
Research Paper

Waterfront Urban Regeneration in Post-industrial Shanghai:

Publicness and Policy Suggestions for Making More Inclusive Public Spaces

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Abstract

Waterfront areas in the city were occupied by industrial factories and freight ports in industrial age because of their convenience for transporting materials and resources by waterway. In the post-industrial era, as the role of the city gradually shifts from the 'production centre' to 'consumption centre', redeveloping waterfront industrial areas has become a global trend. In China, the city of Shanghai begins to redevelop its waterfront industrial areas since 2002. A main goal of the redevelopment in Shanghai is to 'return the river to the public', namely to open up the enclosed industrial compounds and transform industrial sites in the waterfront areas to public spaces. Focusing on the waterfront redevelopment and regeneration in Shanghai, this paper quantitatively assesses the publicness and quality of the newly created public spaces in three selected waterfront areas in the city. Drawing on the results of the empirical assessments, the paper argues that Shanghai has not achieved its goal of returning the river to the public yet. In response, the paper proposes some suggestions for policy-making aiming at improving the publicness and inclusiveness of public spaces in post-industrial redevelopment areas in Shanghai and other cities in the global south.

Keywords

Urban regeneration, waterfront industrial sites, public spaces, publicness, policy suggestions

1. Introduction

Since the oil crisis in the early 1990s, redeveloping industrial areas in the city centre, especially waterfront areas which were widely used as heavy industrial sites and freight ports because of their convenience for transporting materials and resources by waterway, has gradually become a global urban development trend (Roberts, Sykes, 2000). The primary goal of redeveloping waterfront industrial sites, as many policy-makers have claimed, is to open up the closed industrial areas to the general public, transforming waterfront areas from production spaces to open public spaces. However, because of the rise of neoliberalism since the 1980s, many of those urban redevelopment projects are fueled by private investments and, as a result, property-led (Obeng-Odoom, 2013; Wang, Wu, Zhou, 2020). The involvement of and reliance on private investments, as many scholars have pointed out, lead to privatisation and gentrification of the redeveloped areas. In recent decades, as a result, we have seen in Cardiff, Sydney, Baltimore and many other global cities that growing numbers of waterfront industrial areas have been transformed to places such as luxury waterfront apartment, fine restaurants, high-end shopping centres and casinos.

Many scholars have raised their doubts about the publicness of public spaces in those areas, arguing that those spaces only serve for customers and investors rather than the general public (e.g. Harvey, 1990). Those waterfront urban regeneration areas, in this sense, are often pseudo-public spaces. Current research on the publicness of waterfront public spaces in post-industrial areas, however, mainly focuses on Western cities but tend to neglect cities in the global south.

When it comes to China, however, the country desires more analysis. The transformation of waterfront industrial areas in Chinese cities is massive. In Mao Zedong's regime (from 1949 to 1978), based on the communist ideology, Chinese cities served as 'industrial production centres'. In Maoist China, therefore, urban growth was driven by industrialisation and the urban space was organised based on the forms of production introduced by the Soviet-influenced Socialist state, while urban functions in commerce, finance and services were suppressed (Lu, 2011). As a result, in Mao's era, waterfront areas in Chinese cities, thanks to their advantages in waterway transportation, were full of industrial factories and storehouses which were not open to the general public.

Since 1979, China adopted a market-oriented economic reform which turns Chinese cities from industrial production centres to consumption ones (Wang, 2019). And Shanghai was planned to be the multifunctional economic centre of China in the reform era. The economic reform, as a result, leads to a large number of urban lands in Shanghai's city centre, especially the waterfront areas, which were used for non-commercial purposes in the pre-reform era being gradually redeveloped in recent decades. China's economic reform, in David Harvey's (2007) words, is 'neoliberalism with Chinese characteristics'. Private investors are encouraged to participate and invest in the redevelopment of industrial areas. As a result of the reliance on private capital, to what extent the waterfront industrial sites are public after redevelopment? Can they provide genuine public spaces that can contribute to improving the inclusiveness of the city? What policies are needed to make those spaces more inclusive?

Through case studies in Shanghai, this paper tries to explore answers to those questions. In what follows, the paper starts with outlining the historical process of the development and redevelopment of waterfront areas in Shanghai. After that, in the third section, the paper explains and justifies the methodology adopted for empirically assessing the publicness of waterfront public spaces in this research. On this basis, the fourth section then presents the results of the empirical case study and discusses main findings of this research. The last section proposes policy suggestions which aims at improving the publicness and inclusiveness of redeveloped industrial areas in Shanghai and other cities in the global south.

2. Regenerating waterfront industrial sites in Shanghai: a context

Soon after 1949 when the People's Republic of China was founded, the central government carried out a series of industrial reforms which make Shanghai the centre of industrial development and the powerhouse of economic growth for China (Wang, Chen, 2018; Ding, Wu, 2020). As a result of Shanghai's important role in China's industrial development, in the 1950s, over 80 percent land in the city centre of Shanghai were occupied by industrial factories. What is more, most of those factories were located at the waterfront areas of Huangpu River, the major river passing through Shanghai. The river offers those factories convenience for transporting materials and resources by waterway. At that time, Shanghai's industrial development was mainly relied on cotton, textile and paper production. Factories producing those products need large numbers of coal as the main source of energy. And, during the 1950s and 1960s, the main method to ship heavy materials such as coal is by waterway. In the 1980s, because of the growing demand for cargo transportation, Shanghai Municipal Government made plans to build more container ports and two new large-scale freight handling areas for foreign trade along Huangpu River. As

a result of those plans, by 1984, Shanghai has become one of the few cities in the world that have the ability to handle more than 100 million tons of cargo each year.

However, in 1992, when the industrial and freight transport sites along Huangpu River are still growing, the 14th National Congress of the Communist Party of China, was held in Beijing. In the congress, the central government made a decision to reduce China's secondary industry such as textile-manufacturing and ship-building and replace them with tertiary industry such as financial services and tourism (Ding, Wu, 2020). In response to the national level shift from secondary industry to tertiary industry, Shanghai, at the local level, begins to transform itself from a production centre to a consumption one (Ding, Wu, 2020). Nevertheless, by the end of 2000, approximately 2500 hm² of land along Huangpu River were still occupied by industrial factories. This figure accounts for 37.5 percent of the total waterfront land.

To further promote the redevelopment of waterfront industrial areas, Shanghai Municipal Government issued a 'Huangpu Riverside Comprehensive (Re)Development Plan' in January 2002. According to the plan, 73.3 km² waterfront urban land with a length of 85 kilometres along the banks of Huangpu River need to be redeveloped (Li, 2009). The main goal of redeveloping the waterfront areas, as the plan clearly states, is to 'return the river to the public' (China Natural Resources News, 2019). Through conducting massive redevelopment, the plan intends to replace the industrial production and freight transport activities in the waterfront areas with financial, tourist and residential functions.

Moreover, the main way to realise the goal of 'returning the river to the public', according to the plan, is to 'create high quality public spaces in the waterfront areas'. The plan requires that, after redevelopment, public spaces along the waterfront areas should be continuous and, in this way, allow the public to walk through the whole 85 kilometres long riverbanks. Guided by this requirement, by early 2018, over half of the Huangpu River waterfront development has been completed. As a result, 45 kilometres long public spaces along the river have already been made connected and accessible by walk. However, as many Western theorists have pointed out, the physical accessibility of urban public space does not necessarily lead to high public quality of the space. Then, to what extent the waterfront public spaces are really public? Is the plan's goal of 'returning the river to the public' really achieved? Addressing those questions needs to adopt a comprehensive methodological approach. The methodology is to which we now turn.

3. Methodology

3.1 Case selection

The 'Huangpu Riverside Comprehensive (Re)Development Plan' divides the waterfront of Huangpu River into four main areas: Xuhui Riverside, 2010 Expo Site, North Bund and Yangpu Riverside. By October 2020, except the North Bund Area, all the other three waterfront areas are already open to the public. People are able to get access to and carry out their daily urban activities in all the public spaces in those three waterfront areas. For this reason, we are now able to assess the quality of public spaces in all the three areas. These three areas, therefore, are selected for case studies of this research.

Xuhui Riverside is part of Xujiahui area which is one of the most prosperous business areas in Shanghai. Xuhui Riverside area is 7.40 km² in size. The riverbank is 7-8 km in length. It includes 5 sub-districts and over 70 land parcels that were occupied by industrial factories, warehouses and transportation ports before the redevelopment (Ding, Wu, 2018). The redevelopment of Xuhui Riverside area started in 2007. By 2012, 116 factories and over 3500 households were removed from the waterfront area, making over 1.3 km² land for redevelopment (Zhang, 2010).

2010 Expo Site is a waterfront area which is 5.28 km² in size. During May and October 2010, this area was used for holding the World Expo (Wu, 2009). A large number of important factories in China's industrial

history were located in this particular waterfront area including Jiangnan Shipyard, Shanghai Steel Factory and Nanshi power station. Redevelopment of this area has removed 272 factories, including over 10 important historical factories, from this area (Zhang, 2015). However, although all industrial production activities are removed from the area, not all factories are demolished. Instead, as many as 2 million m² floor area, accounting for 12.5 percent of the total floor area of industrial building in this area, were preserved for adaptive reuse (Zhang, 2010).

Yangpu Riverside area just completely opens to the public recently in 2019. With 15.5 km waterfront bank, this area has the longest industrial heritage belt along Huangpu River (China Natural Resources News, 2019). Yangpu Riverside area has over 100 years industrial history and accommodates many important industrial factories. This industrial area therefore plays an important role in Shanghai's economic development. In the 1950s, factories in this area contributed 26 percent of the overall industrial output of the entire Shanghai. After the redevelopment, 5.5 km waterfront public space and 200 thousand km² green land have been created in this area.

3.2 An analytical framework for assessing the publicness of urban space

In the literature, there are four analytical frameworks developed by Markus (1993), Iveson (2007), Németh (2012) and Wang (2019) that can be used to empirically assess the publicness and inclusiveness of urban public spaces. However, Markus's (1993) framework oversimplifies the influencing factors of the publicness of space. Iveson's (2007) work fails to trace fully the complex interactions between the distinct dimensions of publicness. Németh's (2012) work, although provides a feasible framework in comparison with previous models. However, for each influencing factor, what exactly need to be investigated in empirical studies are still very vaguely defined in Németh's framework.

A more holistic and pragmatic framework than those of Kilian (1998), Iveson (2007) and Németh (2012) is proposed by Yiming Wang (2019) in a recent work. Wang (2019), building upon an in-depth review of the existing literature (e.g. Kohn, 2004; Carmona, 2010; Varna, Tiesdell, 2010; Nemeth, 2012; De Magalhães, Freire Trigo, 2017), develops a framework to analyze the publicness of urban public space. The table presented below shows Wang's analytical framework. This framework consists of twenty different indicators. For each indicator, a grading system from -2 (most private) to 2 (most public) is given with a descriptor at each end of the grading system and an intermediate one. To make the index more reliable and objective, the descriptors do not weigh the factors. Instead, they are either able to be examined directly from on-site documents or directly observable according to their presence and intensity. The overall score for an urban space represents its degree of publicness. The overall score should be calculated by aggregating the score for all indicators on an arithmetic basis. The higher the overall score, the more public the space is. The highest possible overall score for a given space is 40 (very high degree of publicness); the lowest score is -40 (very low degree of publicness). Positive scores represent the 'more public' situation of a space; while negative scores represent 'more private' urban space.

Wang's framework overcomes the weaknesses of previous simplistic conceptions of publicness and takes into account the complexities of publicness of space. The framework provides a grounded tool that can be used to systematically guide empirical studies. This research applies Wang's framework to assess the publicness and quality of the public spaces in the three redeveloped post-industrial waterfront areas introduced in section 3.1. Qualitative data were collected through direct-observations and participant-observation, while quantitative data needed were collected through direct-counting on site, using hand-held tally counters. On-site documents such as rules for using the space and shopping guides were collected during the fieldwork. Multiple visits to each selected case were conducted on weekdays between May and September, 2020. Every site visit lasted from 10:00 to 20:00, when the highest usage generally occurs.

		Scoring criteria		Public (2)	1	Neutral (0)	-1	Private (-2)
Indicators								
Design and Plan Dimensions	Function	Support of unplanned use	The design of the space offers users three or more choices of activities and means of carrying them out	-	One or two more choices of activities are offered by the design of the space	-	Design/plan only support fixed functions and activities	
	Urban-scale design	Location and physical Connection (Physical accessibility)	Centrally located within the overall movement network, well connected with surrounding urban area to facilitate movement-to and movement-through the space for different groups	-	Connected with the overall movement network and surrounding urban area, but little movement-to and movement-through the space is facilitated	-	Physically isolated and cannot be reached from surrounding area	
		Visual permeability	Visually permeable from surrounding urban area	-	Visual accessible, but the visual connection is obscured or camouflaged by view impediments or grade changes	-	"Disappeared" (Cannot be found) from surrounding area	
		Thresholds and gateways	No distinguishable thresholds and entry points exist	-	Designed to be sharply distinct from the surroundings, and look or feel like being isolated or escaping from the whole urban context	-	Explicit thresholds and entrances are applied (e.g. walls, gates, and checkpoints)	
Architectural-scale design	Availability of facilities (Seating place, restroom, and microclimate)	Majority of facilities (e.g. restrooms and sitting places) are provide and designed to be easily accessible and used by the general public for free	-	Majority of facilities are provided for fee-paying customers	-	No facilities provided for public use		
	Human needs (Comfort & relaxation; passive engagement; and active engagement)	The design of public facilities meets all human needs: "comfort", "relaxation", "passive engagement", and "active engagement"	-	Public facilities are inconvenient to use and can only meet part (half) of the four kinds of human needs	-	Public facilities deliberately designed to be uncomfortable and inconvenient to use, and no human need is met for public use		
Manipulation Dimensions	Ownership	publicly owned	-	public-private-partnership	-	privately owned		
	Agency	Operated or controlled by public agents or agencies	-	Public-private-partnership	-	Operated or controlled by private or for-profit agencies		
	Interest	The target beneficiaries is the public; Majority of the benefits and profits of the service of the space (e.g. revenue, power to control) are received by the public	-	The benefits and profits of the space's operation is shared by the public and the proprietors	-	The target beneficiaries is the proprietors; Majority of the benefits and profits of the space's operations are received by the proprietors		
	Management & control	Purpose	To protect the safety of all the public, and promote a 'responsible' freedom	-	To protect the safety and freedom of certain social groups	-	To protect the safety of property or an investment	
		Methods and its Presence	No "direct" control instruments (e.g. security guards, and security cameras) evident	-	"direct" control instruments are used, but subtle/non-visible in the space	-	"direct" instruments are used and highly visible in the space	
Rules	Presence & Purpose	Visible sets of rules are posted in the space to maintain the public order and protect people from harm (e.g. no disturbing other users; no disorderly behaviour)	-	Rules for use the space are adopted, but subtle/non-visible in the space	-	sign announcing "private space" (or "no enter") exists; only insiders are allowed to enter and use the space in private interest (e.g. profitability or marketability)		
Use Dimensions	Arrangement and enforcement	Arranged by public authorities, and enforced by local police	-	arranged by public authorities, enforced by private security	-	arranged by property owner or manager, enforced by private security		
	Perception	Cultural understanding	The space gives users 'a sense of community'	-	The space is a mixture of community and strangers	-	The space is 'a community of strangers'	
		Social engagement	Most activities in the space are "optional" or "social activities" (e.g. leisure, observe others and interacting with others)	-	Similar amounts of "optional (or social) activities" and "necessary activities" occurred in the space	-	Most activities in the space are "necessary activities" (e.g. waiting for bus; going to school/work)	
	Accessibility (information & Resources)	Information	Information about the space is publicly accessible (e.g. clearly announced or posted in the space or on its website)	-	Information about the space is only accessible to certain groups of the public (e.g. consumers)	-	Information about the space is not publicly accessible (e.g. only accessible to employees or insiders)	
		Resource	Majority of resources are accessible to all the public for free	-	Majority of resources are accessible to certain groups (e.g. potential consumers); or resources are accessible to majority of the public, but fee for service is required (e.g. café, bar, restaurant)	-	Majority of services and resources are only accessible to employees and members (e.g. club, residential community)	
	Users/Uses	Variety	No particular social groups are excluded	-	Particular social groups are excluded, but no clearly visible rules posted	-	Particular social groups are excluded by rules clearly visible in the space	
		quantity	The space is busy	-	some users present	-	empty or very few users present	
quality		Three or more kinds of spontaneous uses occur in the space	-	Only one or two kinds of spontaneous use occur in the space	-	Only planned use or uses occur in the space		

Table 1. An analytical framework for assessing the publicness of urban space. Source: Wang (2019)



4. Results and discussions

Using the framework presented in Table 1, the publicness and quality of public space in the three redeveloped waterfront post-industrial areas in Shanghai can be quantitatively assessed. Table 2 shows the results of the assessment. Based on the results, five key findings can be identified. In what follows, we will elaborate and discuss those findings further:

Study Spaces		Dimensions/Indicators	Xuhui Riverside	Expo Site	Yangpu Riverside
Design and Plan Dimensions	Function	Support of unplanned use	2	0	0
	Urban-scale design	Location/ spatial Connection	0	-2	-2
		Visual permeability	2	-2	-2
		Thresholds and gateways	2	-2	-2
	Architectural-scale design	Availability of facilities	0	-1	-1
		Human needs	2	1	2
Design dimensions score			8	-6	-5
Manipulation Dimensions	Ownership		0	2	2
	Agency		0	0	2
	Interest		0	-2	2
	Management & control	Purpose	-1	-2	2
		Methods and its Presence	0	0	0
	Rules	Presence & Purpose	0	0	0
		Arrangement & enforcement	0	0	2
	Management dimensions score			-1	-2
Use Dimensions	Perception	Cultural understanding	0	0	1
		Social engagement	1	0	2
	Accessibility	Information	0	0	2
		Resource	0	0	2
		Variety	2	2	2
	Users/ Uses	quantity	2	0	-2
		quality	2	-2	-2
Use dimensions score			7	0	5
Overall score			14	-8	10

Table 2. Results of the assessment. Source: according to fieldwork in Shanghai

(1) Although the redevelopment processes of the three waterfront post-industrial areas are similar, the publicness of public spaces in those areas vary significantly. As can be seen from the overall scores, Xuhui Riverside area receives a positive score of 14, which means this particular area is in a relatively high publicness situation. Similarly, Yangpu Riverside area's publicness is also in a good overall situation. It is scored a positive 10. However, in comparison of Xuhui Riverside and Yangpu Riverside, the publicness of Expo Site is much lower. It gets a negative score of -8, which indicates that public spaces in the Expo Site can hardly serve as real public spaces that can accommodate local citizens' authentic public social life. Then, what makes the degrees of publicness of the three waterfront areas so different after the post-industrial redevelopment? To find out answers to this question, more analyses of the results are carried out and discussed below.

(2) By issuing the 'Huangpu Riverside Comprehensive (Re)Development Plan', Shanghai municipal government tries to connect all public spaces along Huangpu River and make them as a systematic whole. However, as the assessment results clearly show, public spaces in different areas of the riverside are designed, managed and, as a result, used by the public in quite different ways. The post-industrial redevelopment results in public spaces in Xuhui Riverside area receive scores of 8, -1, and 7 for its design/planning, management and use dimensions respectively. Meanwhile, Expo Site is scored -6, -2, and 0 for its design/planning, management and use dimensions. And Yangpu Riverside area's scores for those three categories of dimensions are respectively -5, 10, and 5. No regularity and correlation can be seen from all the scores the three areas received. The irregularity and uncorrelation of scores indicate that the redevelopment plan does not well achieve its goal of systematically integrating all the public spaces along Huangpu River and making them designed, managed and used as a whole.

(3) In terms of spatial design and planning, the redevelopment does not make the waterfront areas along Huangpu River highly accessible in the post-industrial era. As revealed by the three study areas' overall design/planning-related scores, only Xuhui Riverside area gets a positive score of 8, while both Expo Site and Yangpu Riverside get negative scores of -6 and -5 respectively, which means these two waterfront areas, rather than open to the public, are being privatised or enclosed to a degree after the redevelopment. According to our fieldwork, Yangpu Riverside area, for example, is very poorly connected with the city's overall movement network. The metro subway system is not connected to this urban area. And there are only two to three bus stops along the 15.5 km long boarder of the area. Visitors who live in other parts of the city are very difficult to get to Yangpu Riverside by public transport. As for the Expo Site, to take another example, it is also located far away from metro subway stations and cannot be seen from the main city road. The area is separated from its surrounding urban areas by a series of construction sites which block the visual permeability of the waterfront area. As a result, this area is hard to find for people who want to carry out their urban life in waterfront public spaces.

(4) As the scores of the management-related dimensions show, two of the three studied waterfront areas, Xuhui Riverside and Expo Site, are managed in ways that do not encourage public activities to happen in the public spaces. The main reason behind this result is because many public spaces in those waterfront areas are managed by private agencies, rather than public ones such as police. The redevelopment of Xuhui Riverside area, for example, is to a large extent property-led. To attract investments, the local government sell a large portion of land in Xuhui Riverside to private developers and allow them to build office buildings and gated communities in the waterfront areas. On this basis, some existing industrial buildings are also sold to those capital investors who then reuse and transform those buildings to art galleries. In this way, the developers want to create a 'high-end' urban image of the Xuhui Riverside area and thus improve the land price of the area. An important result of the image-making strategy is that a number of private managed art galleries stand in the waterfront area of Xuhui Riverside. As tight social control schemes are applied in the public spaces surrounding those galleries, the existence of those privately managed art galleries helps the private social control schemes to mediate

with the public realm of the waterfront public spaces. People's freedom of conducting public social activities in the waterfront public spaces is therefore constrained to an extent. The property-led redevelopment strategy, in this sense, bring negative effects to the publicness of waterfront public spaces.

(5) Although most waterfront public spaces are not physically easy to access and the management of many of those spaces does not encourages public uses, as scores of the use dimensions reveal, after the redevelopment, people who doing their daily businesses in the post-industrial waterfront public spaces can still engage with the spaces in positive ways. Both Xuhui Riverside and Yangpu Riverside areas are scored positively. Xuhui Riverside gets a 7 score and Yangpu Riverside is scored 5. In Xuhui Riverside, although it is not well connected with the public transport system, in weekends when the weather is fine, there are always large numbers of people come to the public spaces in the waterfront areas by their private cars. Large quantity of people come to Xuhui Riverside and the social activities they conduct in the waterfront area appear a high level of variety. There are often a large group of teenagers playing their skateboards in front of an art gallery. Meanwhile, a small group of young people, sometimes mixed with some old ladies, are dancing at a plaza near the gallery. About one hundred meters away from the plaza is a landscape wood which has a wonderful view toward the river. In the wood, a large number of families are having their picnics. Similar scenes and activities can also be seen in Yangpu Riverside area and the Expo Site. However, as the surrounding blocks of these two waterfront areas are relatively less developed, considerably fewer people appear in the public spaces of those areas and activities occur in them are less various. This leads to, in terms of public use, a less public situation of Yangpu Riverside and the Expo Site.

5. Conclusion and Policy suggestions for making more inclusive waterfront public spaces in post-industrial Shanghai

The paper has introduced the context of the development and redevelopment of the waterfront industrial areas in Shanghai. On this basis, the paper, by adopting an analytical developed by Wang (2019), has carried out empirical assessments of the publicness of public spaces in three selected redeveloped waterfront industrial areas. The empirical study finds that (1) the degrees of publicness of public spaces in the three selected areas vary significantly, which results in that (2) the public spaces in the redeveloped industrial areas do not, as the local government wants, form a systematic network of open spaces along Huangpu River. This is because (3) most of the public spaces in the redeveloped waterfront industrial areas are not well connected with the overall movement network of the city and not easily accessible from their surrounding urban areas; Meanwhile, (4) a large number of the waterfront public spaces are managed in ways that do not encourage public uses, but (5) local residents still want to carry out their daily urban life in the waterfront public spaces and, as a result, engage with those public spaces in quite positive ways. Drawing on these key findings, the paper argues that the urban redevelopment and regeneration carried out according to 'Huangpu Riverside Comprehensive (Re)Development Plan' since 2002 has not successfully achieved its major goal of 'returning the river to the public' yet.

To achieve this important goal, we believe the following suggestions for policy-making are helpful: (1) the reason why current waterfront public spaces can not form a systematic network as a whole is mainly because the redevelopment of the three different industrial waterfront areas is carried out and organised by different district governments in Shanghai. Xuhui Riverside redevelopment is carried out by Xujiahui district government. The Expo Site redevelopment is conducted by Pudong district government. And the Yangpu Riverside regeneration is organised by Yangpu district government. Different district governments have different goals, concerns and limitations. These differences lead to the different

degrees of publicness of public spaces and different ways in which those spaces are managed. As a result, public spaces in different districts can hardly integrate as a whole and form a systematic public space network. In response, we suggest a public agency should be established at the city level to make overall plan, supervise and coordinate the work of different districts; (2) We suggest at least one metro subway station should be added to each of the three waterfront areas to merge the redeveloped sites -which were isolated from other parts of the city in the industrial era- to the city; (3) In terms of land use, we suggest urban land surrounding the waterfront public spaces should be mainly used for cultural purposes such as public museums, theatres and cultural centres. This is because, as we have seen in Xuhui Riverside case, if waterfront public spaces are mainly surrounded by private properties such as office buildings, gated residential communities and private galleries, then the private social control in those spaces will cause considerable impacts on public uses in the public realm; Finally, (4) we suggest the local government should take advantage of people's willingness of carrying out public activities in waterfront public spaces. Currently, the public activities occur in the study areas are spontaneous and unorganised. We suggest public events, such as outdoor concerts, can be held in the waterfront public spaces to motivate more people come to the waterfront public spaces and, in this way, create a more public atmosphere in waterfront public spaces.

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