

An Integrative Approach to Reinforce and Manage Social Diversity in Urban Green Spaces

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Abstract

This study aims to identify effective strategies and approaches for addressing the diverse social needs and requirements of urban green spaces in a rapidly growing city. The majority of the population today would rather reside in urban centres. This has led to development that has accelerated the rate of migration between rural and urban areas, creating concerns for urban communities. The strengthening and guidance of social diversity in green spaces within the urban environment is a critical issue that warrants a thorough empirical study. This paper employs an integrative approach to develop an overall solution that provides pertinent design and management operations for sustainable landscape planning, considering the various cultural requirements of urban centres. The city of Islamabad (ekistics-based) has been taken as an example to analyse the current state of urban green spaces. The sources of data were spatial analysis, field observations, and interviews. The main discoveries include the unequal allocation of green space, which implies that central areas are more covered than peripheral ones, the age, gender, and cultural peculiarities of user preferences, the lack of accessibility, insecurity, and the absence of policy enforcement. The interviews with key actors also revealed barriers, including unprepared participatory planning, fragmented management, and ecological homogenisation. A landscape planning structure has been developed to enhance the potential of urban greenery. Lastly, this review suggests that future approaches prioritise social diversity in cities, as considerable attention should be devoted to areas such as awareness, guidelines, contextual measures, and innovative techniques.

Keywords: Urban Green Spaces, Social Diversity, Islamabad, Sustainability.

Introduction

This study aims to identify appropriate methods and approaches for analysing the diverse social demands and challenges of urban green spaces in a growing city. It provides sustainable, inclusive solutions that manage and promote social diversity in urban green spaces through real-world practices. The research explicitly addresses an emerging set of challenges within urban societies, created by a rapidly growing urban population resulting from heavy rural-urban migration, with most migrants preferring to reside in the central regions of megacities (Haq, 2011). This rapid rate of urbanisation, characterised by both increasing population and expansion of urban land area, presents various social and environmental risks. These challenges may also present significant opportunities for promoting sustainable urban management, provided that development strategies prioritise improving 'social-life quality' through the

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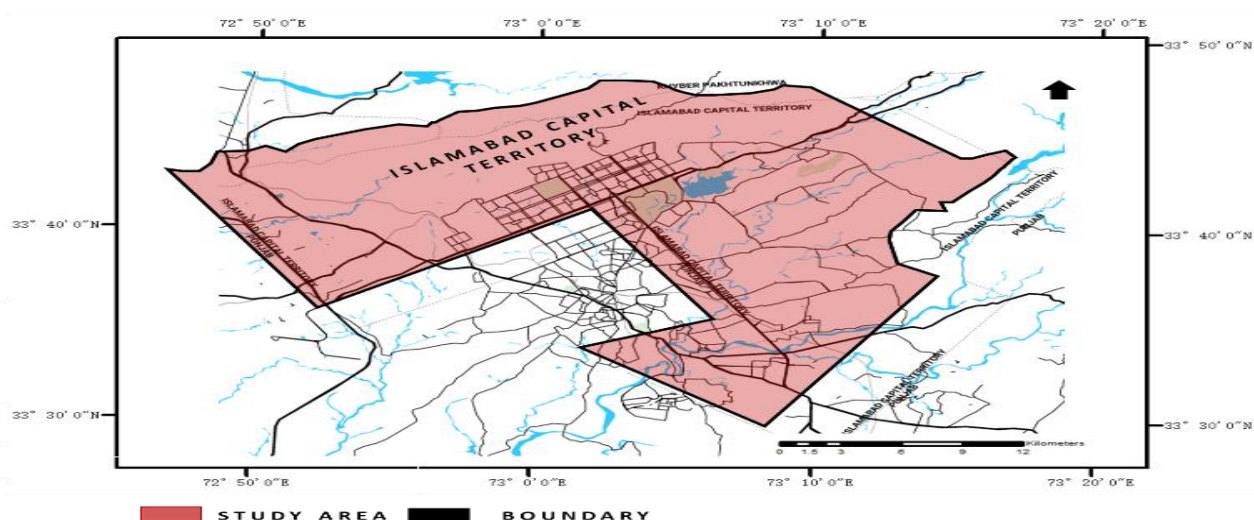


provision of urban green spaces (Kabisch & Haase, 2014). These can be understood as an integrated area comprising natural, semi-natural, and artificial green land, providing multiple benefits to different population groups within the city (Tzoulas et al., 2007). Some interpretations of urban green spaces also include urban forest along with other green areas (Helms, 1998; Wu, 2008), such as public parks, sports fields, edges of roads, public or private gardens, and remnant patches of natural Vegetation, as well as individual street trees (Davies et al., 2008). Moreover, urban green spaces offer numerous physical, social, environmental, and health benefits, thereby enhancing the quality of life in urban environments (Özgüner, 2011). At times, it is argued that urban green spaces should respond to the needs of people from diverse cultural groups (Francis, 2003; Wong & Domroes, 2005). Therefore, these spaces should be designed and managed by individuals from diverse social and cultural backgrounds, thereby ensuring that the various needs, perceptions, and expectations of these groups are met (Germann-Chiari & Seeland, 2004). Previous studies on the evaluation of urban green areas have consistently shown that people from different cultures exhibit different preferences for natural and built environments (Ulrich, 1993), which are based on aesthetic perceptions and preferences influenced by their cultural backgrounds (Todorova et al., 2004; Van den Berg et al., 1998). There is additional evidence to suggest that people from different cultural and ethnic backgrounds utilise open spaces in various ways and value them for distinct reasons (Özgüner, 2011). Reinforcing and managing diversity in urban green spaces through real-world practices poses a significant challenge that necessitates empirical research. Therefore, this study aims to employ an 'integrative approach' to develop a comprehensive solution that provides suitable design and management strategies for sustainable landscape planning, while also addressing the diverse cultural needs of urban populations.

Study Area

The study was carried out in the planned urban settlement of Islamabad (the capital city of Pakistan). The city was established in 1959, covering an area of approximately 906 km² (figure 1).

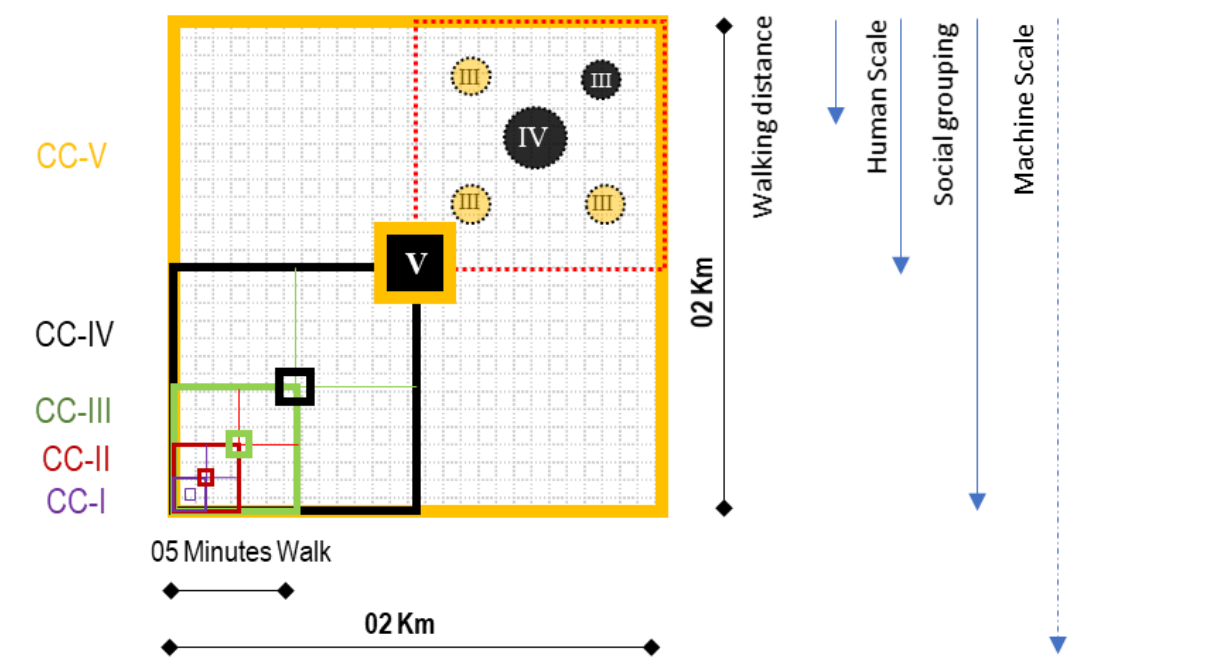
Figure 1: Location of map of Islamabad city



The city was designed by Greek architect and planner C. A. Doxiadis, based on the ekistics theory (science of human settlement). According to Doxiadis, human settlements can be presented as follows: “Nature is the container, the man arrives in it, and forms social groups which function as a society (Doxiadis, 1968). Finally, the social group, for its protection,

creates shells, connected with Complex networks of transportation (Doxiadis, 1968). Islamabad was conceived through the system of its region and positioned as an essential nucleus of other major metropolitan areas concentrated along the national highways. Designed as a typical 'Dynametropolis' (city of the future), Islamabad would become a dynamically growing city, growing from a small polis of the past to a large metropolis of the future (Doxiadis, 1968). Following Islamabad's physical dimensions in city planning (human and non-human), urban centres, highways, and parks are classified according to different extents. Regional, national, and local centres of diverse social classes are present, and these centres are further divided into hierarchical communities (Figure 2). The spatial structure of each community consists of a centre that serves the community and encompasses various public spaces (Khan, 2012).

Figure 2: The spatial structure of each community, both on machine and human scale, is considered



Social Challenges of Urban Green Spaces in Islamabad

Islamabad currently has a population of 1.5 million (SEDAC, 2020). The city's rapid growth presents challenges to experts and planners alike. Due to its geographical location, strategic importance, and growing economic profile, Islamabad is evolving into a regional hub of multiculturalism. Consequently, the residents constitute a heterogeneous mix (Germann-Chiari & Seeland, 2004), creating peculiar challenges for urban green spaces in the city. The objective of the study is to investigate ways to manage and integrate social diversity as an opportunity for urban green spaces.

Methodology

In the first step, an empirical study of urban natural and built-up areas was conducted using Geographical Information System (GIS) data. Satellite imagery from Landsat-8 (OLI_TRIS) was used to acquire the most recent data. Additional satellite data were downloaded from Earth Explorer. Supervised Landsat Image Classification data were obtained using ENVI 5.3 and are presented in Table 1. The second step involved identifying urban green spaces to carry out interviews with diverse social groups. Sites were chosen within a 5-km radius of the downtown

area (central business district), as locations near the urban core reflect a wider variety of culture, knowledge, and user expectations (Shams & Barker, 2019). Semi-structured interviews, comprising both closed and open-ended questions, were conducted with 150 users. Discussions about urban spaces were conducted with the participants face-to-face and online. The first part of the questionnaire included socio-cultural profiling questions. In contrast, the second section contained Likert-scale queries, focusing on preferences and perceptions about urban green spaces in the city. In the third and final step, face-to-face and online managerial-level interviews were conducted with key actors. The targeted interviewees were regional and city-level managers as well as academicians from interdisciplinary fields.

Findings

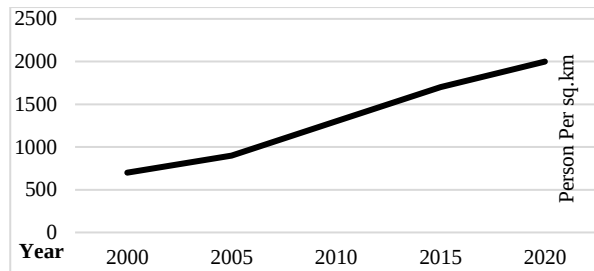
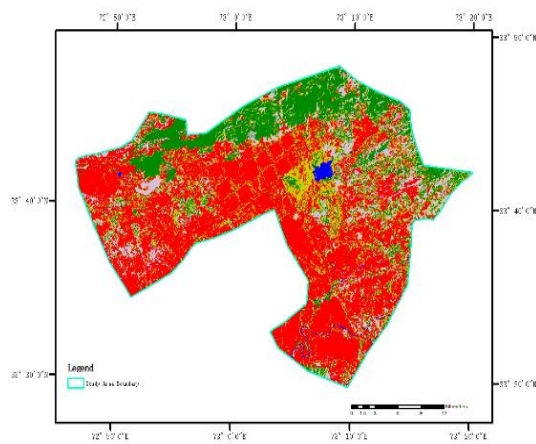
Qualitative data from Landsat Image Classification were combined with social demographic data and analysed to determine whether urban green spaces were optimally dispersed to serve as places for social integration (TABLE 1). This approach aligns with recent calls for integrated socio-ecological analyses in urban planning to address the increasing cultural diversity and spatial pressures in growing cities (Ishtiaque & Barker, 2019; Maryanti et al., 2017).

The attitudes of various social groups towards the survey sites were identified through the questionnaire, with assistance from the replies provided to the Likert scale questions. The participants rated how they valued urban green spaces (5 = most valued, 1 = least valued) (Table 2). The high preference for mixed green areas and natural landscapes confirms earlier findings that socially heterogeneous groups tend to assign higher recreational and emotional value to accessible, well-maintained, and diverse green environments (Ali & Malik, 2010). This also resonates with the idea that green spaces serve multiple roles—ecological, cultural, and recreational—primarily when they reflect local usage patterns and demographic variability (Tress et al., 2003).

In total, 150 interview data points were captured and entered into the SPSS 19.0 software to analyse the data spread and variance. The observed statistical trends support the theoretical view that urban green infrastructure, when properly distributed and accessible, acts as a social equaliser and enhances citywide liveability (Maryanti et al., 2017). However, unequal access or poor management can reinforce existing spatial inequalities (Ishtiaque & Barker, 2019). For the interviews with critical actors, approximately 13 open-ended, unstructured interviews were conducted to gather information about the interviewees' preferences, their current use of urban green spaces, the challenges of social heterogeneity, and their views on policy and management practices (Table 3). The rich qualitative insights validate the interdisciplinary need for participatory landscape planning, as advocated by Tress et al. (2003), where feedback from multiple stakeholder groups can inform adaptive and inclusive urban policies. The diverse fields of the respondents, who transitioned from architecture to sociology, demonstrate their transdisciplinary involvement in formulating sustainable and equitable green spaces.

Table 1: Analysis of landsat image classification and social demographic data

Landsat Image (2019)				Landsat data Classification & Area Description			
Legend	Classification	Area Sq.km	Area Percentage		Built-up Area	260.18	28.6%
	Urban Boundary	906			Mixed vegetation	206.1	22.74%
					Urban Green	85	9.38%
					Waterbody	4.84	0.44%
					Bare Area	350	38.63%



Total population: 1.5 million

Table 2: The users' evaluation of values & significance about urban green spaces

Item	Mean	Most liked	liked
Significance of mixed urban green spaces	4.8333	86.8%	11.8%
Knowledge about Urban Green spaces as social integrative places	4.6111	69.1%	27.6%
The need for green spaces for recreation & physical health	4.3111	48.7%	42.1%
The need for urban green spaces in the city for social tie	4.2222	49.3%	42.1%
Frequency of visit urban green spaces in the city	3.1073	27.6%	14.5%
Ease of accessibility of urban green space	2.9246	23.7%	11.8%
Management of urban green in city	2.5523	7.2%	16.4%

Table 3: Profile of interviewed key informants/ multidisciplinary professionals

Category	No	Organization	Key discipline
Regional organization managers	1	Capital Development Authority CDA	Landscape planning
Local Government	2	Federal Government, Ministries, Public sector Organizations	Environmental engineering, Solar Architecture
Volunteer organization managers	2	Non -Government organizations	Human geography, sociologist
Academician	5	Govt& Private Universities	Architecture, urban planning
Private Practitioner	2	Private organizations	Architecture, Urban design

Results

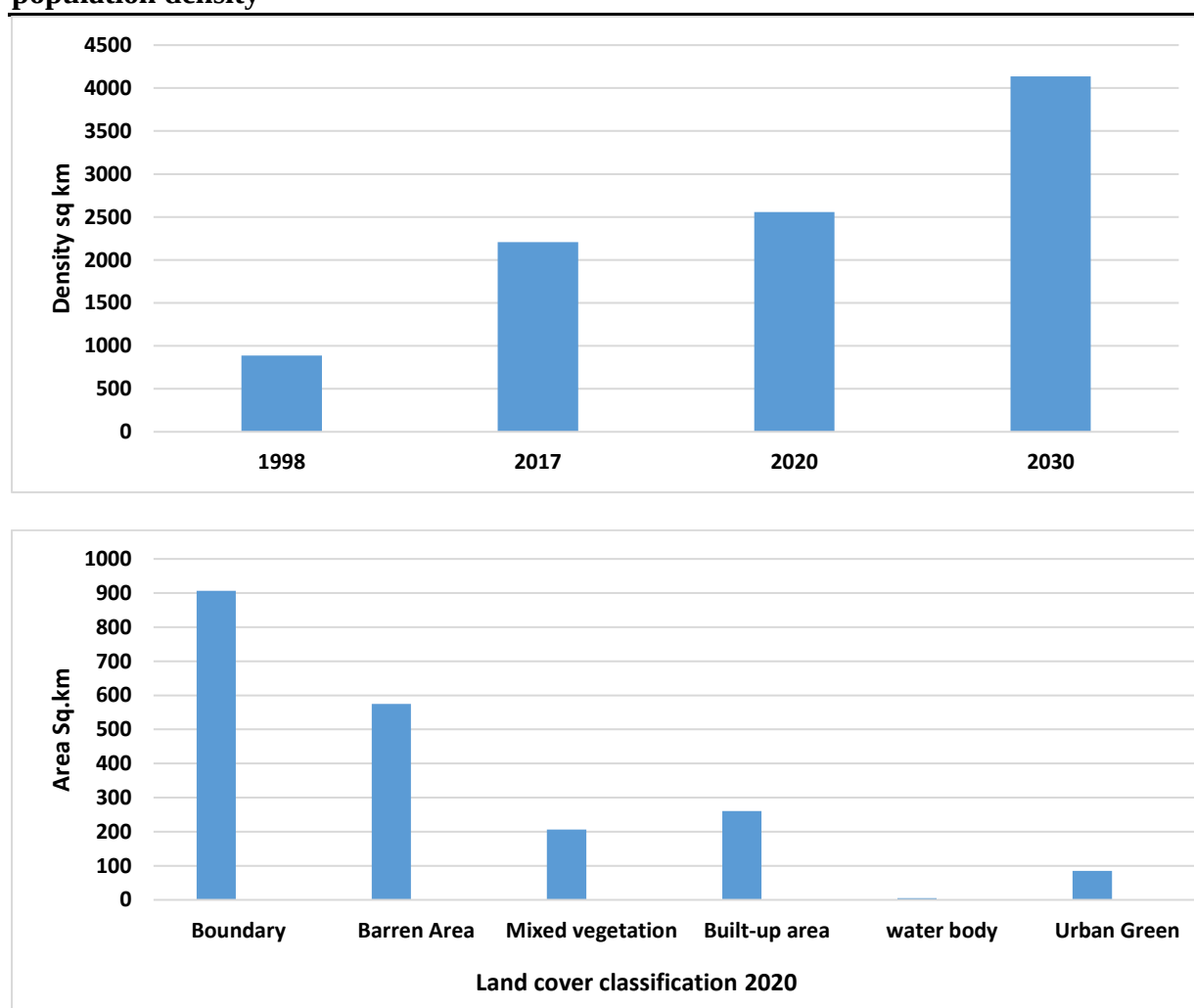
Optimal Available Green Spaces

The interrelation between urban green spaces and the heterogeneity of social groups reflects the correlation displayed in Table 1, using data provided by Landsat. The relatively newer parts of the city also have more developed areas, as indicated by Landsat imagery, and exhibit greater social diversity, but less green cover. In contrast, older divisions (e.g. G6, F6, etc.) feature low socially integrative potential (less built-up area) and greener spaces. Overall, 9.38% (85 sq. km) of urban green spaces and 22.7% (206 sq. km) of mixed vegetation areas are available for

a population of one and a half million. It is shown that the square kilometres of green spaces in cities in 2020 are associated with population density per square foot, as shown in Figure 3.

This result supports existing literature, which identifies gaps between policy-based green space provision standards and their implementation in rapidly urbanising cities (Maryanti et al., 2017). The World Health Organisation (WHO) recommends a minimum of 9 square meters of green space per person in urban settings; however, the actual provision in Islamabad falls significantly short of this guideline, highlighting the unsustainable spatial distribution of ecological resources (Ali & Malik, 2010). Theoretical approaches to landscape planning also suggest that ignoring green infrastructure during urban sprawl limits the city's ability to accommodate socio-ecological demands, undermining both environmental and social resilience (Tress et al., 2003).

Figure 3: The relationship between the square kilometers of urban green spaces and the population density



User Preferences

In evaluating user preferences and values regarding urban green spaces (Table 2), mixed green spaces received the highest Likert scale rating (86.8%), as they were considered the best-managed natural areas combined with social elements (Figure 5). Approximately 70% of participants highly agreed that urban green spaces serve as socially integrative places for a diverse population (Figure 4). The least favourite response by the users was that 7.2 per cent of them strongly disagreed that urban green spaces were well-maintained. Additionally, the

information suggests that individuals with diverse cultural backgrounds are more drawn to the natural environment than to the built environment.

This aligns with earlier results that cultural and ethnic diversity have a strong influence on how urban green areas are used and perceived, especially in socially heterogeneous societies (Shams & Barker, 2019). The social-ecological theory posits that the satisfaction of urban landscape users depends strongly on the degree to which these areas meet both ecological and social interaction needs. When green spaces reflect a variety of uses—both passive and active—within a culturally inclusive setting, they are more likely to support mental wellbeing and foster social cohesion (Tress et al., 2003).

Key Actors Preferences

Interviewed key actors' transcribed qualitative data were arranged into types of social heterogeneity and landscape planning and management policies.

State of Urban Green Spaces and Social Heterogeneity

Most of the major players argue that the visionless planning and uncontrolled growth of Islamabad can be attributed primarily to the failure to follow the theoretical principles of green spaces in urban settings, as defined in the master plan. Most of the current green spaces are ineffective. This unplanned boom in the addition of housing models in a bid to house more and more people has not been theorised enough in terms of the provision of space for parks, green belts, and squares of all types. Over time, this has led to negative consequences for the city's social and ecological systems.

However, key actors also identified that the Islamabad master plan includes provisions for ample green belts, offering an opportunity to improve connectivity and integration (Ali & Malik, 2010). The application of Ekistics theory by Doxiadis emphasises the importance of spatial planning that interconnects physical and social structures through hierarchical and integrative urban elements (Doxiadis, 1968). Integrating these green belts effectively could support the accommodation of increasing socio-cultural diversity and meet the city's ecological and recreational needs.

Policies and Management

Opinions of key actors on policy and management highlight that cities must fulfil the basic needs of their residents, and urban green spaces serve as "urban magnets" that draw people from diverse social groups. They should therefore be made the top priority. The inclusive landscape planning (where human as well as non-human implications are addressed) is taken to be the best policy for enhancing the usefulness of the green space.

As stressed by Tress, Tress, and van der Valk (2003), transdisciplinary planning that engages ecologists, architects, urban planners, and community members is essential to addressing complex urban sustainability challenges. Additionally, the interviewees proposed that regulatory laws should require a certain percentage of land in any new development in the city to be allocated to green space. This reflects the standards-based approach to green space allocation, which remains underutilised in South Asian contexts due to implementation challenges (Maryanti et al., 2017).

Landscape Planning

From a planning perspective, activities in the green space should be tailored to the local context and create a sense of community. It is vital to have community programs at the awareness level, and installations made to induce use and interaction. Cultural nodes as well as parks should be incorporated into green spaces that encourage civic involvement. Theoretical support for this recommendation is drawn from Ekistics, which places strong emphasis on spatial relationships

that enhance human connectivity and environmental balance (Doxiadis, 1968). Through intelligent planning of landscapes that incorporates these principles, the city can achieve provisions of green spaces that serve the intended social and ecological purposes.

Figure 4: Managed natural area combined with social elements



Figure 5: Social integrative green spaces



Conclusion

The term 'Integrative approach' is interpreted as either interdisciplinary or transdisciplinary, in which new knowledge and theories emerge from the integration of disciplinary knowledge (Ali, & Malik, 2010; Atiqul Haq, 2011). Researchers and practitioners, including social actors, policymakers, managers, local representatives, and the broader public, are involved in an integrative approach (Tress et al., 2003). In this study, the same integrative approach methodology was employed to investigate the issue of managing social diversity and its sustainability in expanding cities. A case study of Islamabad city has been considered. Findings from demographic data and qualitative spatial analysis suggest that the current distribution and usage of urban green spaces do not serve the needs of diverse social groups in the context of Islamabad city. Optimal distribution of urban green areas is necessary to address this problem by investigating the role of urban green spaces according to user perceptions and preferences. As users seek areas and activities to meet their diverse needs, urban designers and managers should integrate their needs into the design of urban green spaces. Therefore, green spaces should receive due attention in government policies, while ensuring unencumbered access for residents, maintaining infrastructure, and providing standard civic facilities. Current usage patterns should be studied, and these spaces should be modified accordingly to meet the needs of users. Prior research shows that adequately designed green spaces can play a vital social integrative role for minority population segments.

This study highlights the need for context-specific innovations, primarily through policy changes, sociocultural knowledge, and community awareness, to improve urban green space availability and Utilization. It highlights the environmental and social benefits of green spaces by analysing the preferences of diverse social groups and key actors from multidisciplinary fields. Further studies can replicate this study in other cities of Pakistan, using more diverse samples to generalize the results of this study.

Recommendations

Use an Integrative Planning Approach

A more integrative landscape framework used in formulating plans should include social inclusiveness within ecological sustainability. This requires collaboration across disciplines such as urban design, ecology, sociology, and environmental engineering (Tress et al., 2003).

Make Green Spaces Equitable to Distribute

The application of urban green spaces should be centred on areas of high population density and the presence of diverse cultures. Zoning regulations should mandate the inclusion of green spaces in all new housing developments, as recommended by sustainable planning models (Maryanti et al., 2017).

Use Participatory Design to Be More Inclusive Culturally

The green spaces must also be well-planned, with different sections of the community actively involved in planning and maintaining them. Public participation can help shape culturally responsive spaces that foster a sense of belonging and reduce spatial exclusion (Ishtiaque & Barker, 2019).

Reform Management and Policy Systems

Policy tools need to be revised by the government, particularly the Capital Development Authority, to ensure regular maintenance, safety, and accessibility requirements for these areas. An intersectoral management unit can be created to oversee the implementation.

Encourage indigenous Vegetation and biodiversity

The landscaping policy should restore the indigenous plant community, thereby improving ecological resilience and preserving regional diversity. This can reverse the trend of homogenised green environments noted in previous studies (Ali & Malik, 2010).

Educate the Population and Environmental Degrees

Community-based programs and awareness initiatives should promote the benefits of green spaces for physical and social well-being, especially among underrepresented and marginalized sectors.

Use Technological Monitoring and Evaluation

Apply GIS and remote sensing techniques frequently to determine green space coverage, trends in usage, and patches of maintenance. Real-time data may facilitate adaptive planning and open decision-making processes.

With these suggestions, Islamabad could shift to a more functional, inclusive, and sustainable urban future where green spaces will not only be the determinants of urban beauty but also centers of social connectivity and environmental well-being.

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