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# ENHANCING THE UTILIZATION OF PUBLIC OPEN SPACES ALONG RIVERSIDE

## Case Study: Area Around Jembatan Merah Plaza Surabaya

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### Abstract.

Public open spaces along riverbanks hold great potential to be transformed into areas for recreation, social interaction, and the enhancement of urban environmental quality. However, inadequate planning and maintenance often lead to these spaces being underutilized by the community. This study aims to explore strategies for enhancing the utilization of public open spaces along riverbanks, with a focus on integrating ecological, aesthetic, and social functions. Using a qualitative descriptive approach, the research examines several case studies from large cities that have successfully revitalized riverbanks into vibrant and inclusive public spaces. The findings suggest that collaborative management involving the government, local communities, and the private sector is crucial to ensuring the sustainability of these spaces. Effective planning that meets the specific needs of local communities also supports this transformation. Additionally, the development of infrastructure that supports social, recreational, and educational activities has been shown to significantly increase community participation and engagement. The study concludes that maximizing the potential of public spaces along riverbanks not only enhances the quality of life for city residents but also contributes to broader environmental efforts, such as conservation and disaster mitigation, especially in flood prevention. Therefore, there is a clear need for more comprehensive planning and management strategies to ensure that these areas are effectively managed and utilized as part of sustainable urban development efforts. By considering both social and environmental aspects, cities can better harness the potential of their riverbanks for the benefit of communities and the environment.

**Keywords:** public open space, riverside, sustainability

## 1. Introduction

Public open spaces along riverbanks play a crucial role in improving the quality of urban life. In addition to providing recreational areas and social spaces, these open spaces also serve as connectors between nature and the city, strengthening people's relationships with their surroundings. The development of public open spaces along riverbanks contributes to reducing air and noise pollution and provides spaces for social activities that encourage interaction among residents (Pramudito & Kurnial, 2020). Moreover, these spaces can host cultural and entertainment events, enhancing the quality of life while attracting tourists and contributing to the local economy (Lange & Dewulf, 2011). By integrating ecological, social, and aesthetic elements, riverbank open spaces have the potential to raise environmental awareness and support efforts to mitigate climate change (Grant & Tripp, 2010).

The Kalimas River, which flows through the city of Surabaya, plays a significant role in urban spatial planning. The river divides the city and has become an integral part of Surabaya's history and development as a center of trade and a port city. As one of the historical rivers, Kalimas not only served as a waterway supporting economic activities in the past but



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has also been developed into a public open space in recent times. The Kalimas River in Surabaya now functions as a green space providing recreational areas, pedestrian pathways, and social interaction venues for city residents, ultimately contributing to the enhancement of urban community quality of life (Garudea, 2023).

As an open space, the area along the Kalimas River holds strategic value in supporting various public activities and strengthening local cultural identity. The development of public open spaces along the river facilitates the creation of a more inclusive environment for all community groups. Research shows that the use of riverside open spaces, such as Kalimas, can enhance community participation in maintaining cleanliness and environmental sustainability, as well as fostering a sense of ownership toward the city (Arbani & Idajati, 2017). With careful planning, public spaces along the Kalimas River have the potential to become city icons that are not only aesthetically pleasing but also function as eco-friendly zones supporting social interaction and education for urban residents.

Historically, the Kalimas River played a crucial role in the evolution of Surabaya as a center for trade and port activities in the past. Kalimas was part of an extensive river network connecting inland areas to the coast, facilitating the trade of agricultural products and goods from around East Java to Surabaya's port. The river served as a primary route for small boats and ships transporting various commodities, including spices, agricultural products, and raw materials, for sale or export to other regions. Kalimas established Surabaya as a gateway for thriving trade activities, starting from the Majapahit Kingdom era and continuing into the Dutch colonial period, when Surabaya was recognized as a strategic port city in the Nusantara (Mardiansyah, 2019).

During the colonial period, the function of the Kalimas River as a trade route was reinforced through the development of supporting infrastructure along its banks. Warehouses and docks were constructed along the river to facilitate the loading and unloading of goods. Additionally, colonial structures and residences for European entrepreneurs were built around the river, making the area a hub of economic activity and cultural interaction. However, with advancements in transportation technology and the shift of trade activities to land transportation and modern ports, the role of the Kalimas River as a primary trade route diminished. Nevertheless, the historical value of Kalimas persists today, making it a significant icon that reflects Surabaya's historical journey as an influential port city in Indonesia (Soemardi, 2021).

Economically, the Kalimas River has long served as a valuable asset for the city of Surabaya. In the past, the river functioned as a primary transportation route for trading goods from inland areas to the port, supporting local economic growth. Trade along the river not only benefited large merchants but also stimulated local economic sectors such as markets, artisans, and water transportation services. In the modern era, the economic potential of Kalimas remains, although its function has shifted. Currently, the river is being developed into an attractive water tourism area that draws both local and international visitors, generating economic benefits through tourism, small businesses, and various services supporting recreational activities along the riverbanks. Through revitalization, Kalimas is expected to become a tourist attraction that promotes creative economic development and micro-enterprises in the surrounding area (Arbani & Idajati, 2017).

From a social perspective, the Kalimas River plays a crucial role as a public space that strengthens social interactions in the context of urban life. As a public space, the area along



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Kalimas allows Surabaya's diverse communities to gather, interact, and enjoy recreational activities together. The presence of pedestrian pathways, parks, and seating areas along the river creates an environment conducive to social interaction, thereby enhancing social cohesion among city residents. Additionally, various events such as cultural festivals, art exhibitions, and night markets are frequently held in the area, attracting community participation and enriching Surabaya's cultural life. The social function of Kalimas as an open public space contributes to improving the quality of life and happiness of urban communities, making it a highly valuable social asset within the dynamics of modern urban life (Jordan & Ulimaz, 2019).

From an environmental perspective, the Kalimas River plays an essential role in Surabaya's urban ecosystem. As one of the main waterways, Kalimas helps manage surface water, including mitigating floods during the rainy season by channeling excess water downstream. This ecological function is critical for a large city like Surabaya, which is vulnerable to flooding. In recent years, Kalimas revitalization initiatives have also focused on improving water quality and waste management to create a cleaner and healthier environment. By enhancing water quality and restoring vegetation along the riverbanks, Kalimas has the potential to support biodiversity, including habitats for birds and fish that were previously threatened by river pollution (Pramudito & Kurnial, 2020).

Additionally, the presence of green spaces along the Kalimas River plays a crucial role in maintaining the city's air quality and microclimate. Vegetation along the river absorbs air pollutants, produces oxygen, and provides a cooling effect beneficial to the surrounding area. By adding more native vegetation around Kalimas, the city of Surabaya can enhance the ecological function of the river as the "lungs of the city," contributing to reducing the urban heat island effect. The revitalization of Kalimas also offers opportunities to promote sustainable practices, such as rainwater management and the use of eco-friendly materials in public facilities along the riverbanks. Therefore, Kalimas not only serves as an environmental asset supporting urban ecosystem sustainability but also as a model for other cities in creating green spaces integrated with natural ecosystems (Arbani & Idajati, 2017).

In the context of Surabaya's urban planning, the Kalimas River plays a strategic role as a natural element that shapes the city's structure and character. The river not only divides the city geographically but also serves as a focal point for planning public open spaces that integrate cultural, economic, and ecological elements. In the context of urban planning, the area along Kalimas has been transformed into a green corridor that integrates various public spaces, including parks, pedestrian pathways, and recreational zones. The development of this corridor aligns with urbanism concepts that aim to create public spaces accessible to people from diverse backgrounds, while enhancing the city's aesthetic appeal. The initiative to make the Kalimas riverbanks a public space reflects Surabaya's efforts to create a pedestrian-friendly and sustainable urban environment (Masyithah et al., 2021).

Kalimas, as a crucial element in urban planning, also supports the concept of Transit-Oriented Development (TOD) implemented in Surabaya. TOD-based development around this river enhances accessibility to public spaces, thereby reducing dependence on private vehicles and encouraging the use of public transportation. Pedestrian pathways and bicycle facilities along Kalimas improve accessibility for Surabaya residents, particularly in reaching public amenities and recreational spaces. On the other hand, the presence of Kalimas promotes better environmental management and maintenance, including waste management and water quality improvement, as part of efforts to create a cleaner and more sustainable city. Through an urban



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planning approach that integrates the river as both a functional and aesthetic element, Kalimas serves as a central open space, enhancing the quality of life, beauty, and sustainability in Surabaya (Arbani & Idajati, 2017).

## 2. Literature Review

Riverbanks are areas along the edges of rivers that play a significant ecological and environmental role in supporting ecosystem balance. According to Government Regulation of the Republic of Indonesia Number 38 of 2011, riverbanks refer to the areas on both sides of a river that serve as flood control, protect water quality, and provide habitats for biodiversity in the area (Ministry of Public Works and Housing, 2011). Natural vegetation along riverbanks acts as a natural filter, absorbing nutrients and pollutants before they reach the water body, thus contributing to the prevention of water pollution (Osborne & Kovacic, 1993). Additionally, vegetation along the riverbanks helps reduce soil erosion and provides habitats for various species of flora and fauna, strengthening biodiversity (Naiman et al., 2005). Therefore, riverbanks function not only ecologically but also contribute to reducing the negative impacts of urbanization and human activities on the river environment, while maintaining the overall stability of the river ecosystem (Richardson et al., 2007).

River boundaries hold significant importance in supporting sustainable urban growth and development. These riparian zones serve as ecological buffers between the river ecosystem and urban activities, as well as natural flood controllers, reducing the risk of flood damage in urban areas. Vegetation along riverbanks helps absorb runoff, reduce erosion, and slow down water flow, thereby preventing flooding in city centers (Naiman et al., 2005). Furthermore, the presence of river boundaries serves as green open space, enhancing the quality of the urban environment by absorbing air pollutants and providing space for recreational activities and social interactions within the community (Alberti et al., 2007). Riverbanks play a crucial role in maintaining water quality, serving as a source of drinking water for urban populations by filtering pollutants before they reach water bodies (Osborne & Kovacic, 1993). Therefore, the existence and effective management of river boundaries are critical for supporting healthy, resilient, and sustainable urban life, as well as helping cities achieve sustainable development goals (Richardson et al., 2007).

Open spaces are areas that are not built upon or obstructed by permanent structures, which can be used for various social, recreational, or ecological functions. In an urban context, open spaces are classified into two main categories: urban open spaces and green open spaces.

**Urban open spaces** encompass all open areas within the city that are used for various public purposes, such as parks, fields, pedestrian paths, or communal spaces. These spaces serve as gathering locations, facilitating interaction and enhancing the quality of life for residents. Additionally, urban open spaces help reduce density and pollution, provide areas for social interaction, and enhance the city's aesthetics. Wheeler (2013) emphasizes that urban open spaces are crucial for fostering a healthy and dynamic urban environment.

**Green open spaces** are a segment of open space planted with vegetation, such as city parks, urban forests, and other green areas. Green open spaces serve crucial ecological functions, including improving air quality, providing habitats for fauna, and mitigating the impact of global warming by absorbing carbon dioxide and producing oxygen. These areas function as green spaces that manage rainwater, reduce pollution, and provide comfort for city



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residents (Tzoulas et al., 2007). Green open spaces contribute to the creation of a greener and healthier environment, supporting the sustainability of cities and enhancing the quality of life for their inhabitants.

The utilization of riverfront spaces in several cities, including the local context of Surabaya, often faces various obstacles that hinder the optimal functioning of these areas. Some of the main challenges encountered in the utilization of riverfront spaces include:

**a. Land Limitations and Uncoordinated Land Use**

One of the primary obstacles to utilizing riverbank areas is the intense pressure of land use along the river's course. In many cities, land along the river is often already used for essential infrastructure such as highways, commercial buildings, and residential areas. The presence of informal settlements or uncoordinated land use often hampers efforts to develop open spaces that are accessible to the public (Kurniawan & Setiawan, 2021). This results in riverbank areas becoming narrow, fragmented, or even neglected.

**b. Pollution and Environmental Contamination**

Adverse environmental conditions caused by water and soil contamination around the river also hinder the utilization of riverbank spaces. Water pollution caused by domestic waste, industrial discharge, and garbage can reduce the attractiveness of the river as a location for recreation or social activities. Polluted riverbanks degrade the quality of life and pose health risks to the public (Amir, 2020). Therefore, one of the main challenges is how to address these pollution issues to create a safe and clean environment for the community.

**c. Lack of Infrastructure and Accessibility**

Inadequate infrastructure and limited accessibility are significant barriers to the utilization of riverbank spaces. Many cities lack sufficient facilities to support public activities, such as pedestrian paths, bike lanes, or comfortable seating areas. Additionally, the limited connectivity between riverbank spaces and other urban areas makes access to these spaces difficult, thereby reducing their potential for social and recreational activities (Sigit, 2019).

**d. Policies and Regulations that Do Not Support**

Policies and regulations that do not support the development of riverbank spaces often hinder the revitalization of these areas. Ambiguity in river boundaries, along with uncertainties in the enforcement of regulations concerning development along the river, can lead to land misuse and a decline in the quality of riverbank spaces. In many cases, local governments face challenges in integrating various policies between open space planning, infrastructure development, and conservation policies (Widodo, 2020).

**e. Lack of Public Awareness and Participation**

Another obstacle commonly encountered is the lack of public understanding and awareness regarding the importance of utilizing riverbank spaces. Without active public participation in the planning and management of riverbank areas, the development of these spaces will not be optimal. Moreover, the public's unfamiliarity with utilizing green open spaces along the river as social or recreational areas also hinders the enhancement of these spaces' quality (Pramudito & Kurnial, 2020).



### 3. Method

In this article, the method used is categorizing various studies related to the utilization of the characteristics of open spaces along riverbanks into several main categories, namely:

1. Public Spaces,
2. Public Parks,
3. Commercial Spaces,
4. Road Access,
5. Residential Areas,
6. Industrial Areas.

### 4. Result and Discussion

Riverbank open spaces play a significant role as areas that are accessible and available for use by the general public. These spaces function as places for recreation, social interaction, and community activities. For instance, Bungkul Park in Surabaya, situated near the Kalimas Riverbank, features facilities such as walking paths, seating areas, and expansive green open spaces. These areas are used by the community for exercising, socializing, and holding various community events. Studies on such public spaces show that easy access and community-friendly facilities can enhance residents' quality of life while enriching the area's aesthetic value. The park not only provides space for social interaction but also connects residents with nature, creating a balance between urban activities and the surrounding environment.

Parks on riverbanks, in addition to functioning as public spaces, also offer significant ecological benefits. These parks provide green areas that help preserve the environment and create a refreshing atmosphere. For example, the City Park in Jakarta, situated along the Ciliwung River, serves as a green space that supports biodiversity and helps reduce air pollution in the surrounding area. The park also contributes to rainwater management, reduces flood potential, and provides health benefits to its visitors. Studies related to riverbank parks indicate that these parks serve not only as recreational spaces but also as tools for climate change mitigation and sustainable natural resource management.

Commercial spaces along riverbanks are often utilized to boost the local economy. These areas provide opportunities for restaurants, cafes, and shopping centers to thrive, creating jobs for the community. For example, the riverbank area along the Musi River in Palembang has been developed with numerous restaurants and cafes, which not only attract tourists but also enhance local economic activity. Studies show that such commercial spaces play a vital role in creating employment, increasing regional income, and providing a more enjoyable experience for visitors. This experience is also linked to the aesthetics, comfort, and accessibility that make it easier for the public to enjoy these areas.

Good road access along riverbanks is crucial for enhancing connectivity between areas. Research shows that environmentally friendly designs for pedestrian and bicycle paths can ease access to public spaces and increase the use of riverfront areas. In Yogyakarta, the bicycle lane built along the Gajah Wong River allows cyclists to enjoy the river view while safely engaging



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in activities. Good accessibility not only reduces congestion but also provides comfortable and safe spaces for pedestrians and cyclists. Studies related to road access demonstrate that well-planned infrastructure can enhance the quality of public open spaces and strengthen connectivity between city districts.

In residential areas, proper planning is essential to ensure the sustainability and safety of the environment along riverbanks. Studies on riverfront settlements, such as those in the Kalimas area of Surabaya, highlight the importance of spatial adaptation that reduces flood risks and utilizes green spaces to improve residents' quality of life. For instance, the use of open land for parks and water absorption areas can reduce flood potential while providing residents with green open spaces. This approach is also crucial in maintaining the balance between the growing demand for housing and sustainable environmental conservation. Well-planned residential areas along riverbanks can create safe and comfortable spaces for inhabitants while protecting the river ecosystem from further damage.

Industrial areas located along riverbanks often face significant challenges related to water and air pollution. Studies examining industrial zones along rivers, such as those along the Citarum River, underscore the importance of stringent regulations in mitigating the environmental impact of industrial activities. In these areas, policies regulating industrial waste disposal and wastewater management are crucial for protecting river water quality. Research also shows that implementing environmentally friendly technologies, such as more efficient wastewater treatment systems, can help maintain the river ecosystem while still supporting industrial economic growth. Sustainable management in riverbank industrial areas is crucial for striking a balance between industrial activities and effective environmental protection.

## 5. Conclusion

Open spaces along riverbanks represent a significant opportunity that serves not only as an aesthetic element but also as an integral part of a city's sustainability and quality of life. The utilization of these spaces can enhance social interaction, provide recreational areas, and support community activities that enrich urban life. Additionally, riverbank open spaces serve ecological functions by supporting environmental preservation, mitigating floods, and improving air and water quality. With proper planning, these areas can also optimize economic potential through profitable commercial spaces, while providing accessibility that supports mobility and connectivity across neighborhoods. Overall, riverbank open spaces play a crucial role in creating more environmentally friendly and sustainable cities that enhance the quality of life for their residents.

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