

URBAN RECREATIONAL WATERFRONT DEVELOPMENT PROJECTS: SUSTAINABILITY ASSESSMENT

Weerakoon K G P K¹, Rathnaweera D U²

¹Department of Estate Management and Valuation, University of Sri Jayewardenepura,
Sri Lanka

kgpk@sjp.ac.lk

²Department of Estate Management and Valuation, University of Sri Jayewardenepura,
Sri Lanka

uthpalarathnaweera@gmail.com

ABSTRACT

A waterfront development is a worldwide well-established phenomenon, and Sri Lanka has recently been involved in waterfront development projects, notably recreational waterfront development projects. Therefore, the primary aim of this study is to evaluate the sustainability of urban recreational waterfront development projects in the Colombo metropolitan area. The qualitative research methodology is used, and primary data is gathered through observations and interviews. The structured interviews were conducted using the judgmental sampling technique with nine experts involved in Urban Recreational Water front Development projects in Sri Lanka. The content analysis approach was used to analyze qualitative data. The study presented six environmental aspects, three economic aspects, and seven social features that contribute to the long-term viability of urban recreational waterfront development projects in Sri Lanka. Accordingly, the study addresses a vacuum in the literature by outlining the social, economic, and environmental factors specific to urban recreational waterfront development projects in Sri Lanka for which there are no prior evidences.

Keywords: Urban Recreation, Waterfront Development

1. INTRODUCTION

The term "urban waterfront development" refers as the portion of a city that is located adjacent to a body of water, such as a river or the sea. Thus, the urban waterfront is not simply a strip of land, but also a network of sites and services connecting the sea and land (Niemann & Werner, 2016; Roux, 2015). It is crucial for the success of an urban region since it provides numerous benefits to humans, such as flood management, ecological and environmental balance, and urban heat control. Rapid urbanization has resulted in widespread land use change and increasing economic demand for production elements such as capital, labor, natural resources such as land, water, air, or landscape, and consumption factors such as infrastructure, housing, working spaces, recreation, and so on. This process provides an incentive for urban land resources such as agricultural lands, water bodies, wetlands and lowlands, as well as issues such as high urban resource depletion, low living standards, the spread of epidemics, and environmental degradation such as flooding due to the encroachment of water logging areas. This is typically the case in underdeveloped nations. Indeed, urban waterfront development strives to build cities in light of these vicissitudes, while also serving as a border demarcation to prevent unlawful constructions or encroachments over the urban areas' major attractions (Ragheb, 2017). According to Dong (2004) the concept of waterfront development has changed over time while it greatly changed with respect to the characteristics of cities. For instance, in Malaysia urban waterfront development is inextricably linked with river-based development and the position between riverfront and river development (Yassin, et al., 2010). Furthermore, "Sydney, London, Amsterdam, Hong Kong, Tokyo, Toronto,

Osaka, Kobe, and Dublin” have offered evidences for effective waterfront development processes that will continue under the intrinsic features of the cities.

Sustainable development, on the other hand, is defined as “development that fulfills the requirements of the present without jeopardizing future generations' ability to satisfy their own needs” (WCED, 1987). It refers to the shared space of a specific development context's social, economic, and environmental interfaces at a given time. Thus, the Brundtland report consistently emphasized dynamic and complex problems such as environmental devastation with challenges of human growth and poverty, clearly attempting to conquer both opponents concurrently and in a mutually reinforcing manner (Robinson, 2004). The pillars of sustainability: economic, environmental, and social, are inextricably linked to urban waterfront development. These three viewpoints are included at all levels. According to Bruttomesso (2006) ten criteria should be followed in order to ensure the long-term viability of urban waterfront development initiatives. Besides the Giovinazzi and Moretti (2010):Rahana and Nizar (2020) examined these principles from empirical studies. The principals are secure the quality of water and the environment, waterfronts are part of the existing urban fabric, the historic identity gives character, mixed-use is a priority, public access is a prerequisite, planning in public-private partnerships speeds the process, public participation is an element of sustainability, waterfronts are long term projects, revitalization is an ongoing process and waterfronts profit from international networking.

The review of sustainability outcomes in urban waterfront development projects is an interesting topic of research in the sustainable urban planning and design literature. Recent empirical studies have demonstrated the sustainable results of certain urban waterfront development projects based on the type and place of waterfront development. The many forms of urban waterfront development are based on the major tendencies of changing waterfronts into dynamic zones, which are commercial, cultural, environmental, historic, residential, and recreational. In Sri Lanka, a number of urban recreational waterfront projects have been carried out during the last few decades, but few of them have been evaluated in terms of sustainability. Therefore, the paper aims to understand the urban recreational waterfront development projects in terms of those being achieving sustainable outcomes. Thus, this information is important in informing urban planning theory and practice in order to determine the potentials, complexity, and problems connected with current urban recreational waterfront development projects in attaining sustainable outcomes.

2. METHODS

The qualitative research method was adopted, comprising both primary and secondary data sources. Interviews and observations are used to obtain primary data. Observations and interviews are strongly recommended for the study aims, with a preference for the participatory observation technique and semi-structured interviews to get a previous awareness of the setting. The experts involved in recreational waterfront development projects in Sri Lanka are deemed the population of this study. Using the Judgmental sample approach, nine experts were chosen based on project position, responsibility, and level of participation. The study also relied on secondary data gathered through documentary studies as a feasible method for identifying project background information. As a result, this study attempts to use content analysis to evaluate information obtained through semi-structured interviews with important experts involved in waterfront recreational development projects in Sri Lanka.

Thus, Diyatha Uyana Park in Battaramulla (Case 01) and the Bellanwila Weran Ganga Project (Case 02) has been chosen for empirical evaluation in this study.

3. RESULTS AND DISCUSSION

3.1 Environmental Criteria

The six environmental criteria were defined in connection to case 01 and case 02 study areas namely evaluation of ecological consequences, protection of natural resources, landscape enhancement, avoidance of polluting materials usage, eco-friendly building materials and flood mitigation. As shown in table 01, all respondents (100%) agreed that both projects received EIA and IAA approvals from relevant agencies to analyze the ecological consequences, with the purpose of keeping and improving the environmental quality of the waterfront region in the future. In both scenarios, 78 percent of participants proposed the criterion of 'natural resource conservation.' Case 01 includes a distinct zone for rare fauna and flora species, as well as the preservation of marshy areas through the development of ponds. While case 02 offers facilities for plant nurseries, producing riverine fruit, herbs, vegetables, and other valuable trees such as bamboos on stream banks, and cultivating high value rice types in paddy fields next to the foot pathways. All respondents (100%) in case 01 with first rank and 88 % in case 02 with second rank agreed on the third criteria (C3) of 'promote and encouragement of green setting' (Refer table 01). The case 01 includes a green environment with strategically placed seats, whereas Case 02 includes stone tiles with designed areas of green. According to practitioners, the fourth criterion mentioned is to 'avoid the use of harmful materials.' The primary reasons for suggesting that both developments offer garbage bins in premeditated areas and prohibit the use of polythene, plastic, and other polluting items on park grounds. Therefore, the fourth criteria (C4) are accepted 66 % of the time in both contexts, and it ranks third and fourth in case 01 and case 02, respectively. The fifth environmental criterion (C5) of the study was eco-friendly building materials. It was established that the low rate was 11% (case 01) and 22% (case 02). The building materials of park infrastructure mostly included cement, which produces 5% of greenhouse gases, harming the climate and jeopardizing human life. Therefore, it was ranked as the final factor in both conditions. The sixth criterion (C6) was recommended as 'flood mitigation,' and 66 % and 78 % of respondents rated it in cases 01 and 02, respectively. Water retention basins are used to alleviate floods in parks. As a result, it has conducted restorations of existing river basins as well as new constructions of new retention basins. In both scenarios of the study, this sixth criterion came in third place.

Table 1. Environmental Criteria

No	Criteria	Results			
		Case 01 %	Rank	Case 02 %	Rank
C1	ecological impacts	100	1	100	1
C2	natural resources	78	2	78	3
C3	green settings	100	1	88	2
C4	Avoid polluting materials use	66	3	66	4
C5	Eco -friendly	11	4	22	5
C6	Flood mitigation	66	3	78	3

Source: Survey data, 2020

3.2 Economic Criteria

Regarding the assessment of sustainability in Sri Lankan urban recreational waterfront development projects, respondents proposed three key economic criteria that were related to

the setting of cases 01 and 02. The first criteria (C1) of 'create employment or urban labor' revealed a rate of 66 % and 56% in instance 01 and case 02, respectively, placing second in both situations (refer table 02). Thus, the second criterion (C2) was proposed as 'business activity,' which represented 78% and 56% in cases 01 and 02 respectively. In Case 01, 248 food stalls were built, and small businesspeople from Viharamaha Devi Park (another urban park in Colombo) were granted license to conduct business from these stalls. The key economic products include flower and flower-related goods, vegetables and fruits, fertilizer and seeds, plastic, pottery, ceramic clay, cement, coir pottery, aquaculture related businesses, and clothing, slippers, and other decorations, which provide employment for many locals and visitors. Case 02 also includes economic activities and new job prospects from the construction of food booths and small stores. Despite this, most communities start their agricultural and horticultural operations by supporting new canals created by this initiative. Therefore, it provides a novel experience for urban inhabitants in Case 02 and the surrounding region. Thus, there were several more job prospects in both study areas linked to cleaning services, security, parking lots, and so on. Case 02, on the other hand, provides a source of income for the low-income population through street selling along the roadside, with the tiny stalls given free of charge. The final economic criterion proposed is appropriate parking facilities (C3), which is scored as 88 percent and 100 percent in cases 01 and 02, respectively. Thus, in both scenarios, it signified the first rank. As noted by the experts, both of these development projects have ample parking spots with sufficient facilities to minimize needless congestion near cases 01 and 02. In this regard, practitioners proposed a parking facility as an economic criterion for this investigation.

Table 2: Assessment of the Economic Criteria

No	Criteria	Respondents (N= 9)			
		Case 01	Rank	Case 02	Rank
		%		%	
C1	Uplift Informal employment	66	3	56	2
C2	Promote Business activity	78	2	56	2
C3	parking facilities	88	1	100	1

Source: Survey data, 2020

Social Criteria

Seven social criteria were found in respect to the case 01 and case 02 study settings. The first condition (C1) of 'providing separate place for fitness facilities' was accepted by 56% in case 01 with a fifth rating and 78% in case 02 with a second ranking (Refer table 03). Walking, jogging, and cycling are just a few of the exercise options available in Case 1. In instance 02, there is a nice promenade for cycling and jogging amenities around the Bellanwila Lake. As a result, the distinct exercise zones improve social contact among park users while avoiding friction between park users and the neighboring local population. According to practitioners, the second social criterion (C2) is to "provide water-related and water-based activities." Recreational waterfront developments are built near water bodies, and many people visit to get away from their hectic lifestyles. Users in Case 01 can wander down the riverbank and gain experience by riding the riverboats. In instance 01, it showed a 78% response rate with a third-place ranking. Although there are no boat rides available in Case 02, boats are solely utilized for lake cleaning. Therefore, it received no ratings in the model. The third criteria (C3) of 'Provide separate area for foods and beverages' indicated 66 percent in both cases,

placing them fourth and third in the rankings in cases 01 and 02, respectively, while providing separate area for cafeterias with various food items that are well suited to local and foreign visitors' preferences. Therefore, this fourth criterion (C4) is accepted by 78% and 88% in cases 01 and 02, respectively, resulting in the third and first positions in the ranking of cases 01 and 02, respectively. Case 01 includes a melodic water fountain, which adds to the overall appeal of the project and makes it perfect for families to spend their time in a great setting. Previously, there were mind-blowing 3D artworks that provided fresh and fantastic experiences; however, these beautiful 3D artworks have now been damaged in a terrible manner. Case 02 offers cool outside pleasant areas with living wall constructions that give consumers with a tranquil environment. The study's fifth social criterion (C5) was public accessibility. It verified a high rate of 88% (case 01) and 77% (case 02). Both of these parks are open to all socioeconomic groups and financial levels, and all facilities are free to use. Within this quiet and soothing setting, students come to study; young people congregate for celebrations, the elderly come to converse, and so on. The sixth (C6) criterion was recommended as a "combination of modern and cultural aspects," with 66% and 56% in cases 01 and 02, respectively. Case 01 is illuminated by the legislative complex, which is linked by the neighboring water body of Diyawanna Oya, and it adds to the illumination of the Water's Edge Hotel Premises. Thus, Case 02's walking trail linked the neighboring temples of Bellanwila Raja Maha Viharaya and Pillawa Temple. As a result, people may easily worship at both temples, which blends contemporary and cultural elements into growth. The last criterion (C7) was established as 'removal of illegal buildings,' which indicated 100% and 88 percent in cases 01 and 02, respectively. As a result, it was ranked top in both situations since the surrounding areas were free of unlawful settlements as a direct result of the initiatives.

Table 3: Assessment of the Social Criteria

	Criteria	Respondents (N= 9)			
		Case 01	Rank	Case 02	Rank
		%		%	
C1	Separate area for fitness facilities.	56	5	78	2
C2	Water related and water-based activities.	78	3	0	5
C3	Separate area for foods and beverages	66	4	66	3
C4	Beautification.	78	3	88	1
C5	Public accessibility.	88	2	78	2
C6	Modern and cultural aspects.	66	4	56	4
C7	Avoid unauthorized constructions.	100	1	88	1

Source: Survey data, 2020

4. CONCLUSION

Waterfront development is a global phenomenon, and there are several evaluations and learning processes taking place. Therefore, this research investigates the long-term consequences of Sri Lankan urban recreational waterfront development projects. The two major recreational waterfront development projects, Diyatha Uyana Park and Bellanwila Weras Ganga Park were studied and determined to have six environmental sustainability characteristics, three economic sustainability attributes and seven social sustainability

features. Thus, many inadequacies in social, economic, and environmental aspects have been discovered, which are critical to the project's overall performance. These pave the way for more study into how planning practice for urban recreational waterfront development may be set ahead to accomplish an integrated and collaborative approach, a high return on investment, and water logging protection that is appropriate for the particular local environment.

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