

# Songdo: A Case Study of Underutilized Public Spaces

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**Abstract**—As a newly developed city in South Korea, Songdo’s urban planning, rooted in sustainability and smart city initiatives, differs significantly from common urban development strategies in the country. This research explores public spaces in Songdo as an important case study of a shift towards user-friendly urban models. Despite the abundance of green areas, public spaces in the city face the challenges of underuse. The study focuses on five key parks, employing observation, on-site surveys, and public feedback to analyze usage patterns, design elements, and user preferences. The article outlines the development of Songdo’s public spaces, including Central Park, Sunrise Park Global Park, Haenuri Park, and Haetmuri Park. A comprehensive examination of these spaces reveals variations in usage and satisfaction levels. Recommendations and conclusions emphasize enhancing accessibility, amenities, and activities to activate underused spaces, highlighting Songdo’s role as a prototype for future urban development in South Korea, and the need for a people-centric approach to address challenges in public space utilization.

**Keywords**—green space, public space, public space activation, public spaces in Songdo

## I. INTRODUCTION

In recent years, Korea has begun considering a shift in the conventional urban model, emphasizing the concept of user-friendly cities with a focus on citizen participation in urban design initiatives. The emergence of smart cities such as Sejong and Songdo reflects a commitment to environmental concerns, as well as an initiative to create a more attractive urban environment. This new approach involves the establishment of larger public green spaces and the promotion of walkable and bikeable spaces in cities.

Despite offering a remarkable amount of public green space compared to other cities in Korea, Songdo’s public spaces remain underused. As urbanist Jan Gehl says, “If people get involved in social activities, they will forget place and time, and just enjoy. Do not look at how many people are walking in the city, but look at how many people have stopped walking to stay and enjoy what is there”. There are main challenges for Songdo’s public space design and planning: What activates a public space? What makes it part of the city and daily life? How do we encourage people to use public spaces more and make them stay longer? Inclusive public spaces allow for a healthy public life where social interactions can occur, and the planning, design, and development of public spaces must be a process that guarantees the inclusion of citizens.

This research began with the intention of analyzing the general problems in Songdo’s public green spaces, including Central Park, Sunrise Park, Global Park, Haenuri Park, and Haetmuri Park from the perspective of users and their interaction with the urban space. The content focuses on

current problems leading to underutilization of space and spatial organization.

## II. METHODOLOGY

Songdo is a relatively new city built on reclaimed land in Incheon, South Korea. The planning and development of Songdo began in the early 2000s to establish an international business district. The city has been envisioned as an innovative and sustainable urban area, with a focus on creating a smart and livable environment.

Although there has been academic interest in Songdo’s development, the limited availability of literature on public spaces in Songdo was the main motivation behind this research.

To understand the dynamics of public space usage in Songdo, observation data were collected and public surveys were conducted on site.

First, observations were made in five significant public spaces during different days of the week, as well as varying hours, recording the number of users and their usage patterns. Second, design and planning related elements were recorded by taking photos and marking on maps, and the current situation of the facilities and urban furniture was examined on site. The final step in data collection was to conduct public surveys. Users from different age groups were asked about the frequency and duration of their visits to these public spaces. Additional questions were aimed at finding the design elements that users like or prefer to see in parks subject to research. Furthermore, statements ranked between 1–5 such as ‘I feel comfortable and joyful’ and ‘I feel unsafe or uncomfortable’ were given to understand the user’s feelings attached to these spaces.

## III. THE SIGNIFICANCE OF PUBLIC SPACE

The city is a complex and multilayered place where various forces and dynamics converge. It has historical, geographical, political, and sociocultural significance and plays a crucial role in recognizing and protecting individual rights. The city is a dynamic, ever-changing organism that continually evolves and reshapes itself.

Public space, such as parks, gardens, squares, and streets, is a crucial component of this urban structure. It serves as a venue for social interaction, collective identity, and public activities. Public space has played a central role throughout human history, shaping the urban landscape and carrying functional, cultural, symbolic, and civic-political value.

Public space has multiple dimensions, serving as a social arena, a place for daily activities and tourism, and a platform for various forms of expression and interaction. The achievement of social sustainability is a key goal to ensure equal access to public space for various social groups [1].

Public space influences the dynamics of society.

Cities require social infrastructure, encompassing public places which go beyond practical utility; they serve as arenas for socialization and connection. Studying these spaces directs attention to the rich texture of social life in urban environments and emphasizes their significance for society, politics, health, and well-being. Infrastructure facilitates activity, and the material qualities of social infrastructure—its embeddedness in networks, modularity, adherence to conventions of practice, and affordance of specific activities—influence its functioning [2]. Proper planning of public spaces is crucial to enhance the unique character and identity of cities. Public space should be considered as part of the urban language.

Public space involves various actors, including users, non-users, space managers, public officials, and designers. Their interactions shape the perception and use of public spaces. Designers play a crucial role in creating spaces that are readable and meaningful to users, using design codes that are unique to each design and the cultural context [3].

In public space design, fundamental approaches involve defining the character that specifies function; distinguishing between parks, gardens, squares, streets, and other morphological elements; being aware of the fact that urban space is an artificial version of nature; establishing architectonic façades and three-dimensional forms; avoiding an accumulation of artificiality; and being moderate and rational in use of sculpture or paintings [4].

The formation of urban fabric in connection with collective spaces should prioritize designing the city based on these spaces rather than merely filling gaps to create a continuous urban character. Public spaces should be at the heart of urban development, as they are essential elements of the city.

In urban settings, public spaces play a crucial role in the growth and densification of cities. Densification, driven by a concentration of residents in inner city areas, has led to increased and diverse use of public spaces for activities such as mobility, play, events, and more. High-density buildings have also impacted the availability of private outdoor spaces, especially in centrally located areas with rising property prices. Despite positive developments, challenges include preserving the 'publicness' of spaces, addressing issues of transparency, inclusiveness, and stewardship [5].

Urban environments consist of diverse public and private spaces with varying degrees of accessibility for individuals. The emergence of privately owned and managed public spaces has led to a restricted availability of entirely public spaces within cities. The alignment between the physical and social construction of an urban public space is crucial, as it enhances the likelihood of individuals forming positive emotional connections with the space, thereby encouraging prolonged engagement. Furthermore, in the transition towards a more relational approach to urban planning, it is recognized that individuals, as they traverse between locations, undergo an embodied reaction to their surroundings [6].

Clear and understandable spatial relationships in the city also help users navigate and understand the city's functions and activities, creating a more habitable and comprehensible urban environment. Public spaces often serve as landmarks

and reference points.

The quality and character of outdoor activities in the city are influenced by the physical environment, planning, and design. Choices of materials, colors, patterns, and artwork contribute to vibrancy and a sense of place. Urban furniture, such as benches and chairs, is important in public spaces, but should be carefully placed to avoid overcrowding [7].

The life cycle of a public space is not completed with design and construction steps, but also includes the activation of that space. Public space activation is important for its role in encouraging community building and social interaction, as well as having a positive impact on public health and well-being. When activated, public space allows cultural and artistic expression and creativity, brings economic benefits, supports commercial activity, and ensures environmental sustainability.

#### IV. SONGDO'S URBAN PLANNING

Songdo is an innovative and sustainable international business district located on 607 hectares of reclaimed waterfront land in Incheon. It is approximately 65 kilometers from the capital of South Korea, Seoul. Songdo is considered an extension of Incheon, which is a major international transportation hub, and is connected to the island where the Incheon International Airport is located through a reinforced concrete bridge.

The early 21st century envisioned Songdo as a fully sustainable, high-tech city, geared toward a future without automobiles, pollution, and overcrowding. Its planning was based on an approach that might be considered opposite to the urban development of Seoul, especially in terms of the amount of green space and spacious boulevards. However, the remarkable difference between the urban planning approaches of Songdo and Seoul must be examined in light of historical facts.

Following the liberation from Japan, post-war recovery and urban reconstruction were critical tasks in South Korea, requiring the urgent development of fundamental infrastructure. Rapid economic growth, often referred to as 'The Miracle of the Han River', the hosting of the Olympic Games, globalization, and technological innovations were essential in the formalization of urban design.

South Korea's most significant urban challenge lies in rethinking urban areas that developed during rapid transformation. The rapid expansion of urban areas resulted in an urban model characterized by high-rise development and motorized vehicles as the primary mode of transportation. The influx of people from rural areas to major cities led to rapid population growth, and worsening urban challenges. Despite efforts to expand the subway network, the urban landscape of the 1980s and 1990s was dominated by highways and ring roads that traversed the heart of the city, leading to increased connectivity issues and environmental concerns [8].

In recent decades, South Korea has been considering a shift in these urban patterns. The current trend is to focus on the concept of user-friendly cities that place citizens at the forefront of urban design projects. Smart cities like Songdo demonstrate a commitment to energy efficiency, smart waste management, shared mobility, monitoring technologies, IoT devices, and environmental sustainability. The main goal is

to create a more livable urban environment, based on lessons learned from the development of Seoul.

Along with Cheongna and Yeongjong, Songdo is designated as part of the International Free Economic Zone (IFEZ), which is actively building smart city infrastructure and providing urban services. Smart traffic information, crime, and disaster prevention services aim to protect the lives and property of residents and provide a comfortable urban life. Another objective is to attract multinational corporations and foreign investments. Songdo has been positioning itself as a new global economic center.

To achieve these goals, advanced urban technologies were harnessed. The streets are equipped with sensors that measure traffic flow, and the number of LEED certified projects is increasing. Songdo also has an extensive waterfront park with self-sustaining irrigation systems that provide sufficient public space. At the resident level, waste disposal systems use pneumatic tubes to transport garbage to a central facility, where it is classified as recyclables and non-recyclables [9].

The concept of Songdo development was initially introduced in the early 2000s, and in 2003, Incheon officially unveiled its plan for the development of Songdo [10]. Significant emphasis was placed in the initial plan on waterfront development. Following the successful hosting of the 2014 Incheon Asian Games, extensive infrastructure construction and city planning efforts were implemented. This led to the establishment of offices and research facilities by major international companies in Songdo.

Songdo continues to experience ongoing development, with the expansion of international schools, universities, research centers, and medical facilities. In the waterfront area, residential complexes, hotels, shopping malls, cultural amenities, and park projects are in progress. Songdo is expected to continue to grow and evolve sustainably in various domains, including international business, culture, leisure, and education.

In the early 2000s, the South Korean government started to work on land reclamation efforts to transform the area. Due to its close proximity to the sea, Songdo was identified as an ideal location for global business development. Its strategic location near the Incheon Airport and the Incheon Port established an environment favorable to international trade and, ultimately, evolved into an international city.

Songdo's continuous development is geared not only toward facilitating international exchanges but also toward fostering a sustainable environment. It boasts a multitude of green spaces, including Central Park, Moonlight Festival Park, Solchan Park, and Songdo Landmark Waterfront Park, thereby increasing the city's green space ratio and contributing to environmental conservation, with a focus on sustainability as a core principle of its development.

Songdo could be seen as a prototype for the future of urban development, offering a compelling and sustainable environment for business and trade and a high quality of life for its residents. The development takes inspiration from the best practices of the United States. However, local architectural and engineering firms have an important role to play in transforming this development package into a more conventional approach, making sure it fits the local context, culture, and lifestyle. Cities are designed for people, and in the case of Songdo, several areas are still underused and

'forgotten' due to the lack of users and designated functions. The design and planning perspective must shift towards the user's experience and eye level, rather than decisions taken from an aerial view.

## V. PUBLIC SPACES IN SONGDO

### A. An Overall Glance

In the wake of the global financial crisis in 2008, South Korea embraced the 'Green Growth' movement, leading to a surge in large-scale environmentally conscious construction projects. This change in approach significantly influenced the development of Songdo, a prominent urban hub in South Korea, leading to the inclusion of numerous green public spaces. These green spaces not only boosted the ecological sustainability of the region, but also added to its cultural and visual appeal.

Songdo has a 'Green Public Area' that spans 17,291,603 square meters, comprising 32.4% of the total land area [11]. There are nine public urban parks, each offering a unique set of characteristics based on their location and the various amenities they provide the public.

The establishment of these green spaces (Fig. 1) became achievable due to the advantageous layout of an artificially designed area, which lacked significant prior structures and influential stakeholders. This condition greatly eased the construction of extensive parks and green areas adjacent to residential complexes.

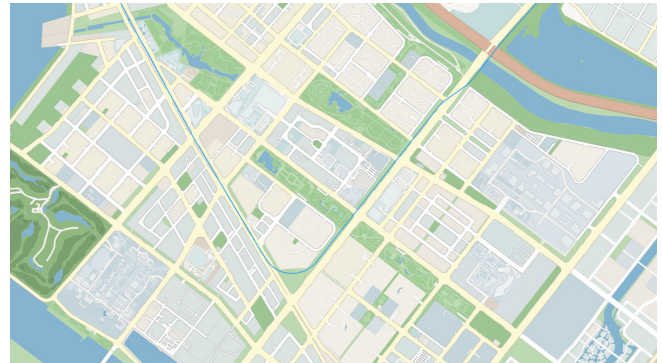


Fig. 1. Public green spaces in Songdo.

Songdo is divided into 11 zones, with Zones 1 to 4 existing at the beginning, whereas the rest has been reclaimed throughout the period since 2005.

The city has undergone significant development over time.

- In 2005, Songdo was newly built and reclamation projects were underway. Sunrise Park was the first public park to be defined and was in its early stages of construction.
- In 2008, the city had expanded, the outline of the district was established, and Sunrise Park was completed. Central Park was in the process of being developed.
- In 2012, Central Park was completed, and two smaller parks, Haenuri and Haetmuri Parks, were under construction. The city continued to expand.
- In 2017, most of Songdo's main public spaces were completed, but the Global Park, in an area under development, had not yet been created.

By 2021, all five urban parks have been built, and Songdo's urban development is now well planned, with green public areas distributed throughout the city. Zone 11 of

Songdo is under development and the city is expected to expand.

Among the public spaces in Songdo, there are five significant parks worth mentioning:

- Central Park, located in the city center and easily accessible from various parts of the city. It covers an area of 370,748 square meters.
- Sunrise Park, a neighborhood park next to Central Park, is known for its walking trails, fountains, flower gardens, and more. It spans 210,468 square meters.
- Global Park, located near the Global Campus entrance, offers various amenities, such as a gym, outdoor sports facilities, a water park, and more, spread across three districts.
- Haenuri Park, a small park next to a university campus with walking trails, greenery, a children's playground, and other facilities.
- Haetmuri Park, a small park located next to Haenuri Park, features similar amenities and covers an area of less than 20,000 square meters.

These parks contribute to the green and sustainable urban environment of Songdo, providing recreational spaces for residents and visitors (Fig. 2).



Fig. 2. Location of parks: 1. Central, 2. Sunrise, 3. Global, 4. Haenuri, 5. Haetmuri Park.

### B. Development of Public Spaces in Songdo

Due to the increasing emphasis on environmental awareness, Songdo has undergone extensive development in the realm of green public spaces. In an effort to fully explore the use of these parks by residents and to understand the interactions between these public spaces and other elements within the urban landscape, this research initiative was carried out.



Fig. 3. Layout of Central Park.

In 2008, Songdo Central Park (Fig. 3) was only a concept, with basic facilities and areas planned for walking trails,

buildings, and a canal. In 2009, it was completed and opened to the public, although it remained relatively undeveloped until 2014, when improvements were made to the trails and a new facility, called Songdo Hanok Village, was added. Today, the design remains mainly the same, with minor changes to the walking trail and newly constructed facilities in the northern area, including the National Museum of World Writing Systems, which opened in June 2023.

One of the highlights of Central Park is the 1.8 km seawater canal that flows through the public space (Fig. 4). The 12-passenger water taxi provides a leisure ride in addition to the various small boats that are highly enjoyed by users to enjoy the park. The bridges connect two sides of Central Park divided by the waterway. Each has a distinctive design language that facilitates an enjoyable outdoor experience.



Fig. 4. The canal in Central Park.

Central Park's design philosophy reflects a harmony of tradition and modernity. The Hanok complex, located south of the artificial canal, is a commercial facility with a detailed landscape design, which has traditional Korean architecture and a modern interior at the same time. Contemporary architectural works such as The Tribowl, Incheon Urban History Museum, and National Museum of World Writing Systems are some of the edifices that can be found adjacent to the park. In particular, the Tribowl is a facility with a unique inverted cone shape and is considered a landmark. All of these buildings have their own distinguishing design that blends into the surrounding urban landscape.

Sunrise Park (Fig. 5) began its development in 2005 and construction continued until 2009. Although it started earlier, it opened around the same time as Central Park and initially consisted of empty areas. After the creation of new walking trails, a public library building, and a parking lot, only minor adjustments were made [12].



Fig. 5. Sunrise Park.

Two small parks, Haenuri and Haetmuri (Fig. 6), began their development in 2012 simultaneously and were constructed rapidly within a year. Haenuri Park saw changes in 2018 with the addition of a fountain and a children's playground. Since then, both parks have remained unchanged.

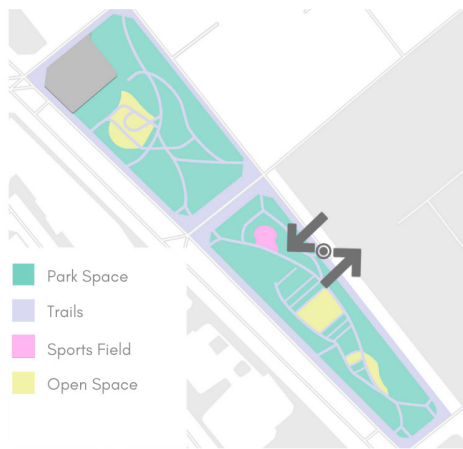


Fig. 6. Layout of Haenuri Park and Haetmuri Park.

Global Park (Fig. 7), the newest of Songdo's public parks, started development in 2017. By 2019, the basic structures and facilities were in place. It remained unchanged since its completion in 2021. It is located in one of the newest reclaimed areas in Zone 5, and other developments in the area, including the university building, were built around the same time. Site 3 of Global Park was also developed in 2017, and was completed before the other sections. It contains water play facilities, small rest areas, benches, sports fields, an open-air book reading space, a stage, an artificial pond, a playground, a two-story café, and a plaza connected to the walking trails.

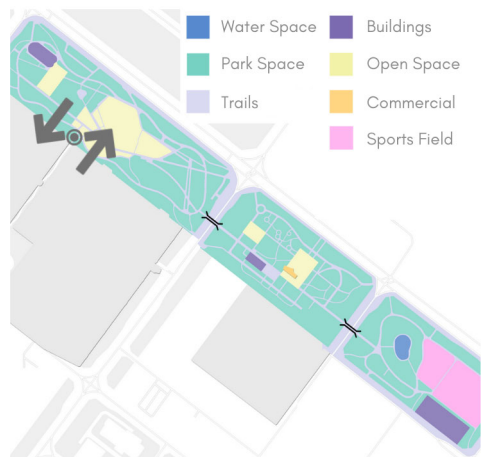


Fig. 7. Layout of Global Park.

### C. Observation Data and Survey Results

To understand the use of these main public spaces, observations and surveys were completed during the spring and summer months.

Research completed during the spring period provided this information:

The Central Park (Fig. 8) is located in the city center of Songdo. This site had the highest number of visitors among the parks surveyed. There are two main factors: The presence of elements that cannot be found in other parks, such as water recreation, advanced landscape design, commercial and

cultural facilities, and the advantage of location in Songdo Central Business District, which provides good accessibility due to its proximity to surrounding offices and residential area.



Fig. 8. Central Park.

Sunrise Park also has various visitor facilities, such as a small open performance venue with tiled walls (Fig. 9), a city government-run public library, a 6,800 m<sup>2</sup> rose garden, and an entertainment facility that applies simple scientific principles as an experiential facility for park visitors. Shaded rest areas and benches are found throughout the park. The whale sculpture features a fountain and reigns as a symbol of the park, whereas fountains without sculpture are also found in other places. However, the park shows a lower number of visitors, as it is located in an area with a low floating population. There is interference between the bike path and the walking path. Furthermore, the roads are poorly paved and uneven, requiring repair.



Fig. 9. Sunrise Park.

During this research, Global Park was divided into 3 sites. Site 1 and Site 2 showed a lower use rate compared to Site 3. The reasons are as follows. The absence of a nearby residential area and the distance from the center of Songdo. Site 3, which has an apartment complex nearby and is close to the metro station and the center, showed a larger number of users and various usage patterns.

The Haenuri and Haetmuri parks are adjacent to each other. There are universities and high schools nearby, but park visitors are rarely seen, since many pedestrians tend to use the park only as a passageway to reach the university or the nearby bus stop. The anticipated reasons for the lower usage are as follows: Both parks are located in low-density areas away from the center of Songdo, so they seem to receive fewer visitors. Furthermore, the lack of residential areas in the vicinity and attention-grabbing design elements can be considered among the reasons. The parks are well maintained, but their designs are too ordinary.

On the other hand, there is a feature that makes Haenuri and Haetmuri Park different from other parks: The unpaved walking trails. Some sections of trails are not paved and the soil remains exposed, giving users a 'forest' feel (Fig. 10).



Fig. 10. Haetmuri Park.

The facilities include a covered lounge, a small basketball court, and a children’s playground. It seems that these facilities do not have a shared design language. One rest area has a modern design, while the adjacent one reflects the traditional Korean architecture style. The artificial fountain is designed as an arena with seats half-circling the fountain. The fountain is designed to blend naturally with the surrounding vegetation.

In the summer period research, participants from various age groups (20 to 60 years) were surveyed about their experiences in public spaces in Songdo. The survey covered several key aspects.

The first part of the survey focused on the number of respondents in each park, how often they visited the park per week (most visits 1–2 days a week), and the amount of time spent during each visit (most stays 1–2 hours) (Fig. 11).

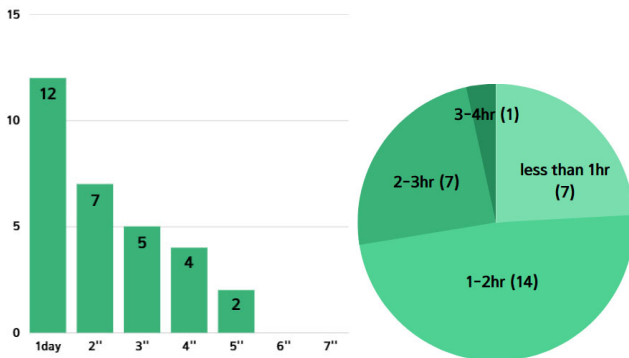


Fig. 11. Survey diagrams based on the answers.

For Central Park, the main concern highlighted by respondents was the lack of shaded resting areas, despite the park’s size. They suggested the addition of more benches under tree shade and more bridges to improve connectivity. The respondents also noted positive changes in the park, such as completed trail maintenance and the new museum.

In Sunrise Park, visitors expressed dissatisfaction with the state of abandoned facilities, including a non-functional children’s playground. They also mentioned the absence of facilities, such as trash cans and shaded areas. In contrast to Central Park, Sunrise Park lacked commercial facilities. The overall satisfaction level for Sunrise Park was 3.8 out of 5.

Global Park faced criticism for lack of practical facilities, particularly compared to Central Park and Sunrise Park. The respondents wanted more seating and additional amenities. The park’s somewhat secluded location discouraged visitors, especially those from the city center. The overall satisfaction level for Global Park was 4.1 out of 5.

Two smaller parks, Haenuri and Haetmuri, received fewer responses. Visitors appreciated the quiet atmosphere but expressed concerns about safety due to the low number of

visitors. There was a suggestion to replace unpaved trails with paved ones. The overall satisfaction level for these parks was 3.6 out of 5.

In terms of overall satisfaction in all parks, the average rating was 3.9 out of 5, indicating a moderate level of satisfaction among the respondents.

## VI. RECOMMENDATIONS

As a city created from scratch, Songdo has great potential to be planned as a liveable and walkable urban environment with a large number of public spaces. Based on research data and surveys, the need to activate public spaces is evident for a more vibrant urban experience in the city.

The example of Central Park serves as a relevant reference to improve the utilization rates of public spaces in Songdo. A crucial determinant contributing to the utilization of Central Park is its accessibility. Situated within the Songdo Central Business District, Central Park enjoys seamless access to neighboring offices and residential areas characterized by a substantial population. In addition, the integration of active public transportation, including the metro and bus services that connect the park to various city sectors, plays a crucial role in maintaining its elevated usage rates.

The decrease in occupancy rates observed in certain parks within Songdo can be attributed to the absence of a densely populated residential district and their distance from the city center. To address this challenge, it is necessary to increase the appeal of these parks by improving surrounding areas and establishing efficient transportation links, thus promoting increased visitation. A fundamental strategy would be to activate public spaces by offering various activities and design elements to engage users. Successful case studies such as A’Beckett Square in Melbourne, Robson Redux in Vancouver, Lawn on D in Boston could be taken as great influences to create more active public space use in Songdo [13].

## VII. CONCLUSION

Songdo’s trajectory reflects a shift in South Korea’s urban development approach, moving from a focus on rapid expansion and motorized transportation to a user-centric model that prioritizes livability. The emphasis on smart city initiatives and sustainability positions Songdo as a prototype for future urban development.

However, challenges persist, particularly in optimizing the use of public spaces in the city. The observed disparities in usage rates between parks highlight the need for strategic interventions, such as improving accessibility, improving amenities, and incorporating diverse activities to activate these public spaces.

Drawing inspiration from successful global examples whilst considering the local context, Songdo can elevate its public spaces by fostering user engagement, incorporating user-friendly design elements, and addressing specific concerns highlighted by residents. The journey toward a more vibrant urban experience in Songdo requires an adaptive and people-centered approach.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORS' CONTRIBUTIONS

Seung Won Cha conducted the research under the supervision of Idil Ayril who analyzed the data and wrote the paper; both authors had approved the final version.

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