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Title

Environmental Justice and Park Accessibility in Urban China: Evidence from Shanghai

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Running Head: Environmental Justice and Park Accessibility

Abstract

This article applies the pluralistic concept of environmental justice to the issue of park accessibility between people across different socioeconomic strata in the metropolitan region of Shanghai. Data was obtained from China's 2000 and 2010 population census, Shanghai Landscaping and City Appearance Administrative Bureau, semi-structured interviews and secondary sources. The article finds significant environmental injustice between foreign citizens and Chinese citizens (including people from Hong Kong, Macau and Taiwan and mainland people with and without Shanghai *hukou*) and between blue collar, white collar and wealthy white collar people from distributive, recognition, participatory and procedural justice perspectives. The article then discusses why such injustice is the result of urban China's unique authoritarian mode of governance, power structure, neoliberal practice and globalisation development. The findings offer insights into the development of the concept of environmental justice in the Chinese context and the country's objective to build an impartial society.

Keywords: Park accessibility; Environmental justice; People across different socioeconomic strata; Shanghai; China

1. Introduction

An urban park is able to offer a variety of benefits to residents. Socially, it promotes cohesion between people (Peters et al., 2010) and provides opportunities for participation in recreational activities (Giles-Corti et al., 2016). Economically, proximity to urban parks is found to have significant impact on property values (Xiao et al., 2016). Residents are likely to choose neighbourhoods that are closer to public parks for its property value appreciation ability (Jiao and Liu, 2010). Also, environmentally, urban parks are effective in ameliorating air quality (Cohen et al., 2014), mitigating heat-land effect, controlling storm water (Niemelä, 2014) and improving liveability of a region (Villanueva et al., 2015). This results in better health for local residents who live near such urban parks (Ekkel and de Vries, 2017, Rojas-Rueda et al., 2019). This has been demonstrated during the COVID-19 pandemic (Venter et al., 2020).

In China, dramatic urban transformation embodies neoliberalism in the form of land and housing commodification and privatisation (He and Wu, 2009). Local governments are reliant on land resources to accumulate local capital resulting in limited green space and public parks (Li et al., 2005). This is because if more land is prioritised for commercial development, less land will be allocated for public parks (Chen and Hu, 2015). Also, China's neoliberal urban development approach has led to significant residential differentiation - where one can live is determined by their socioeconomic status and ability to purchase

property (Yang et al., 2015). For example, large proportions of socioeconomically disadvantaged groups have moved to suburban areas due to the lower housing prices, substantial gentrification and involuntary resettlement processes (Li et al., 2019). This has left urban central areas to high-income people such as local and foreign elites, leading to prominent socio-spatial segregation (Sassen, 2016). Such a trend affects the 'justice' in the use of public resources. Compared with central areas, suburban areas often have poorer living facilities and environmental amenities (Qian and He, 2012). This issue is becoming increasingly significant in the current stage of socioeconomic development, in which Chinese people and society have paid more and more attention to their own happiness, well-being and overall life satisfaction (Steele and Lynch, 2013). Therefore, in the context of park resource shortage, there is a growing need to examine whether park accessibility is equitable between people across different socioeconomic strata in urban China. This requires a clear understanding of the concept of environmental justice, which remains limited in the Chinese context.

This article investigates the equitability of park accessibility between people across different socioeconomic strata in the metropolitan region of Shanghai. The article classifies people in Shanghai according to where they live: blue collar communities, white collar communities

and wealthy white collar communities as well as according to their nationalities and *hukou*[1] status: foreign citizens and Chinese citizens (including people from Hong Kong, Macau and Taiwan and mainland Chinese people with and without Shanghai *hukou*). This classification approach covers the socioeconomic conditions of all people in Shanghai. The article then analyses the following: which particular groups of people encounter inequitable access to parks? Is their situation well recognised and why? What are the consequences of and resolutions to the social and environmental justice issues? The concept of environmental justice contributes to the analysis as it concerns the socioeconomic and environmental experiences and needs of all people through its pluralistic perspectives and dedication to combatting the political economic systems and power structures that induce social and environmental injustice (Pellow, 2016). This article therefore articulates the issues of green space and civil rights using the concept of environmental justice and aims to offer new insights into the development of such a concept within the context of urban China's authoritarian mode of governance, neoliberal practice and rapid globalisation process.

2. Environmental justice and park accessibility in urban China

[1] *Hukou* is a household registration system in China. It divides Chinese citizens into two categories in a city. For example, for Shanghai: having Shanghai *hukou* and not having Shanghai *hukou*. Generally, the former enjoys Shanghai government-provided social welfare such as education, healthcare, housing and employment opportunities while the latter does not and can only access to social welfare in the areas where they are registered, leading to great injustice between them. In addition, for those not having Shanghai *hukou* and holding rural *hukou*, they enjoy much less welfare than their urban counterparts.

The concept of environmental justice is a dynamic and pluralistic concept evolved from the unfolding of environmental concerns of environmental activists. The original environmental justice concept was focused on socio-spatial proximity and from a distributive dimension, which emphasises including all social groups in the benefits of environmental amenities, such as urban parks (Hughey et al., 2016). In order to analyse the reasons behind disproportionate distribution, scholars such as Whyte (2011), Holifield (2012) and Martin et al. (2016), advocate looking beyond the distributive dimension and incorporating the dimensions of recognition and participation, which affirm group differences in terms of their diverse interests and capabilities and are central in achieving procedural environmental justice in decision-making and implementation processes. They have paid particular attention to rural and poor people, who are often politically and socioeconomically disadvantaged groups (Walker and Bulkeley, 2006), often deprived of environmental rights, and who suffer from environmental inequalities (Wolch et al., 2014). However, given the fact that short-term economic gain is still dominating and officials in charge of environmental justice issues are not powerful enough to ameliorate the situation of rural and poor people being disadvantaged and deprived, Pellow and Brulle (2005) propose 'critical environmental justice studies' calling for transformative changes to the political economic system and power structures in pursuit of social and environmental justice (Pellow, 2017). The concept of environmental justice at this point connects with the other research fields, such as studies of the civil rights

movements and political ecology, which also emphasise political economic dimensions of environmental problems (Swyngedouw and Heynen, 2003). For example, particular modes of development can prioritise one group's rights and interests at the expense of others, and this in turn affects social and environmental justice (Yeh, 2015).

In the Chinese context, although there exists significant social and environmental injustice between people across different socioeconomic strata (Whyte, 2010), scholarly efforts to link the relevant issues with the concept of environmental justice are still limited (Ma, 2007). This is largely because the concept is rooted in the Western liberal movement (Schlosberg, 2009), contradicting China's existing political economic system and power structure, which advocate a top-down mode and state-domination (Westman and Broto, 2018) and do not fully consider civil empowerment and engagement (Liu et al., 2018). One example is China's South-to-North Water Diversion (SNWD) project. The central government constructed the world's largest water diversion project to address the challenge of water scarcity in northern China (Wang and Li, 2019). The SNWD project was criticised as leading to further pollution, loss of cultural heritage and forced displacement of people (Moore, 2014). However, as Barnett et al. (2015) indicate, the unsustainable project was nevertheless implemented because it was essential to maintain economic growth in the North China Plain and the powerful position of Beijing, the capital of the country. The SNWD project hence

demonstrates that a powerful and controlling government mobilises a variety of resources in order to pursue its political and economic objectives. As indicated by Smith (2017), China is still prioritising policies that maximise economic growth, employment and consumerism, which are all paradoxical to the concept of environmental justice.

As a consequence of prioritising economic growth, there is deteriorating and inequitable access to public parks in urban China. For example, Yin and Xu (2009) found that although overall park accessibility during 1986 to 2000 in Shanghai has improved, many people still live far away from parks and lack sufficient park resources. Cai et al. (2011) found that less than half of the population in Guangzhou were able to conveniently reach nearby parks reflecting the city's unsatisfactory level of park provision and accessibility. You (2016) demonstrated inequalities in public green space provision in Shenzhen, in which socioeconomically disadvantaged districts had more restricted access. Using a green accessibility index, Fan et al. (2017) found that people's access to green space in the urban peripheries and outer suburbs was less than average access for people across Shanghai. Shen et al. (2017) unveiled a significant mismatch between public green space provision, resident visits, and the requirements of socially vulnerable groups including children, elderly and unemployed people in Shanghai. This finding is based on 1,213 public green spaces including parks, street gardens, greening forests, greening squares and plazas, greenways and

sports grounds within Shanghai's outer-ring. In recent years, the issue has been increasingly discussed through the concept of environmental justice (Wolch et al., 2014). For example, from a distributive perspective, Zhu et al. (2019) revealed that in neighbourhoods that are located in densely developed areas in Guangzhou, parks and playgrounds are scarce, while Xing et al. (2020) found significant disparity of park accessibility between different age groups of young people in Wuhan. However, no studies systematically explore park accessibility in Chinese cities from the pluralistic perspective that goes beyond distributive justice.

This article applies the pluralistic concept of environmental justice (including distributive, recognition, procedural, participatory justice and critical environmental justice studies) to present the equitability of park accessibility between people across different socioeconomic strata in the metropolitan region of Shanghai. Using neighbourhood committee (*juweihui* in Chinese)[2] as the basic research unit and based on China's 2000 and 2010 population census, the article discusses how urban China's unique political economic system and power

[2] Urban China's hierarchical administrative structure is comprised of the following levels: municipal, district, sub-district, and neighbourhood committee (*juweihui*). *Juweihui* is the lowest semi-administrative unit in urban China. *Juweihui* can either be luxury gated and villa communities with high housing prices and rental, or ordinary communities with middle and low housing prices and rental. Normally, a *juweihui* in Shanghai contains around 4,300 people.

structure result in social and environmental injustice. The article is therefore able to advance the empirical scope of the concept of environmental justice, a Western-rooted concept advocating bottom-up empowerment and citizen participation within the authoritarian context. In this context power relation between the state and citizens result in a squeezing of civil space in the pursuit of deliberative opportunities with citizens left powerless and with no rights to influence the decisions of local governments, thereby leaving them marginalised in the urban development process. A deepened understanding of the concept of environmental justice can precipitate decision-makers to establish policies that benefit every stratum of society in urban China and facilitate civil empowerment and public participation in the development, implementation and enforcement processes of policies and projects.

3. The methods

Shanghai is the case city selected for this study. Shanghai has fast pace of globalisation development measured in terms of business activity, human capital and information exchange (Kearney, 2019) and is one of the most popular destinations for both domestic and transnational migrants in China (Wang et al., 2020). Shanghai has notably low per capita green space amongst global cities. According to the Shanghai Bureau of Statistics (2019), in 2018, per capita green space area in Shanghai is 57.52 m^2, which is much lower than other

global cities, for example 163.82 m^2 in Tokyo and 436.03 m^2 in London (United Nations Office for the Coordination of Humanitarian Affairs, 2018).

The main data sources for this study are the website of Shanghai Landscaping and City Appearance Administrative Bureau[3] and China's national population census in 2000 and 2010. These data sources provide information about the distributions of public parks and population in Shanghai. In 2010, the census incorporated foreign populations residing in China for the first time. Public parks built after 2010 in Shanghai are not included in order to be consistent with the population census data. In 2020, this study conducted semi-structured interviews to understand people's perceptions and opinions with respect to living conditions and park accessibility. These interviews helped understand park accessibility and environmental justice between people across different socioeconomic strata from pluralistic perspectives, for example whether they are provided with opportunities to be involved in the development process such as voicing their opinions, providing input into the process and

[3] In charge of the city's greenery and appearance, environmental hygiene, forestry and other related management services, Shanghai Landscaping and City Appearance Administrative Bureau also has the power to both deliver new park development proposals to professional institutions for feasibility studies and planning, and to approve all park spatial planning, upgrading and renovation. Each park manager has to routinely report their park's information and operation status to this bureau. Therefore, this bureau has first-hand data about all parks in Shanghai including, names, areas, locations and whether an entry fee is charged.

communicating with the local government. This study also collected secondary data including government reports and newspaper articles as well as participatory observation.

This study covers Shanghai's metropolitan region, which is around 35 km outward from the People's Square (Shanghai's city centre). This region consists of 16 districts (Jing'an, Huangpu, Xuhui, Hongkou, Yangpu, Zhabei, Pudong, Putuo, Changning, Baoshan, Minhang and parts of Songjiang, Fengxian, Jiading, Chongming and Qingpu), key development areas (Songjiang New City, Jiading New City, Nanqiao New City and Qingpu New City) and 4,669 *juweihui*. This region has an urban landscape, higher population density (occupying 88.3% of Shanghai's total population in the 2000 census and 89.2% in the 2010 census) and less park resources and green space compared with Shanghai's rural areas; park accessibility is thus a pressing issue in this region. Shanghai's rural areas are outside of our research region and have a rural landscape and lower population density. Located in the south of the lower reaches of the Yangtze River, these rural areas have abundant farmland and paddy fields with green space that is visible and accessible almost everywhere.

We found that the region within the outer-ring (Shanghai's urban built-up area) occupies only 10% of the total area of Shanghai's metropolitan region, but contains most of the available

parks. In total, we found 167 public parks: 111 parks opened before 2000 and 56 parks opened between 2000 and 2010. Thirty-eight of the 56 parks are distributed within the outer-ring (Figure 1). One hundred and eleven parks out of the 167 parks are within the outer-ring and the closer to the city centre. Next, we classified parks in Shanghai as free-entry parks or pay-to-entry parks. Whether a park charges an entry fee or not affects people's accessibility for two reasons. First, if people want to visit parks but need pay for entry, this causes an economic burden especially for lower-income people. Second, pay-to-entry parks usually have fixed opening hours and access controls so people cannot visit these parks whenever they want. There are 136 free-entry parks, mainly located within the outer-ring and 31 pay-to-enter parks, mainly distributed outside the outer-ring. In terms of residential location, according to Yang et al. (2015), the majority of Shanghai's total population are local people with blue collar professions, people with white collar professions, and rural migrants from other parts of China, mostly concentrating outside the outer-ring. In contrast, most foreign people, people from Hong Kong, Macau and Taiwan and people with white collar professions in the highest income bracket are concentrated within the outer-ring and comprise the minority of Shanghai's total population.

Insert Figure 1 here.

This study classified the population in Shanghai according to their residential locations, nationalities and *hukou* status. The latter two categories include the foreign citizens and

Chinese citizens (people from Hong Kong, Macau and Taiwan and mainland citizens with and without Shanghai *hukou*). For residential location, this study calculated an average occupation index of community residents to reflect their average level of socioeconomic status according to the occupational categories in the population census. The method of assigning points to occupational categories is as follows: managers of large enterprises and institutions (7 points), professionals (6 points), clerical personnel (5 points), commercial service personnel (4 points), production, transportation and equipment operation related personnel (3 points), agriculture, forestry, animal husbandry and fishery related personnel (2 points) and unemployed people (1 points). The method is based on the findings of previous studies, such as Qiu (2014). Then, according to the occupation index in different communities, the study categorised communities in Shanghai as blue collar communities (index lower than 3.5), white collar communities (index between 3.5 and 4.8) and wealthy white collar communities (index higher than 4.8). In 2000, Shanghai had 3,813 blue collar communities, 1,859 white collar communities and 75 wealthy white collar communities. In 2010, there were 1,536 blue collar communities, 3,298 white collar communities and 913 wealthy white collar communities. The proportions of the population living in different types of communities also varied. In 2000, 45.6% lived in blue collar communities, 53.0% in white collar communities and 1.4% in wealthy white collar communities; while in 2010, the numbers were 23.1%, 63.3% and 13.5% respectively.

Two measurement approaches were adopted to assess Shanghai's park accessibility from a distributive perspective. One measurement approach includes: 1) the average distance of different groups of people to the closest park; and 2) the distribution proportion of different groups of people in *juweihui* with varying distances to the closest park. We adopted the direct distance from the geographic centroid of *juweihui* to the geographic centroid of the closest park. We used geographic centroid because both *juweihui* and parks are polygonal and may have multiple entry doors. A *juweihui* is already a very small spatial unit with even population distribution, hence population weighted centroid is not appropriate. We used population-weighted average distance, which is from all *juweihui* that one specific group of people distribute to the closest park, as the average distance of this group of people to the closest park[4]. We then divided *juweihui* in terms of their distances to the closest park, and counted the distribution proportion of one group of people in each *juweihui*[5]. Another useful

[4] The formula to calculate the average distance of a group of people to the closest park is $D=\frac{\sum p_i * d_i}{P}$
D: the average distance of a group of people to the closest park; p_i: the total number of this group of people in one *juweihui*; d_i: the distance from the *juweihui* to the closest park; P: the total number of the group of people in Shanghai.

[5] Dividing *juweihui* into five categories according to their distances to the closest park; I category: 0-0.5 km; II category: 0.5-1 km; III category: 1-2 km; IV category: 2-5 km; V category: 5 km and above;
Then, for example, the formula to calculate the distribution proportion of one group of people in *juweihui* with 0-0.5 km distance to the closest park: $P_{\mathrm{I}} = \sum p_{\mathrm{I}i}$; $p_{\mathrm{I}i}$: the total number of one group of people in the *juweihui* that have 0-0.5 km distance to the closest park; P_{I}: the total number of one group of people that have 0-0.5 km distance to the closest park; $\frac{P_{\mathrm{I}}+P_{\mathrm{II}}+P_{\mathrm{III}}+P_{\mathrm{IV}}+P_{\mathrm{V}}}{P}$=100%, P is the total number of the group of people in Shanghai.

measurement is the spatial congestion of urban parks for different groups of people[6]. Due to the extremely high population density in Chinese mega cities such as Shanghai, parks are likely to become overcrowded even though they may be close to a particular *juweihui.* As a result, people may not be willing to visit the park. Therefore, park accessibility measured only by distance cannot fully reflect park accessibility from a distributive perspective.

4. Park accessibility from a distributive perspective

This section discusses park accessibility in Shanghai from a distributive justice perspective. The measurements include the average distance to the closest park, the distribution proportion in *juweihui* with varying distances to the closest park, and the spatial congestion of parks.

4.1 The average distance to the closest park

As our data shows, although there are more parks after the year 2000, the average distance to the closest park for the total population increased from 2.3 km in 2000 to 2.6 km in 2010. This is because population increased at a rate faster in the urban fringes and suburban areas

[6] Spatial congestion of urban parks refers to the actual number of people per unit area of the park (people/mu; 1 mu is 666.6 m^2). It constructs a Voronoi diagram as the park area and then calculates the ratio between the area and the number of people within this area. The characteristic of using a Voronoi diagram as the park area is that *Juweihui* within the park area is closer to the centre of the Voronoi diagram than any other centres.

than the rate of increase in the number of parks. The data shows that foreign residents have the shortest average distance to the closest park while mainland citizens without Shanghai *hukou* have the longest average distance to the closest park. As Table 1 below shows, in the 2010 population census, the distance of mainland citizens without Shanghai *hukou* to the closest park is 3.35 km, 1.34 km for foreign residents, 1.94 km for people from Hong Kong, Macau and Taiwan and 2.05 km for mainland citizens with Shanghai *hukou*. Comparing the data between 2000 and 2010, it is found that the average distance to the closest park for mainland citizens with Shanghai *hukou* slightly decreases from 2.21 km to 2.05 km, and for mainland citizens without Shanghai *hukou*, the number increases from 2.85 km to 3.35 km. Considering only free-entry parks or only pay-to-enter parks could lead to decreased numbers of parks and subsequently increase the average distance to the closest park for all groups of people.

The average distance to the closest park between different types of communities highlight more obvious gaps. Blue collar communities have the longest average distance to the closest park compared with white collar communities. For example, in 2010, the average distance of blue collar communities to the closest park is 6.72 km, which is three times higher than for white collar communities and five times higher than that of wealthy white collar communities (see Table 1 below). The difference in the average distance to the closest park between blue

collar and white collar communities is much higher than the difference between white collar and wealthy white collar communities. Between 2000 and 2010, the average distances of all three communities to the closest park increased; with blue collar communities increasing the most. This indicates that they now live further away from parks and their accessibility to parks has worsened.

Insert Table 1 here.

4.2 The distribution proportion in *juweihui* with varying distances to the closest park

As Table 2 below shows, in 2010, about 25% of foreign residents were able to reach the closest park within 500 metres of their *juweihui* while less than 20% of people from Hong Kong, Macau, Taiwan and mainland China citizens with Shanghai *hukou* were able to do so. For citizens without Shanghai *hukou*, the proportion is just 6.3%. If the walkable distance to the closest park from the *juweihui* is increased to 2 kilometres, about 81.8% of foreign residents were able to walk to the closest park and about 70% of the group comprising people from Hong Kong, Macau, Taiwan and mainland citizens with Shanghai *hukou* were able to do so. Yet for citizens without Shanghai *hukou*, the proportion is just 37.4%. Comparing 2010 data with 2000, the number of mainland citizens with Shanghai *hukou* are able to reach the closest park within 500 metres increases from 16.3% to 17.6%, while for citizens without

Shanghai *hukou*, the number decreases from 8.6% to 6.3%. Within two kilometres, there is not much change for mainland citizens with Shanghai *hukou*, while for citizens without Shanghai *hukou*, the number decreases largely from 48.6% to 37.4%. However, 17.2% of mainland citizens without Shanghai *hukou* are able to reach the closest park in five kilometres and above from their *juweihui* in 2000, while in 2010, the number increased to 22.7%.

The proportions of people across all socioeconomic strata living in *juweihui* within one kilometre of parks decreased, indicating a shortage of urban parks. In our study, the higher that one's socioeconomic status was, the more likely it was that they lived in a *juweihui* close to parks. For example, as Table 2 below shows, in 2010, less than 1% of blue collar people lived in a *juweihui* within one kilometre of parks, while the number was 10% in 2000. Nearly 70% of blue collar people lived in *juweihui* five kilometres or more to parks, demonstrating that the majority of blue collar people lived further away from park resources. In contrast, more than 30% of white collar people resided in a *juweihui* within one kilometre of parks. The difference between blue collar and white collar is much larger than the difference between white collar and wealthy white collar. Between 2000 and 2010, more wealthy white collar people lived in a *juweihui* within 500 metres from parks (see Table 2).

Insert Table 2 here.

4.3 Spatial congestion of urban parks

Population density within the outer-ring is larger than outside of it in Shanghai. However, as most parks, especially free-entry parks are concentrated within the outer-ring, the spatial congestion of parks within the outer-ring is lower than outside of it. The average spatial congestion of the closest park to the *juweihui* in Shanghai's metropolitan region is 3,190 people/mu[7]. Comparing 2000 and 2010 data, the spatial congestion of parks within the outer-ring decreased. However, outside of the outer-ring, it increased.

In 2010, mainland Chinese citizens with Shanghai *hukou* had the highest spatial congestion which is about 3,337 people/*mu*. People from Hong Kong, Macau and Taiwan had the lowest spatial congestion, which is 2,910 people/*mu*. Foreign people and mainland Chinese citizens without Shanghai *hukou* had slightly higher spatial congestion than people from Hong Kong, Macau and Taiwan. From 2000 to 2010, as more parks opened, the average spatial congestion of the closest park for both mainland China citizens with and without Shanghai *hukou* decreased. Looking at people with different occupations, between 2000 and 2010, the spatial congestion of the closest park for blue collar and white collar people decreased, but within a smaller range than that of wealthy white collar people. For example, as Table 3 shows, within

[7] 1 mu is 666.6 m^2

the 10 year period, the spatial congestion for wealthy white collar people decreased from 5,828 people/*mu* to about half of this number. This indicates that compared with blue collar and white collar people, wealthy white collar people have access to more park resources.

Insert Table 3 here.

5. Park accessibility from a recognition, participatory and procedural perspective

The empirical materials of this research show that there is also misrecognition of park accessibility of local blue collars and mainland people without Shanghai *hukou* and marginalised participation by these people in the decision-making and implementation processes of park development. It is noted all communities' names in this section are acronyms in order to protect the residents' privacy.

In places where foreign people, people from Hong Kong, Macau and Taiwan and wealthy white collar people gather, there are more parks with excellent design and complete equipment. Century Park is one of the largest parks in Shanghai's urban core areas. In 2010, amongst the 30 communities that were located within a one kilometer radius around Century Park, there were 7 communities with foreign people and people from Hong Kong, Macau and Taiwan occupying more than 10% of the communities' total population; and there were 4

communities with foreign people and people from Hong Kong, Macau and Taiwan occupying more than 20% of the communities' total population. The average occupation index of the 30 communities increased from 3.82 in 2000 to 5.33 in 2010, indicating that wealthier people have occupied these communities and Century Park. In order to further improve the hard infrastructure of the park, the Pudong New District government and other relevant government departments solicited public opinion regarding the reconstruction of the parks in responding to the public's needs. The public was well engaged through both online and offline channels and their responses around park walls, bathroom and lighting systems were incorporated in the reconstruction project (Pengpai, 2016).

Similar to the 30 communities that were located within a one kilometre radius around Century Park, in JY community in Jing'an district, foreign people and people from Hong Kong, Macau and Taiwan occupy nearly 40% of the total population. In JY community, the closest free-entry park, Xikang Park, is just 0.12 of a kilometre away; the closest pay-to-enter park, Xiangyang Park, is less than 2 kilometres; and between 1 km and 1.5 km, there are another two parks, Jing'an Park (1.066 km) and Jing'an Sculpture Park (1.414 km). It is worth noting that these parks were founded much earlier than the community: Xikang Park in 1951, Xiangyang Park in 1941(Figure 2) and Jing'an Park in 1953, demonstrating that the local government selected locations near parks to initiate land and property development.

This circumstance continues in Xuhui Riverside region (Figure 3), Shanghai's most recent urban development plan. Located in urban core areas where land resources are scarce, Xuhui Riverside region is called West Bund and has been built with a great living environment. The development is a joint product of the local government and private developers, who aimed to build a high quality central area for wealthier people. For example, developed by China Eastern Airline, *Yunjin Oriental* is a top-tier and high-end project comprising luxury hotels, shops and commercial housing. All of the commercial housing is large in size and extremely expensive such that only the wealthy can afford it. The local government has also planned to construct the longest green belt along Huangpu River in this region which will further benefit those who can afford to live in the area.

Insert Figure 2 here.

Insert Figure 3 here.

However, compared with the attention paid to wealthier people in terms of their park accessibility, Shanghai does not offer the same for local blue collar people and rural migrants (normally without Shanghai *hukou*), not to mention the inadequate opportunities provided to these groups of people to participate in the decision-making and implementation processes of park development. This suggests institutional discrimination and a lack of political interest in these people. In our research, such groups have confirmed that they are unable to influence

the government, and experience social and environmental injustice. Accompanying the extensive gentrification and redevelopment projects in Shanghai since the 2000s (He, 2010), a substantial proportion of local blue collar people have been involuntarily resettled to residential communities outside of the suburban outer-ring. These communities have fewer parks located close by, and those which are nearby charge an entry fee. For example, TJBY is a blue collar community in Minhang district and the closest park is Wujing Park which is around 4 km away. Citizens without Shanghai *hukou* also choose to live in the suburbs because of the lower rent. In CH community in Minhang district, where more than 80% of residents are citizens without Shanghai *hukou*, the closest free-entry park, Tian Garden, is about 5 km away. The closest pay-to-enter park, Shanghai Botanic Garden, is about 7 km away. Within 1.5 km of this district, there are no parks.

People in these communities have noticed this lack of parks and feel ignored by the government. Mrs. S lives with her husband and son in TJBY in Minhang district. She commented that:

"We want to visit the park frequently, but there are none nearby. The government will use the land to build more houses and sell".

Mr. K is a carpenter and lives with his wife and granddaughter in ZJNY in Minhang district. He advised that:

"The nearest park is Pujiang First Bay Park. It takes me about one hour walk there. Everyone wants to live close to the park for leisure and exercise, but the government never asks about our needs. The government builds too many roads around us which affects the living environment".

Mr. J in ZJNY is a cleaner and said:

"I have been resettled here for more than 10 years. There used to be a great natural landscape. But now there are no parks, no greenery and only apartments".

She was more direct:

"We are ordinary people and live in a poorer community. The government does not consider building parks here. The government builds more parks near rich communities".

The interviewee also mentioned that there was a park project in the area, but was replaced with housing. Although people reported this to the government, they received no responses. In addition, through site observation, we found that in a small park frequently used for leisure, it was poorly equipped with facilities and did not meet the needs of the majority of park users. This situation has been confirmed by interview. For example, Miss L has been living in RHXC community in Minhang district with her parents and grandparents for more than 20 years. Miss L said:

"Over the past 20 years, there are no new parks been built nearby and we have never heard that government plans to build new parks. The closest park is Xujiahui Park and to get there, it takes more than half an hour by bus. There is only a small patch of green space close to us which we do not call it park. This green space has always been occupied by a small group of people dancing so it is very noisy and there are no landscapes and facilities so young people like me seldom visit it. The government should ask for our opinions and build a real park to meet most people's needs".

6. Discussion and conclusion

This article finds significant social and environmental injustice in terms of park accessibility between people across different socioeconomic strata in Shanghai. People with higher incomes have the best park accessibility, and this includes a significant number of foreign people. They have the shortest average distance to the closest park, the highest distribution proportions in a *juweihui* within 500 and 2000 metres to the closest park and the lowest spatial congestion of the closest park. In contrast, people with lower socioeconomic status, mainly local blue collar people and rural migrants have the worst accessibility to parks in Shanghai. They have the longest average distance to the closest park, the highest distribution proportions in a *juweihui* between two and five kilometres and more than five kilometres to the closest park and the highest spatial congestion of the closest park. More importantly, these marginalised groups are excluded from decision-making and implementation procedures and their legitimate rights and interests continue to be deprived and not taken into account. This echoes the proposition of 'space of vulnerability' (Sharma-Wallace, 2016), whereby access to environmental justice is more difficult for those earning low-incomes and living in peri-urban regions (Gonzalez, 2019).

In China, the government makes the decision of development according to their needs and interests within a neoliberal practice. Citizens under this system do not have the rights and power to oppose development decisions and also do not have opportunities to participate in the development process representing a typical authoritarian mode of governance. As Walker (2012) indicates, the levels of recognition provided to different groups of people are determined by the state institution. The misrecognition of the rights, interests and situations of marginalised individuals and groups in Shanghai is the result of a capital accumulation-oriented development pattern, often through the powerful coalition between local governments and private developers. On the one hand, there is tremendous economic pressure on local governments to develop infrastructure and provide social welfare, but, on the other hand, China has a cadre evaluation system whereby a local official's political career is largely determined by their economic performance. For example, in a bid to attract global capital and elites, enhance global competitiveness and expand global functions, Shanghai prefers to cater to the needs of foreign and local elite people and provide them with a global lifestyle and high quality infrastructure and services (Wang and Lau, 2008) – this includes building the communities near Century Park and Xuhui Riverside region.

In theory, governments have the direct responsibility to promote social and environmental justice for people across all socioeconomic strata. However, in an overwhelmingly neoliberal

context like China, this is often difficult because the powerful coalition is not likely to relinquish their material interests. As Newell and Mulvaney (2013) discuss, any attempts to restructure the system and address injustice issues within the existing system will encounter immense political and economic resistance and institutional challenge. As Lin and Kao (2020) have found, the recent zero waste neighbourhood construction scheme will eventually still be operated with the growing participation of private entrepreneurs in the neoliberal regime. The deprivation of environmental rights and the suffering of environmental inequalities of the least powerful populations are therefore not unintentional and but serves the objectives of the coalition between local governments and private developers (Hsing, 2010). The failure to empower politically and socioeconomically disadvantaged groups and environmentally vulnerable communities is pervasive (Evans and Phelan, 2016). This article demonstrates the impacts of institutional barriers on individual social and environmental justice amid China's ongoing transition, in which people and the society are more individualistic than ever before with growing voices appealing for social equality and rule of law.

As a rapidly developing global city and a highly socioeconomically heterogeneous metropolis, Shanghai needs to increase recognition of the needs of marginalised individuals and groups and address the challenges faced by its most vulnerable. We therefore expect that

the findings of this article can raise attention toward environmental justice amid China's rapid urban development and transformation. For example, empowering marginalised groups to promote a self-governing authority and enhance political, economic and social participation in decision-making and implementation processes. While this may be difficult because it counterbalances the authoritarian mode of governance and a hegemonic political economic system and power structure, it is important to ensure that people across all socioeconomic strata enjoy equitable rights and interests given that China is building an impartial society. We believe that with a number of positive changes in China, such as an emphasis on ecological civilisation with a proper relationship between economic development and environmental protection, the country has the potential to integrate the concept of environmental justice with its current mode of governance and political economic system.

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Table 1. The average distances of different groups of people to the closest park (km)

	All Parks	Free-entry parks	Pay-to-enter parks
Nationality and *hukou* status			
Foreign people (2010)	1.34	1.56	4.35
People from Hong Kong, Macau and Taiwan (2010)	1.94	3.02	4.89
Mainland citizens with Shanghai *hukou* (2000/2010)	2.21/2.05	2.71/2.65	7.57/7.36
Mainland citizens without Shanghai *hukou* (2000/2010)	2.85/3.35	3.46/4.49	8.42/9.37
Community types			
Blue collar communities (2000/2010)	5.41/6.72	6.17/8.22	14.49/17.43
White collar communities (2000/2010)	1.43/2.17	1.94/2.93	5.98/8.28
Wealthy white collar communities (2000/2010)	1.04/1.27	1.60/1.76	3.24/5.23

Table 2. The distribution proportions of different groups of people in *juweihui* with varying distances to the closest park (%)

	0-0.5 km	0.5-1 km	1-2 km	2-5 km	5 km and above
Nationality and *hukou* status					
Foreign people (2010)	22.9	26.4	32.5	16.0	2.3
People from Hong Kong, Macau and Taiwan (2010)	16.1	23.2	27.5	23.9	9.3
Mainland citizens with Shanghai *hukou* (2000/2010)	16.3/17.6	31.4/32.3	21.9/21.3	16.4/17.2	14.1/11.6
Mainland citizens without Shanghai *hukou* (2000/2010)	8.6/6.3	17.7/13.7	22.3/17.4	34.2/39.9	17.2/22.7
Occupation					
Blue collar (2000/2010)	4.0/0.2	7.8/0.7	8.5/4.4	19.4/27.1	60.3/67.5
White collar (2000/2010)	10.8/7.7	20.3/14.8	16.7/14.7	6.4/13.9	45.8/48.9
Wealthy white collar (2000/2010)	8.1/9.4	30.7/20.7	11.5/17.3	3.6/6.7	46.2/45.9

Table 3. The spatial congestion of urban parks for different groups of people (people/mu)

	The spatial congestions	
	2000	2010
Nationality and *hukou* status		
Foreign people		2924
People from Hong Kong, Macau and Taiwan		2910
Mainland citizens with Shanghai *hukou*	5011	3337
Mainland citizens without Shanghai *hukou*	3753	2973
Occupation		
Blue collar	3826	2746
Ordinary white collar	4880	3016
Senior white collar	5828	2791

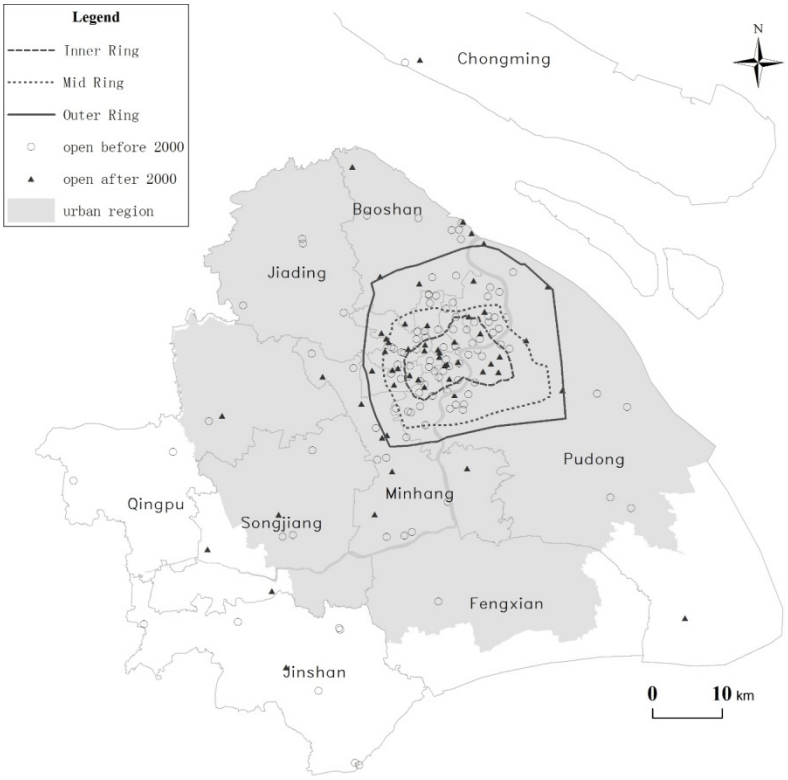

Figure 1 The distribution of parks in Shanghai

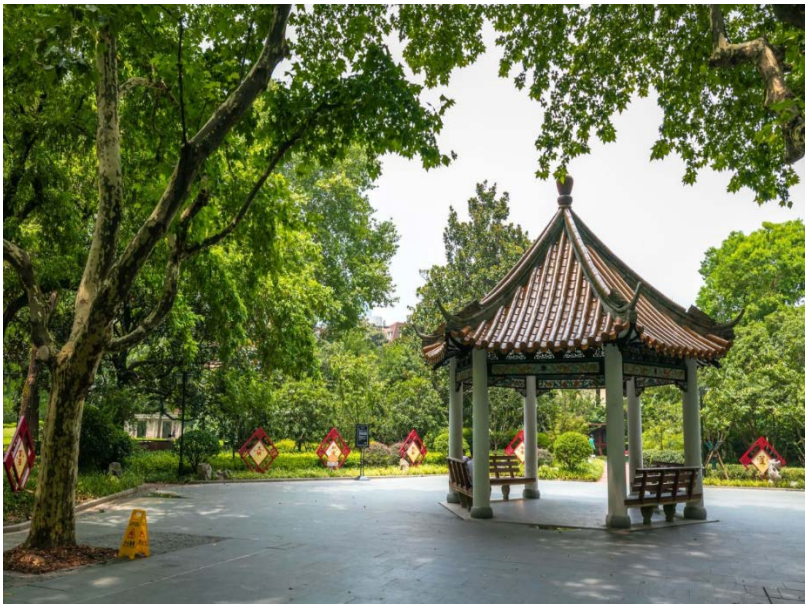

Figure 2 Xiyang Park in Shanghai (Source: internet)

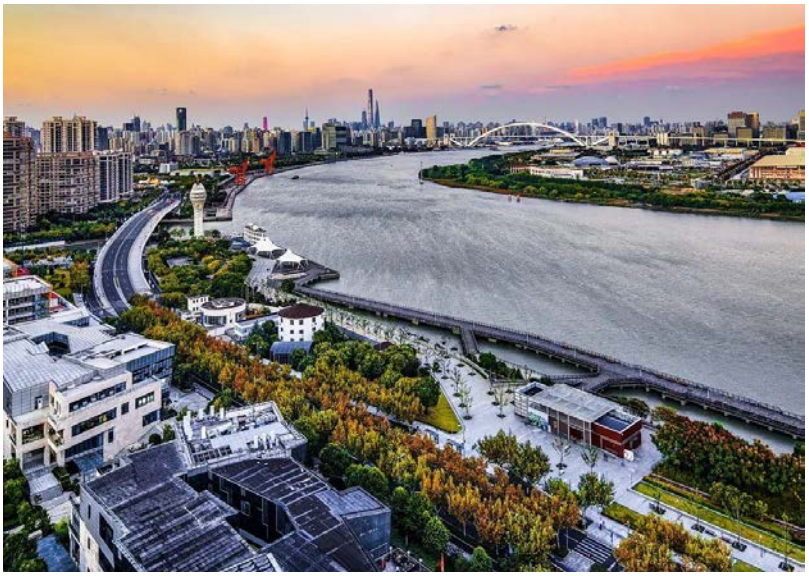

Figure 3 Xuhui Riverside region in Shanghai (Source: internet)

Title

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Conflicts of Interest statement

The authors declare no conflicts of interest with respect to this research, authorship and publication of this article.