

Liveable City Centre: Livability through The Lens of The Singaporean Experience (Case of Singapore City Center)

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Abstract:

Over the past two decades, the world has witnessed a marked increase in interest in improving communities' liveability. Liveability is also an ambiguous and complex concept reflecting a reticular relationship between various dimensions. Although the same term of Liveability Dimensions might be used in multiple research studies, it might not have the same content or meaning.

Liveable cities are being built on an aggregation of identified policies and investment strategies that support: Equitable and affordable housing, promote healthy, safe, and walkable neighborhoods, promote cost-effective and reliable choices of various modes of transportation, and improve the competitiveness of the economy.

This paper explores the Urban Liveability concept and its dimensions by reviewing scientific literature. On the other hand, it aims to conduct a case study analysis on one of the most worldwide successful city examples, Singapore, to conclude lessons from practice.

The livability concept and dimensions were identified through the literature, which was reflected in defining the analysis structure for the case study. The paper concludes with a group of urban indices distributed on the three dimensions of urban liveability that is crucial for achieving Liveable cities.

Keywords: Liveability, Liveable City, Liveability Dimensions, Liveable Singapore, Liveable City Center

1. Introduction

Over the past two decades, the world has witnessed a marked increase in interest in the issue of improving the Liveability of communities. Meanwhile, there is a growing commitment by academic researchers and government authorities toward providing tools and frameworks that are essential for building Liveable cities (Shamsuddin, Abu Hassan, & Bilyamin, 2012).

Liveable cities are being built on an aggregation of identified policies and investment strategies that support: Equitable and affordable housing, promote healthy, safe, and walkable neighborhoods, promote cost-effective and reliable choices of various modes of transportation, and improve the competitiveness of the economy. Evans (2002) argues that Liveable cities are only achieved through considering economic and environmental concerns as equal in significance and putting both sides of the equation together. It is the equation of providing livelihoods for both ordinary and affluent citizens, as well, in ways that preserve the quality of the environment (Keceli, 2012).

“Liveability” term is derived linguistically from the word “Liveable,” which according to Oxford Advanced Learner Dictionary (Ashby & Turnbull, 2010) refers to the phrase: “Fit to Live in” (Rafiemanzelat, 2014, p. 32). While the literal meaning of “Liveability” term, according to Cambridge Dictionary, means: “The degree to which a place is suitable or good for Living in” (Cambridge University Press 2022, n.d.; Obafemi, 2019, p. 29). In addition, “Liveability” is defined according to the Webster dictionary as: “Suitability for human Living” (Okulicz-Kozaryn & Valente, 2019, p. 198). According to the definitions mentioned above, “Liveability” is all about the human’s Quality of Living experience within the built and natural environment. Since humans have a complex nature, the ‘Liveability’ concept has, in turn, acquired characteristics of multi-dimension in a direct reflection of the human nature essence.

2. Liveability Dimensions

Urban Liveability is a multi-disciplinary concept and a multi-dimensional field of action. It is also an ambiguous and complex concept reflecting a reticular relationship between various dimensions. Although the same term of Liveability Dimensions might be used in various research studies, it might not have the same content or meaning (Lau & Hashim, 2010). According to the National Research Council (2002), the Liveability dimensions are categorized into three interrelated spheres of social life: the economy, social well-being, and the environment (Figure 1). Indeed, Liveability is only achieved through the integration of these three dimensions. Therefore, any inadequate functioning within any of these three spheres directly reflects deteriorating the Liveability of the human settlements through population loss, poverty, social conflict, and elevated levels of environmental health problems. According to National Research Council (2002), these three dimensions could be described as follows:

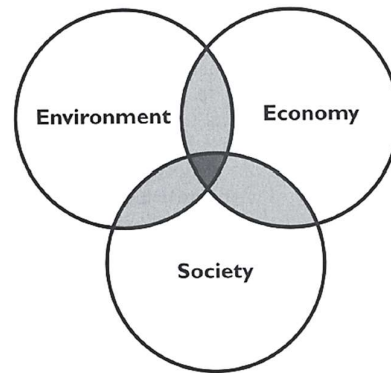


Figure 1: Liveability Dimensions as three interconnected spheres: Environment, Economy, and Society

Source: Reprinted from (National Research Council, 2002) based on (Hart, 1999)

2.1. The Environment dimension of Liveability:

The Environment Dimension of livability denotes the envelope that the people live in, the physical and natural environment. The Environment Dimension of livability advocates coordination and compromise between environmental protection interests and creating a physical urban environment that provides essential services for its residents' needs. The Environment Dimension is concerned with creating a physical environment that is safe and accessible for all the city residents achieving social inclusion and equality. In other words, It aims to create a place that is well-functioning in providing services for the city residents while considering the physical quality of the place and the environmental quality (Yeang, 2006; National Research Council, 2002).

2.2. The Economy dimension of Liveability:

It refers to its fundamental role in residents' health through supporting the community's needs for food, clothes, and shelter, which it fulfills by providing them jobs and income. In addition, the economy involves the provision of the residents' higher-order needs such as education, health care, and recreation. Meanwhile, the economy must efficiently sustain the utilization of raw materials drawn from the environment for current and future generations' needs (National Research Council, 2002).

2.3. The Social well-being dimension of Liveability:

Generally, social well-being relies on social justice, which refers to the fair social and spatial distribution of economic and environmental resources. Besides, ensuring governance systems that are inclusive of all residents while providing freedom and opportunity for individuals are the utmost crucial components of social well-being (National Research Council, 2002).

3. Case Study of Singapore City Center

Singapore is Located in far Southeast Asia, at the southern tip of the Malay Peninsula (Figure 2). Singapore has a geographic location of great significance, which allows it to become the leading dominant player on the trade routes connecting the Indian Ocean to the South China Sea. Therefore, it is considered the largest port in Southeast Asia. This has made Singapore one of the busiest ports in the world, which has greatly affected its economic growth and prosperity (Winstedt, Ho, Leinbach, & Kennard, 2021). Singapore consists of 5 main regions: the West Region, North Region, Northeast Region, East Region, and the Central Region, which will be the focus area of this case study. The Central Region is the economic heart of Singapore as it combines the Central business district (CBD), the Port of Singapore (busiest container transshipment hub and the largest publicly owned port in the world), and various historical places of Singapore located downtown (The Magazine, 2021).

The significance of Singapore as a Liveable city stems from the fact that it has managed to achieve a better liveability standard, despite all the environmental, economic, and scarcity of resources problems that it has been facing. In promoting the role of the Singaporean experience among other the Liveable cities, Mr. LIU Thai Ker stated that: "*The dramatic physical transformation of Singapore in the past five decades is increasingly attracting attention from the rest of the world, particularly from developing countries. Barely 50 years ago, 1.35 million out of a population of 1.7 million lived in squatter colonies. Within one generation, Singapore*

transformed itself into a modern metropolis, a city where there are no homeless people, no squatters, no poverty ghettos, and no ethnic enclaves" (CLC & CSC, 2014, p. 1).



Figure 2: Singapore Map according to Singapore Master Plan of the planning act 2019

Source: Adopted from (Singapore Government, 2019; Worldatlas, 2021)

Although Singapore is considered the 2nd most densely populated country globally, it has been rated one of the few high-density cities capable of achieving high liveability standards (CLC & CSC, 2014). Indeed, Singapore has significantly managed to combine high liveability standards within highly dense urban structures. In less than five decades, Singapore has managed for the first time to gain the place of the most Liveable city in the world for the Asia region in Mercer's quality of living ranking 2005. It is a rank that Singapore has continually been retain until today for more than 15 years in the annual Mercer's quality of living ranking (ECA International, 2021). According to Mercer (2019), Singapore ranked the 25th top Liveable city globally and the 1st in Asia.

Since the 1960s, Singapore has set itself a mission of advancing the city in the face of environmental, economic, and social problems to achieve the highest levels of liveability in cities. During this period, Singapore has launched many programs at the regional and local levels to achieve high liveability standards (Chye, 2019). It has adopted a strategy that aims to match the reinvention of global cities such as New York City, London, and Paris. Therefore, Singapore has given special attention to the City Center, which is considered the economic and social heart of the city (Figure 3). The City Center is located in the Central Region of Singapore. The author sheds light on one of those programs that include an integrated development and revitalization of two precincts of great importance within the City Center (Figure 3), Marina Bay and Raffles Place and Orchard Road.

Singapore has adopted a National Strategy of Sustainable Development for a more Liveable and sustainable Singapore (Figure 4) (MEWR & MND, 2009). The fundamental goal of this strategy was to guide the course of development and transformation of Singapore's urban

within the next 40-50 years since then. Applying this strategy has led to the inclusion of Singapore among the most Liveable cities in the world. Indeed, the Singaporean experience has proven its validity and efficacy as an exemplary approach that other countries must follow and shall study.

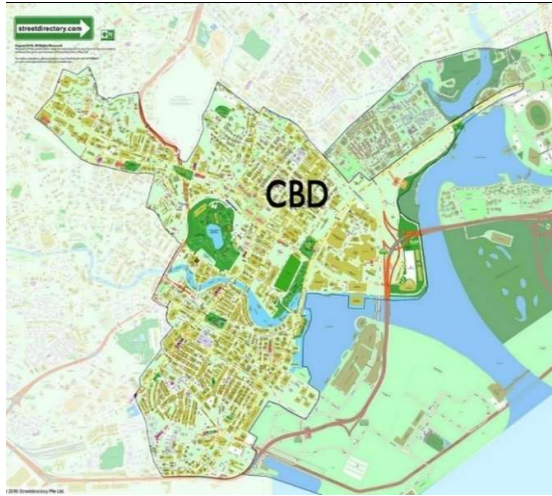


Figure 3: The Central Business District (CBD) of Singapore

Source: Adopted from (Worldatlas, 2021; Wallmaps, 2021),



Figure 4: Objectives of Singapore's National Strategy

Source: Author adopted from (URA, 2012)

3.1. Physical and Environmental indices towards Urban Liveability

The Urban Redevelopment Authority (URA) of Singapore has successfully adopted the objectives of the Singapore National Development Strategy while developing the master plan for the two central districts of the Singapore City Center: Marina Bay and Orchard Road. This is evident in the planning approach that URA has embraced in developing its Master Plan. The Mixed Land-Use Planning has been the fundamental pillar of developing the Master Plan toward achieving liveability goals and principles (Figure 5). Indeed, the mixed land-use contributes to creating Liveable places that combine all human activities in one place: socio-economic activities encompassed within a human-friendly environment (CLC & ULI, 2013).

A specific land-use patterns and percentages have been applied differentially for both Marina Bay and Orchard Road to cope with their development objectives. Marina Bay has been planned to be a vibrant and sustainable high-density district with a mixed-use live, work, and play environment (MEWR & MND, 2009). Also, to serve as the tourism and leisure hub for Singapore CBD. Therefore, the most significant percentage of land was allocated for recreation and open-space land uses, about 30%, followed by commercial land uses at 17%. On the other hand, the Orchard Road's main objective was to be among the most famous roads in the world. Orchard Road was developed piecemeal to be Singapore's main shopping road. It provides the area with a business community and promotes street-wide activities. Therefore, about 82% of its Master Plan is for commercial and business land use (CLC & ULI, 2013).

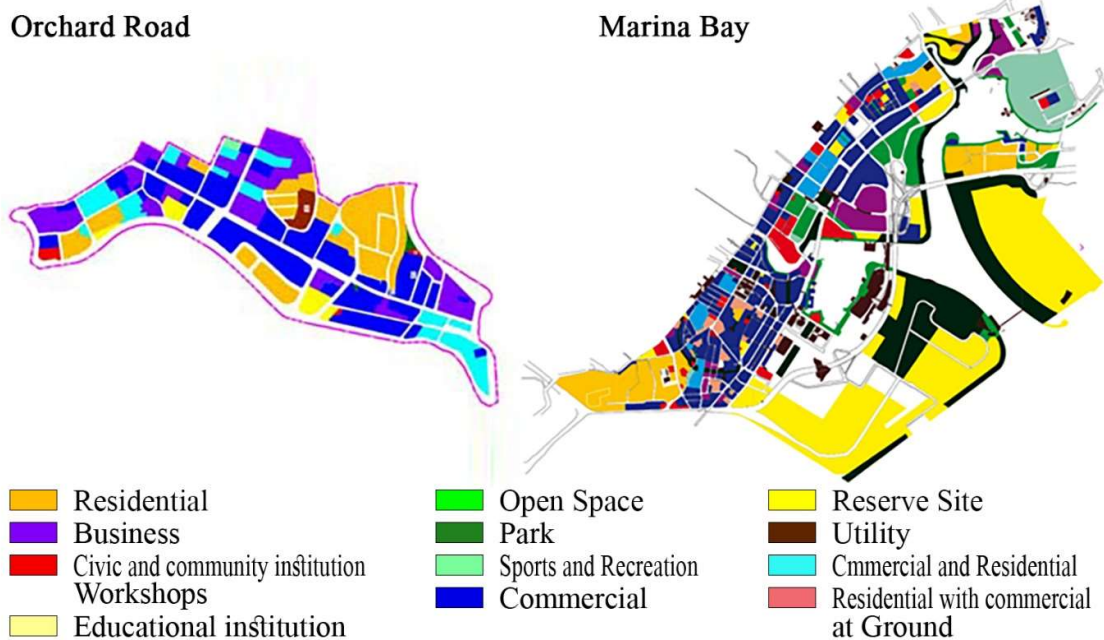


Figure 5: Marina Bay and Orchard Road land-use plan
 Source: Adopted from (CLC & ULI, 2013)

3.1.1. Improving mobility and accessibility

In promoting connectivity and accessibility in the city center, the URA has introduced an enhanced mobility network plan that significantly impacted the city center (Figure 6). The city center development scheme was built on three main pillars: introducing an improved urban grid network, providing more sustainable modes of transportation, and establishing a vibrant and walk-inducing pedestrian network form (URA, 2021). Firstly, the urban grid has been planned based on allowing further extension from the existing city grid. This has led to ensuring better and improved connectivity to and from the city. Secondly, the development of the Mass Rapid Transit (MRT) system since the 1980s has made the city center the focal point of Singapore. It has ensured its connectivity at a regional scale (Chye, 2019). Additionally, providing an intra-district network of cycling paths benefits the city center with alternative transport options, which provides smoother connectivity and mobility for the residents while ensuring that the life in the city becomes healthier and environment-friendly. Thirdly, convenient pedestrian access between buildings and public amenities has been provided in the city center. This was achieved through an integrated network of at-grade covered pedestrian walkways below and above ground (CLC & ULI, 2013).

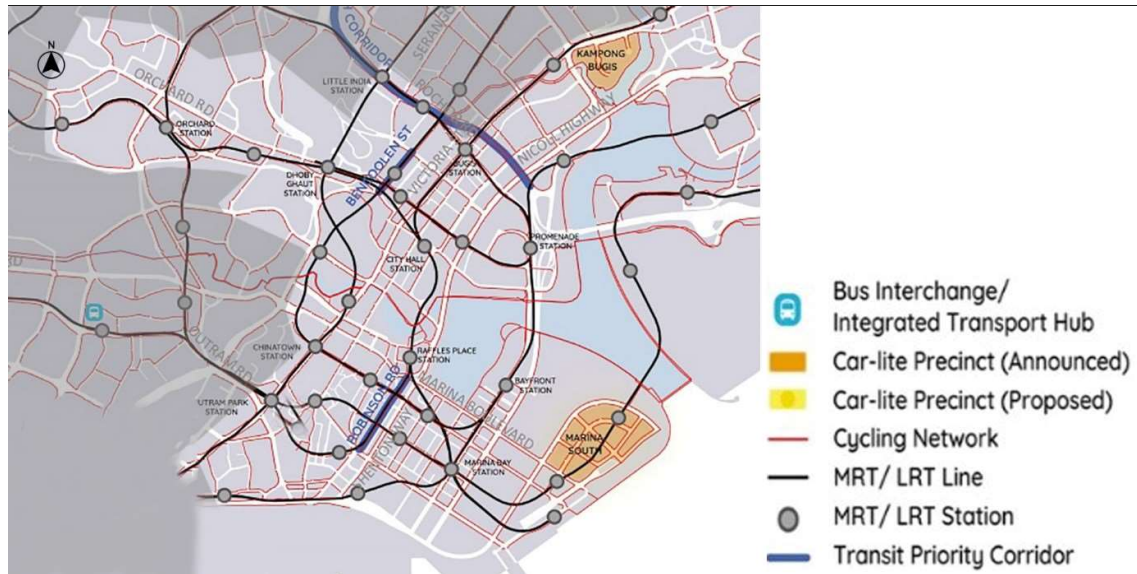


Figure 6: The City Center Mobility Plan
 Source: Adopted from (URA, 2021)

The pedestrian network rejuvenation aims to redesign the road space for better liveability and inclusivity. It is an approach that tends to create more community spaces and broader walking and cycling paths with greenery, which can significantly enhance the roadside environments for residents (Figure 7). Furthermore, The URA has introduced a new approach for urban district development called: Car-lite. A planning approach prioritizes pedestrians, cyclists, and public transport users over providing more regular road space required to accommodate general vehicular traffic. These districts require fewer parking spaces and less allocated road space for general vehicular traffic. Also, it can explore new car-parking concepts such as hub parking.



Figure 7: Road Redesign Concept
 Source: Reprinted from (URA, 2021)

3.1.2. Sustainable Environment

In light of the Environmental protection, Singapore has launched a comprehensive program for a better Liveable city. Since Singapore began its national program toward a Liveable and sustainable Singapore, the balance between environmental needs and economic interests has become a significant imperative that must be settled. Therefore, Singapore has not only sought to have a stunning city skyline that attracts its residents but to be a Liveable and sustainable city that supports eco-friendly spaces. This is evident in the strategies adopted by the government in the development of Marina Bay and Orchard Road. It is a development strategy that puts sustainability in mind and adopts environmentally sustainable technology (URA, 2012).

Singapore has prioritized addressing the issue of urban liveability from an environmental perspective based on three main objectives. These objectives are cleaning the environment and water bodies of pollutants, increasing green spaces, and adopting specific environmental measures and policies. Therefore, the government has initiated a clean-up and waste removal program for the Singapore River, which runs northwest of Marina Bay, because it suffers from an accumulation of pollutants (Figure 8). In addition to relocation programs for pig farms located along the river and rehousing of shop house residents to public housing flats. These measures have transformed the role and identity of the river and have had huge impacts on the Bay.

The second initiative was to gradually raise Singapore's green cover to be a City in Nature. Back in the 1960s, Lee Kuan Yew, the Prime Minister then, called for "*The Creation of a Clean and Green Environment*". It is an initiative that marks the beginning of Singapore's development into a Garden City toward improving the quality of life in the city (Ng Lang, 2008). According to the Center for Liveable Cities, the more increased green cover areas are, the more Liveable the city be. Singapore has been able to commit 9% of the total land area to parks and nature reserves. Between 1986 and 2007, Singapore's green cover grew from 35.7% to 46.5% (Ng Lang, 2008). According to Mr. Khoo Teng Chye (2019), Singapore currently has managed to reach about 10% of the land area as parks and nature reserves.

This approach to greening Singapore has reflected directly on the development strategies of Marina Bay and Orchard Road. The Marina Bay waterfront promenade has been designed as a well-shaded environment with lush tree planting for pedestrians. It also includes other elements like water features to cool the ambient air temperature, making it a pleasant walking experience (MEWR & MND , 2014). Singapore's greening strategy has impacted the Orchard Road transformation as well into a Liveable environmental space (Figure 9).

Also, The Urban Redevelopment Authority has provided Orchard Road with electronic road pricing gantries along the road to regulate vehicular traffic volumes at different times of the day. Singapore has adopted specific environmental measures and policies to achieve a Liveable and Sustainable Green Environment. In addition to the previously mentioned initiatives, Singapore has introduced a "Landscape Replacement Policy" to ensure replacing the greenery lost from the site area taken up by buildings. This policy imposes upon all new developments a mandatory provision of landscaped areas on the upper levels of developments in the form of sky terraces, landscaped terraces, and gardens.

Additionally, Singapore's Building and Construction Authority has launched The Green Mark Scheme applied to all the new and existing buildings. Therefore, all new developments at Marina Bay became mandated to the achieving of a minimum Green Mark Platinum or Gold Plus (MEWR & MND , 2014).



*Figure 8: Singapore River before the clean-up and its transformation into a vibrant Urban Spine
Source: Adopted from (URA, 2021)*



*Figure 9: The Marina Bay waterfront promenade design feature of maraging connection between the Land green cover and Sea (Top Photo), urban design features of Orchard Road with its large Angsana trees (Bottom Photo)
Source: Reprinted from (Knott, Jason, 2021; Hager, 2015)*

3.2. Economic indices toward Urban Liveability

Creating an economic climate that attracts investment and meets the labor market demands is one of the most fundamental liveability indicators in any urban system. URA had this in mind while planning for the Urban Development of Singapore's city center. The development strategy aims to achieve a high-quality business environment and encourage people to work and live there. Achieving this has required the application of innovative planning approaches to develop the city center master plan. Besides, adopting urban policies that encourage public-private partnerships. Relying on new approaches to urban planning, such as “white-site” land-use zoning, the URA has managed to allow developers and investors greater autonomy and flexibility in deciding the most appropriate mix of uses for their land parcels. The White Sites approach allows flexible mixed land-use instead of traditional fixed land-use zoning. It has enabled the development of the right mix of land use according to the site-investment needs, whether commercial, recreational, housing land-uses, or just community spaces.

Furthermore, Singapore has adopted an encouraging policy for the Public-Private Partnership through various programs, such as the Government Land Sale program and the Orchard Road Business Association. The Government Land Sale program was intended for selling land to developers through open tender to meet urban development goals (Chye, 2019). Moreover, the formation of the Orchard Road Business Association (ORBA) has helped promote Orchard Road as a global road and the main shopping road in the city center and Singapore. The ORBA has supported integrating and strengthening the business community in the area and promoting street-wide activities. Indeed, it significantly impacted the economy due to reviving and attracting various investments to the country.

3.3.Social indices towards Urban Liveability

Indeed, Singapore has directed its efforts toward embracing two main approaches to achieving better social life in its City Center. The creation of vibrant public spaces while developing and renewing the current ones. Besides, launching initiatives for improving social responsibility by ensuring public-private participation in developing and enhancing the social quality of life. Through the study of the city center of Singapore, many examples can shed light on the government interventions that seek to create and renovate public spaces for a more Liveable city.

At Marina Bay, Singapore's vision was to create a place for all to enjoy. Therefore, the URA has provided Marina Bay with an extensive waterfront promenade and a network of covered and open spaces for people to gather in and enjoy (MEWR & MND, 2009). Besides, providing large areas allocated for nature and national parks, such as Gardens by The Bay (Figure 10) and Youth Olympic Park.

Furthermore, the street's sidewalks have gained the government's attention within the development plan of the Liveable city center. This is evident in Orchard Road, where the government offers incentives on the gross floor area of outdoor refreshment areas. Therefore, many buildings have incorporated urban verandas, providing a new and enjoyable experience for visitors and passersby (Figure 11) (CLC & ULI, 2013).



Figure 10: Gardens by The Bay: a national park at Marina Bay, Singapore (Photograohy)
Source: Reprinted from (Tripadvisor, 2021)



Figure 11: Discovery Walk: A Pedestrian Plaza, Orchard Road, Singapore
Source: Reprinted from (Foursquare City Guide, n.d.)

4. Conclusion

According to the aforementioned in, the author concludes that

➤ **Physical and Environmental indices Towards Urban Liveability** aims at achieving a Sustainable and Green Environment and Sustainable Mobility through specific planning approaches, and policies as follows:

1. The mixed land-use contributes to creating Liveable places that combine all human activities in one place: socio-economic activities encompassed within a human-friendly environment.
2. Planning an accessible Urban Grid plays a significant role in achieving liveability in the city center by ensuring better and complementary connectivity to and from the city.
3. Mitigating the private car dependency rates through a well-studied Transportation and Mobility Plan is crucial for reducing the city center traffic jams and high CO2 emissions,

which, in turn, improves the environment's air quality and achieves high standards of urban liveability.

➤ Sustainable Mobility aims at promoting variety of sustainable modes of transportation and reducing private car dependency as follows:

1. Supporting an eco-friendly mode of transport, such as cycling, as integrated solutions to improve connectivity and accessibility within the city center for enhanced Sustainable Mobility.
2. Supporting public transportation with a well-connected pedestrian and cycling networks, which provides smoother connectivity and mobility for the residents while ensuring that the life in the city becomes healthier

➤ Balancing between environmental needs and economic interests is a significant imperative that shall be in consideration while addressing improving a Liveable city center issue.

Enhancing the city center natural environment can be achieved as follow:

1. Gradually increasing the city center's green cover area is among the top measures for enhancing the natural environment. Indeed, it depends on two primary approaches. The first approach concerns introducing a program for annual tree planting, the most applicable one. The other approach involves the early planning phase of developing the city center master plan, where more land could be allocated for the nature and national parks. Yet, the efficacy of this approach has a greater limitation in implementation as it is limited to the vacant land the city center provides.
2. Adopting a water bodies' clean-up and waste removal program, particularly for city centers characterized by rivers with waterfront promenades.
3. Improving the river's waterfront promenades with particular attention towards intensifying the tree planting and green areas for pedestrians. It contributes to enhancing the natural environment by cooling the ambient air temperature, making it a pleasant walking experience for pedestrians reflecting a more Liveable city center.
4. Supporting a “Relocation Program” for harmful land uses affecting the natural environment negatively, such as Singapore relocation programs for river-adjacent pig farms.

➤ **Economic indices Towards Better Liveable City Center**

1. Liveable cities aim at creating an economic climate that attracts investment and meets the labor market demands.
2. Achieving Liveable city centers providing a high-quality business environment and encouraging people to work and live and entertain requires the development of specific planning approaches, measures, and policies, such as:
 - Encouraging public-private partnerships is critical for achieving a vibrant and high-quality economy needed for livable city centers.
 - Adopting new urban planning approaches, such as “white-site” land-use zoning, gives developers and investors greater autonomy and flexibility in deciding the most suitable mix of land uses use according to the site-investment needs, whether commercial, recreational, housing land-uses, or just community spaces.

➤ **Social indices Towards Better Liveable City Center**

Liveable city center aims to promote social cohesion, social equity, and raise awareness of the right ways to connect and live toward better social life. This is achieved through:

1. Developing a vibrant, well-connected, and well-distributed network of urban public spaces for people to gather in and enjoy; contributes to achieving equity and ease of access for all the city residents.
2. Supporting the importance of the road sidewalks for the city center's livability, through revitalization programs, as a place for social gatherings.

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