Sustainable SITES Initiative, 2009).

3. Methodology

This study employs a mixed methods approach to develop and validate a conceptual framework for evaluating urban park sustainability. The methodology integrates a critical literature review, framework development with original planning

and design criteria, and case study analysis of large urban parks in Dundee, Glasgow and Edinburgh. This ensures comprehensive assessment across both the planning and design stage and the management and maintenance stage.

3.1 CRITICAL REVIEW

Initially a critical Literature review was carried out to investigate the Sustainability, Development stages of an Urban Park, Urban parks and environmental, social and economic sustainability. Also, the sustainable frameworks were identified which is used to analyze the sustainability level of parks. By reviewing these it was identified that the existing frameworks forces, mainly on park maintenance.

The study will focus on the integration of all elements related to park design, as emphasized in the Sustainable SITES Initiative. The inclusion of this component is essential for conducting a comprehensive study on the sustainability of urban parks. **It ensures that parks are not only well maintained and operationally efficient, but also planned and designed to promote long term environmental, social, and economic sustainability.**

3.2 FRAMEWORK DEVELOPMENT

This development process includes,

1. Identifying sustainability Pillars - The framework will structure around three pillars of sustainability, which are, Environmental, Social and Economic.
2. Identifying Indicators and criteria - In order to ensure efficient data collection and analysis, specific indicators and criteria are established under each pillar. These indicators are made to be adaptable, scalable, and repeatable in various city parks.
3. Structuring the assessment tool - All criteria were converted into a measurable checklist using a 0–5 performance scale to ensure consistent scoring across case studies.

3.3 CASE STUDY SELECTION

To validate the framework Large Urban Parks are used as selected case studies. This ensures that the sustainability framework it develops is implemented in contexts where it may have the most impact, considering the current constraints of existing frameworks. This approach not only confirms the framework's suitability in complex circumstances but also ensures the foundation for future modifications that can expand its application to smaller parks.

Choosing three cities Glasgow, Edinburgh, and Dundee rather of just one, allows for a more comprehensive and representative study of urban park sustainability across Scotland. Each city has distinct environmental, social, and economic conditions, allowing the framework to be evaluated in a variety of settings. This technique ensures that the framework is not constrained by the distinctive characteristics of a single area, increasing its generalizability and applicability to a broader range of urban parks. These were chosen for this study primarily because of their high population density and significant urban sprawl these cities have experienced over time (Figure 3,4, and 5). These characteristics make them ideal case studies to evaluate the sustainability of urban parks in rapidly evolving urban environment. Edinburgh, Glasgow, and Dundee are three of Scotland's most densely populated cities, each experiencing unique challenges as a result of urban growth (Figure 2, Table 1).

Table 1- Population Density Scotland

Major Cities	**Population Census © 2022**	**Area (Km2) Census © 2022**	**Population density 2022**
Edinburgh	493,736	124	3,989/km^2
Glassgow	620,756	175	3,547/km^2
Dundee	148,697	60	2,478/km^2

Source - Census data https://www.citypopulation.de/en/uk/cities/scotland/

By selecting one park from each city, the study takes use of the diverse geographical, cultural, and administrative characteristics found in various metropolitan areas. This variability enables a more comprehensive evaluation of how the sustainability framework operates under various scenarios, resulting in a more robust and adaptive model. In contrast, selecting three parks from a single city may limit the study's breadth because the results will mostly represent the characteristics and challenges specific to that city, potentially decreasing the framework's broader applicability

3.4 QUANTITATIVE DATA COLLECTION

This chapter evaluates the three case study parks using the proposed framework, which encompasses three sustainability pillars, four design-related indicators (site context, site design–water, site design–material selection, and site design–human health and well-being), and 24 park design criteria original to this study (Table 2). Quantitative data were

gathered through structured field observations and spatial analysis: a checklist based on this framework was used to assess conditions and performance across designated zones (entrances, activity areas, natural areas, pathways). Each park was visited three times (weekday, weekend, evening), totalling nine observation sessions, with every criterion rated on a 0–5 scale from poor (0) to strong (5). GIS datasets (land use, vegetation, paths, water bodies, surrounding urban form) from public sources and local authorities measured park size, connectivity, landscape structure, and spatial distribution of key features. No user surveys were conducted due to the absence of ethical approval; thus, the analysis focused on measurable physical and spatial attributes.

3.5 QUALITATIVE DATA COLLECTION

Local authority management plans, policy documents and strategy reports were reviewed to understand planning context, maintenance practices and sustainability priorities. Notes and images from site visits captured user behavior, facility quality, accessibility, safety perceptions and issues not fully captured through scoring. These qualitative sources provided contextual insights and helped interpret the quantitative results.

3.6 DATA ANALYSIS

1. Scoring-
   All criteria were assigned a score from 0–5 based on field observation and GIS measurements.

2. Aggregation-
   Criterion scores were averaged to generate indicator-level scores, which were then aggregated into pillar-level sustainability scores for each park.

3. Comparative Analysis-
   Scores for all three parks were compared to identify strengths and weaknesses across environmental, social, and economic sustainability. Bar charts and radar diagrams were used for visual comparison.

4. Proposed Evaluation Framework

This model contains four design-related indicators, site context, site design–water, site design–material selection, and site design–human health and well-being. Together, these indicators include 24 park design criteria that were developed by the authors to capture planning and design aspects relevant to large urban parks in Scotland. The overall structure of the framework is informed by the three-pillar sustainability model discussed by González et al. (2023), but the specific design indicators and criteria presented in Table 2 are original to this study and focus on issues such as accessibility, water management, material use and user well-being.

Table 2- Pillars and Indicators under Planning and Design

Pillar (ED1-ED2)	Indicator	Criteria
Environmental Pillar	**ED1 Site design- Material selection**	1. Maintain onsite structures and paving
		2. Design for adaptability and disassembly
		3. Use salvaged materials and plants
		4. Conserve and restore native plants and communities
		5. Optimize biomass
		6. Reduce Urban heat Island Effect
		7. Use vegetation to minimizing building energy use
		8. Reduce the risk of catastrophic wildfire
	ED2 Site design-water	9. Reduce outdoor water use
		10. Design functional stormwater features as amenities
		11. Restore aquatic eco systems
		12. Protect and maintain cultural and historic places
		13. Provide optimum site accessibility, safety, and wayfinding
		14. Promote equitable site use
		15. Support mental restoration
		16. Support physical activity
		17. Support social connection
		18. Provide onsite food production
Social Pillar	**SD4 Site Design-**	19. Protect and maintain cultural and historic places

	Human Health and Well Being	
		20. Provide optimum site accessibility, safety, and wayfinding
		21. Promote equitable site use
		22. Support mental restoration
		23. Support physical activity
		24. Support social connection
		25. Provide onsite food production
		26. Reduce light pollution
		27. Encourage fuel efficient multi modal transportation
		28. Minimize exposure to environmental tobacco smoke
Economic Pillar	**ED1 Site Context**	29. Redevelop Degraded sites
		30. Locate project in existing developed areas
		31. Connect to multi model transit networks

Source - Compiled by Author

Within the wider evaluation tool, these design-focused criteria complement other management and operational criteria, allowing the framework to assess how early design decisions contribute to environmental, social and economic sustainability over the life of the park.

5. Case Studies

The selection of three parks for extensive case studies in this research has been guided by numerous essential considerations that together ensure a comprehensive and meaningful evaluation of urban park sustainability. Each park was selected to offer a varied and representative sample of the urban green areas in Scotland.

Three parks selected;

1. Holyrood Park, Edinburgh

Holyrood Park is the largest and perhaps the most significant open public area in Edinburgh. Holyrood Park is located in the heart of Edinburgh, just a short walk from the Royal Mile. Holyrood Park is over 650 acres, is generally circular in shape, and extends about a mile across in all directions.

2. Pollok Park, Glassgow

Pollok Park, Glasgow's largest and most significant ecological oasis, provides an excellent case study for researching the sustainability and multifunctionality of urban parks. Pollok Park, which spans 361 acres, has a unique combination of natural beauty, cultural heritage, and recreational facilities, making it an important part of the city's urban landscape.

3. Camperdown country park Dundee

Camperdown Country Park, Dundee's largest public park, is situated around 3 miles from the city center on Kingsway West (A90). The park, which features the majestic neo-classical Camperdown House as its focal point, covers 400 acres and is home to 190 different tree species. Camperdown Park is a popular destination for both Dundee residents and visitors. It is open year-round and offers a diverse range of activities and events.

6. Evaluation Criteria

This chapter evaluates the three case study parks using the proposed framework, which contains four design-related indicators – site context, site design–water, site design–material selection, and site design–human health and well-being. Together, these indicators include 24 park design criteria that were developed by the authors to capture planning and design aspects relevant to large urban parks in Scotland. The overall structure of the framework is informed by the three-pillar sustainability model discussed by González et al. (2023), but the specific design indicators and criteria presented in Table 2 are original to this study and focus on issues such as accessibility, water management, material use and user well-being.

For each park, maintenance practices, economic strategies and design features are assessed against these criteria and the three sustainability pillars. Advantages and disadvantages are noted for each indicator, enabling a comparative analysis that highlights how the parks meet or fall short of sustainability standards. The results identify new insights and propose framework adjustments to better capture the nuances of urban park sustainability, with every indicator scored according to available data and its relative importance to overall park performance.

Table 3- Scores given under each performance rate.

Score	5-4	4-3	3-2	2-1	1-0
Performance	Area of Strength	Doing well	Doing well but can be improved	Need to do better	Worst

Source - Compiled by Author

6. Study Results

HOLYROOD PARK, EDINBURGH
Evaluation framework study results.
Holyrood Park demonstrates strong performance across all design indicators. It excels in site design–material selection and site design–water within the environmental pillar, site design–human health and well-being in the social pillar, and site context in the economic pillar (Figure 2,3,4).

Figure 2- Environmental Scores, Holyrood Park, Edinburgh
Source - Author's own

Figure 3- Social Scores, Holyrood Park, Edinburgh
Source - Author's own

Figure 4- Economic Scores, Holyrood Park, Edinburgh
Source - Author's own

POLLOK PARK, GLASSGOW
Evaluation framework study results.
Pollok Park shows particular strength in site design–human health and well-being and site context, with good performance in site design–water, making it a leader in design-related sustainability aspects.

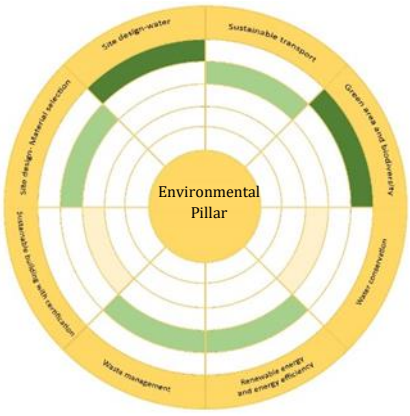


Figure 5- Environmental Scores, Pollok Park, Glassgow
Source - Author's own

Figure 6- Social Scores, Pollok Park, Glassgow
Source - Author's own

Figure 7- Economic Scores, Pollok Park, Glassgow
Source - Author's own

CAMPERDOWN PARK, DUNDEE
Evaluation framework study results.
Camperdown Park performs well across the design indicators, particularly in site design–material selection and site design–water (environmental pillar), site design–human health and well-being (social pillar), and site context (economic pillar).

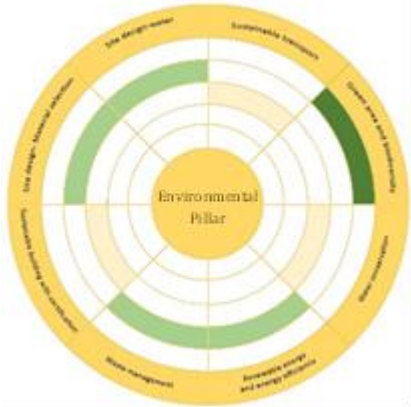
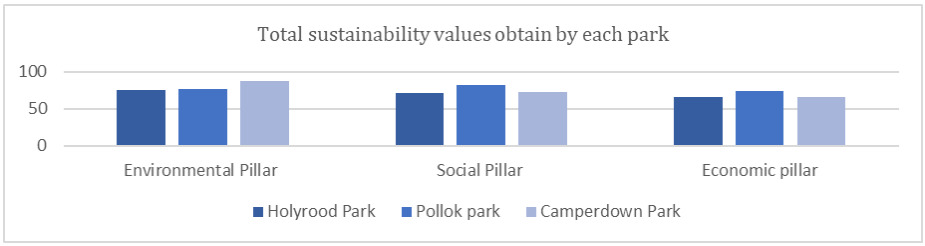


Figure 8- Environmental Scores, Pollok Park, Glassgow
Source - Author's own

Figure 9- Social Scores, Holyrood Park, Edinburgh
Source - Author's own

Figure 10- Economic Scores, Pollok Park, Glassgow
Source – Author's own

Table 4 – Total Sustainability Values



Source - Compiled by author

Holyrood Park's sustainability analysis, using the combined framework of González et al. (2023) and the authors' added design criteria, yielded scores of 70.89% (social pillar), 75.25% (environmental pillar), and 65.67% (economic pillar). In comparison, Pollok Park achieved 82% (social), 76.93% (environmental), and 73.77% (economic), while Camperdown Park scored 66.1% (economic), 72.45% (social), and 87.23% (environmental). Camperdown Park led in environmental performance, while Pollok Park outperformed the others in social and economic sustainability.

7. Discussion

This approach embeds sustainability principles from the outset, focusing on issues such as accessibility, water management, material use, and user well-being, rather than relying solely on post-construction data. The findings highlight the need to balance social and economic priorities: free access promotes inclusivity but can constrain maintenance funding, while entry fees strengthen finances at the cost of accessibility. Overall, the framework offers planners, architects, and policymakers a practical, measurable tool for guiding urban parks from design through long-term management, with potential for adaptation to smaller green spaces in future research.

8. Limitations

This study focused on three parks in Scotland as case studies to evaluate the proposed sustainability framework. Limiting the research to three parks allowed for a more detailed and manageable analysis, balancing depth with feasibility, though it may reduce the generalizability of the findings. A major limitation was the inability to conduct interviews with park administrators, as ethical approval was not given in time. This restricted the study to quantitative and observational data, which, while extensive, could not capture the managerial perspectives and operational insights that interviews or surveys might have provided. Future research should secure ethical approval earlier to incorporate stakeholder input. Data collection was confined to the summer of 2024 (May to August) due to time and resource constraints. While this period reflects peak usage and favorable weather, it does not capture seasonal variations such as winter conditions or rainy periods. Consequently, findings may not fully represent year-round park performance and should be interpreted with this limitation in mind.

9. Conclusion

This study developed and applied a conceptual framework to assess urban park sustainability in Dundee, Glasgow, and Edinburgh, with a focus on integrating original planning and design criteria alongside management factors across three

sustainability pillars. The framework comprising three pillars, four design-related indicators (site context, site design–water, site design–material selection, and site design–human health and well-being), and 24 park design criteria developed by the authors was successfully applied through structured field observations, GIS analysis, and document review of three case study parks.

Results revealed performance differences across environmental, social, and economic dimensions, with Pollok Park leading in social and economic sustainability and Camperdown Park highest environmentally. These findings validate the framework's capacity for comprehensive, context-specific assessment of large urban parks in Scotland. The tool equips park administrators, planners, and designers with actionable insights for improving operations, benchmarking performance, and embedding sustainability from the design stage onward. Future research could extend the framework to smaller green spaces or integrate automated data systems for scalable assessments.

10. References

Chiesura, A. (2004). The role of urban parks for the sustainable city. *Landscape and Urban Planning, 68*(1), 129–138.
Diaz, A. A., & Zambrano, L. (2019). Characteristics of urban parks and their relation to user well-being. *Landscape and Urban Planning, 189*, 27–35.
González, T., Berger, P., Sánchez, C. N., & Mahichi, F. (2023). Sustainability of urban parks: Applicable methodological framework for a simple assessment. *Sustainability, 15*, 15262. https://www.mdpi.com/2071-1050/15/21/15262
Powell, R. B., Stern, M. J., & Ardoin, N. (2006). A sustainable evaluation framework and its application. *Applied Environmental Education & Communication, 5*(4), 231–241.
Scottish Government. (2023). *National Planning Framework 4*. https://www.gov.scot/publications/national-planning-framework-4/
Sustainable Sites Initiative. (2014). *SITES v2 rating system*. https://www.sustainablesites.org/sites-v2-rating-system
The City Council Edinburgh. (2021). *City plan 2030: Proposed plan*. https://www.edinburgh.gov.uk/downloads/file/29997/proposed-plan-written-statement
UN-Habitat. (2008). *State of the world's cities 2010/2011: Bridging the urban divide*. Earthscan.
United Nations. (2017). *Sustainable development goals: 2030 agenda for sustainable development*. https://sdgs.un.org/2030agenda