A Dual Strategy in the Adaptive Reuse of Industrial Heritage Buildings: The Shanghai West Bund Waterfront Refurbishment

Pengfei Ma, Xiangning Li* and Di Lan*

College of Architecture and Urban Planning, Tongji University, Shanghai 200092, China; pengfeima2020@tongji.edu.cn
* Correspondence: lixiangning@tongji.edu.cn (X.L.); 21510101@tongji.edu.cn (D.L.)

Abstract: Waterfront intervention, as one of the post-industrial reuse paradigms, has flourished around the world and been studied as a global phenomenon. This paper investigates the application of a dual adaptive reuse strategy to industrial heritage waterfront buildings and explores its social significance. The case study is of the West Bund, a waterfront renovation in Shanghai, China. Insights are drawn from the qualitative research approach of triangulation, with evidence derived from document sources, archival records, direct participants and semi-structured interviews. This paper examines a series of galleries and landscapes created from former industrial buildings and facilities along the Huangpu River. It concludes that the West Bund exemplifies a dual strategy of adaptive reuse: art-led and landscape-led building reuse. This dual strategy can be viewed as an endeavour to balance urban gentrification and publicness in the megalopolis. It can also be argued, however, that the dual approach to adaptive reuse is unsustainable within the framework of an entrepreneurial state, and significantly so in the post-epidemic era when economic growth pressure increases. This study contributes to our understanding of the complex nature of industrial heritage in the rapidly shifting landscape of contemporary China.

Keywords: adaptive reuse; industrial heritage; urban China; art-led urban regeneration; waterfront; gentrification; publicness; post-epidemic era

1. Introduction

The adaptive reuse of heritage buildings has been a common approach in the revival of local areas throughout urban China. Although the twenty-first century’s first decade witnessed the large-scale demolition of heritage properties and historical urban areas in China, Chinese cities in the past decade have switched away from the dominant model of urban sprawl to the regeneration of old urban areas. An increase in the demand for cultural resources has progressively enabled city managers to revise their attitudes towards historical buildings, with urban area revitalisation becoming a core approach to Chinese urban expansion [1]. Urban heritage buildings are deemed vital cultural assets that boost local distinctiveness and advertise their locality [2]. The adaptive reuse of heritage buildings has gained in value and rigour in terms of a contextual respect for local history [3].

Adaptive reuse is a strategy broadly associated with a change in the function of existing buildings to meet new needs whilst essentially retaining their original structure and fabric [4,5]. The adaptive reuse of historically valuable heritage buildings has featured widely in recent scholarly discourse on heritage conservation and has been applied professionally in practice [6–10]. As a form of sustainable urban regeneration, reuse gives a new life to used building materials and extends an existing building’s life. Adaptive reuse “avoids demolition waste, encourages reuses of the embodied energy and also provides significant social and economic benefits to the society”, thus embracing the
different aims of sustainability [8]. Scholars even consider adaptive reuse as one of the most effective approaches to reducing carbon emissions from the built environment and supporting global climate protection [9]. The emerging trends in adaptive reuse practices can further be incorporated into circular economy strategies and policies for urban regeneration [10]. As frequently quoted, “The greenest buildings are the ones we already have” [11]. It is necessary to adapt existing building stock to reduce the environmental footprint and make more efficient use of natural resources.

The adaptive reuse of industrial heritage buildings, in particular, has received considerable attention. Recent decades have witnessed, on a global scale, the rapid transformation of many cities from centres of production to centres of consumption [12]. Post-industrial landscapes, commonly located near city centres or along waterfronts, consist of obsolescent industrial buildings and infrastructures that need to be returned to productive use and reintegrated into neighbouring communities [13]. The practice of industrial heritage reuse has therefore prevailed worldwide in areas where deindustrialisation is guiding urban development [14–17]. It is generally accepted that the well-planned and designed reuse of factory buildings and facilities promotes not only the conservation of industrial heritage but also sustainable tourism, economic growth [18], urban regeneration [10], as well as local identities and contexts [19].

In Western society, the challenges and barriers facing the regeneration of industrial areas can be summarised into six categories: “Governance (i.e., inconsistency of political vision, inadequacy of the intervention concept, inadequacy of the institutional model, inadequacy of institutional coordination, instability of the institutional model, lack of promotion and marketing); infrastructure (i.e., undefined structural projects, lack of accessibility); territorial (i.e., size of the intervention areas, location of the intervention areas, metropolitan territorial model, land ownership issues); finance (i.e., lack of investment, financial liabilities, financial crisis, property market crisis); culture (i.e., industrial tradition, industrial stigma); environment (i.e., environmental liabilities, climate change effects).” [20] In terms of finance, the Western European countries, however, have wider financing channels to ensure the continuity of funds and can attract more social funds to participate in industrial heritage protection work than China [21].

Waterfront intervention, as one of the post-industrial reuse paradigms, has flourished around the world and been studied as a global phenomenon. Aiming to requalify, integrate and reutilise urban space, the appropriation of waterfront heritage transforms urban function in the course of the deindustrialisation process [22,23]. The long-time abandoned and decayed locations previously occupied by wharves, plants and warehouses are reintegrated and regenerated by finding various new uses, satisfying new demands and providing activities associated with post-Fordist urbanism [24]. The revitalisation of waterfronts is not just considered a simple response to the functional disuse of waterfront heritage in port cities, but more so an opportunity to revive the urban economy in its complexity [25]. When diverse post-industrial paradigms emerge, new social and cultural dimensions beyond productivity are implanted into waterfronts.

“Waterfronts have been imagined as a concentration of Functions that can be productive, cultural, relational, recreational, residential and public” [26].

The vitality of urban waterfront open spaces has become a priority of studies in recent years [27]. The distribution of industrial heritage sites in China presents a strong aggregation trend, mainly distributed in traditional agricultural and commercial areas with rich natural or water transport resources [28]. Compared to Western scholarship, which concentrates on community building industrial heritage, the exploration of tourism and the protection of industrial sites, post-industrial heritage protection and new technology use, industrial heritage research in China mainly focuses on urban renewal, industrial heritage tourism and creative industries [29]. Far less of the literature, however, highlights waterfront building reuse and its resulting gentrification, in particular in China.

Focusing on the case of Shanghai West Bund—a series of galleries and landscapes produced from former industrial buildings and facilities along the Huangpu River—this
study explores the specific strategy of refurbishing waterfront buildings and then analyses its social significance in terms of gentrification and publicness. To provide a background to this specific case study, the following section begins by providing a retrospective literature review that examines the significance of art and culture-led industrial building reuse, and the resulting gentrification, in China. The methodology adopted in this study is then presented and the dual strategy adopted by local governments to reutilise industrial structures is examined. It starts with a brief historic and geographic overview of the transformation of the West Bund from the 1930s to the 2020s based on policy documents, archival research, secondary literature, media reports and interviews, as well as social and enterprise data at the neighbourhood level. The diverse approaches to building reconversion are then reviewed separately. For example, large-scale built spaces in old factories and plants have been re-appropriated as art museums for exhibition and cultural activities. Also, three art museums have been renovated from factory buildings: the West Bund Art Center, the Yuz Art Museum and the TANK Shanghai. In contrast, the industrial facilities and machines along the river have been refurbished as landscapes for public recreation and sports. Two different categories of such landscape-led building reuses are summarised through specific cases. Finally, this paper examines the changing attitudes of local managers towards the West Bund waterfront in the post-pandemic era.

2. Art and Culture-Led Industrial Reuse and Resulting Gentrification in China

The discourse of adaptive reuse of industrial buildings arrived in China in the late 1990s when the epistemic network of international scholars extended from Europe and America to Asia [15]. Since that time, some local grassroots artist communities spontaneously adopted industrial heritage reuse to occupy obsolete industrial sites in Shanghai, Beijing and Guangzhou [30]. From the 2000s onward, art and culture-led industrial building reuse has been associated with the creative industries and has garnered enthusiastic support on the domestic policy circuit, producing art-led regeneration and gentrification in urban China [31].

2.1. Art and Culture-Led Industrial Building Reuse

The art and culture-led industrial building reuse in China started from the spontaneous occupation by independent artists. They gravitated to private art workshops and large living spaces in industrial buildings, which provide vast, high-ceilinged premises for their large-scale artworks at comparatively affordable rents. To avoid excessive expenditure, most artists merely divided and redeployed the large existing interior and exterior spaces without altering the main structure and envelope of the heritage buildings. They placed exhibition installations inside and decorated the outside textured walls and facilities with patterns or texts (Figure 1). These industrial facilities’ stripped-down, rugged ambience provided the artists with an inspiring quality of freedom.
Later, however, the authorities realised the economic potential of these art districts and took over their management. As a result, officially managed art galleries and museums have gradually replaced the bohemian environment. Since the late 2000s, a large number of galleries, artists, pubs and other cultural institutions have been launched, producing so-called cultural clusters in the creative industry. Some famous examples are the 798 Art Zone in Beijing, the Shanghai M50 and the Guangzhou Xinyi International Club [32]. Compared to renovating existing structures, building new facilities from the ground up is far more time-consuming and expensive.

Even so, the official advice on industrial heritage reuse did not emerge until the “Wuxi Proposal” document was presented on International Cultural Heritage Day on 18 April 2006. Under official patronage, the flourishing cultural clusters have brought public attention to industrial heritage buildings and encouraged the official conservation of industrial heritage [33]. The boom in public and private galleries and museums on former industrial sites represents a shift from sporadic artistic occupation to the organised reuse and management of spaces for cultural purposes.

Knowledge of industrial heritage reuse has been promoted in response to a growing national interest in the culture industry and to rapid local urban change. The Chinese government has, therefore, progressively developed a greater interest in culture and art, now viewed as essential to economic development. These cultural clusters have flourished in the past two decades and created an art of culture-led urban transformation and regeneration. In early 2002, the State Administration of Cultural Heritage announced that the country would build 1000 museums by 2015, but the actual number reached 1500. The number of art galleries in China also increased rapidly to 934 in 2018 from only 238 in 2011 [34]. Many of these art venues, fashioned out of abandoned industrial structures, have been transforming once-derelict neighbourhoods into high-culture destinations. Although the design of repurposed spaces and facilities is often architecturally stimulating and sometimes even dramatic, their design usually fits within the international style, so that art exhibitions and showcases in these reused buildings generally feel unusually derivative [35].

On the other hand, Chinese governments have to face local challenges. Recently, the adaptive reuse of industrial heritage was deemed as a signal of the cultural revival of local brownfield regeneration in China, although official economic interests often outweigh local cultural and social interests [36]. A statistical analysis of the literature on Chinese industrial heritage since 2006 concludes that research on industrial heritage in China has started to draw lessons from Western Europe and study the connotations, extensions, types, characteristics and values of all aspects of industrial heritage [29]. It is increasingly true that, building on Western European knowledge, China has developed its own unique local cultural characteristics and historical trajectory.
The final goal of the art-led reuse of industrial buildings in China, however, is still to increase the value of the site and surrounding areas. Both public and private profit motives no doubt play a significant role in the long-term success of these projects. The increase in real estate value through renovation may be attractive to local governments, particularly when land leasing comprises between 30% and 70% of district and municipal revenue in China [37]. Such increases are key drivers for urbanisation and urban regeneration in China.

2.2. Art-Led Gentrification in Urban China

Chinese urbanisation in the post-industrial era has produced gentrification. Dominated by the developmental dictates of an entrepreneurial state, Chinese urbanisation has become a ‘huge and systematic gentrification project’ [38]. With both national and private investment capital flowing into the downtown districts of major cities in China from the 1990s, these cities have set unprecedented records in the real estate market. This gentrification is integral to the economic, social and spatial restructuring of urban cores [39]. Rural residents began to flock to the cities in large numbers, and working-class urban neighbourhoods converted into middle-class residential areas. The recent debates about gentrification in China resonate with discussions on the so-called ‘conceptual stretching’ of gentrification to encompass social and physical urban change in non-Western contexts [40,41]. From the perspective of urban appearance, however, gentrification is more widely expressed by the architectural restoration of deteriorating housing and industrial buildings, as well as the clustering of new cultural amenities in the urban core [42]. This process involves complex real estate financing, community transformation and negotiation between the state, the market and civil society [43].

As an extensively discussed concept, art-led gentrification has become a virtual battle between various cultural proponents and advocates concerned with social stratification. Some cultural theories on art-led gentrification see artists as the originators of gentrification [44–46], whereas others focus on the capital that follows the artists into an area, then commodifies its cultural aspects and displaces the artists or original gentrifiers [47–49]. After years of debate, it is now widely accepted that gentrification results both from devalued urban areas and the particular consumption patterns of gentrifiers. As a post-industrial space recycled into a trendy environment for wealthy consumers, art-led heritage reuse meets both these criteria. It exhibits all the relevant signifiers of gentrification, such as increasing rents, land speculation and the creation of a new cultural centre.

Art-led gentrification in China should be understood from a broader perspective than the traditional example of art-led gentrification, where a localised demand for art ultimately changes a declining urban core into a trendy residential neighbourhood [30]. For art-led heritage renovations in China, the economic and cultural objectives of state action are deeply intertwined [50]. The cultural clusters of reused buildings, galleries and art venues become commercial premises where the aesthetic value created by daily cultural performance determines property values and local entertainment revenue streams. Consequently, cultural consumption in art venues comes from tourists and visitors, not just local residents [51]. Thus, gentrification is about more than changes in inner-city residential patterns. It encompasses tourism and cultural activities, which can generate urban change and promote area reinvestment and restructuring.

From this perspective of state-sponsored developmentalism, the state’s involvement in art infrastructure makes gentrification seem beneficial. The combination of state control in artistic production and urban planning guidance has made heritage buildings a political priority. In the context of China’s ‘heritage fever’ [2], the cultural capital of historic buildings has risen to occupy the core of official discourse on ‘a harmonious society’ [52]. As a result, art-led gentrification has come to signal the superiority of the middle classes, legitimising the social cleansing of derelict historic areas. In some extreme cases, resistance to heritage transformation from local residents or intellectual groups has
ultimately redirected the course of redevelopment towards conserving the historic environment. Apart from these few cases, the government authority in this regard remains largely incontrovertible [53].

3. Methodology

This paper takes a qualitative approach to explore the adaptive reuse strategy of heritage buildings in waterfront regeneration. The emphases are towards investigating real buildings and examining the social meanings of building reuse within the context of contemporary urban China. A case study is used to research an experimental theory comprising several different combinations of data collection [54]. The West Bund is selected as the critical case for use in testing the theory that a dual adaptive reuse strategy can make a trade-off between gentrification and publicness. To study the case of West Bund Shanghai, we use mixed methods of data collection and analysis, seeking to provide a broad understanding of related issues and context. The case study design incorporates evidence from various sources, and the analysis is based on triangulation, which allows the researcher to evaluate different sources of information to test a particular concept or theory on the basis that a consensus of the findings will yield more robust results [55].

The original research data and other information are collected from documents and archival records, from direct and participant observations, as well as from semi-structured interviews. The documents comprise policy documents issued by local governments, media reports, internet articles and academic writings. The epistemological paradigm of interpretivism in these documents aims to provide an understanding of the social background and significance of industrial building reuse. The historical records, maps and photos are collected as archival records from local libraries and internet searches. The pre-renovation appearance of the obsolete industrial buildings was documented in historical records and photos.

For the study of the West Bund, the authors conducted direct observations and participant observation. Direct observation was the method applied to buildings and sites dotted along the West Bund waterfront between 2020 and 2023. The authors photographed the current repurposed buildings and the built environment. Together with archive records, they provide a detailed comparison of industrial structures before and after adaptive re-utilisation, demonstrating the result of industrial heritage renovation for dual purposes. Furthermore, participation in urban culture and art events emanating from the West Bund gave observers an immersed experience of the adaptively reused waterfront.

The narrative and analysis of the reuse strategy and policy in this article are also based on a series of semi-structured interviews with relevant stakeholders, West Bund managers, architects, urban planners, scholars and local residents. Stakeholders with different interests often express diverging views. The emphasis is both on gaining insights from various observers and understanding their experiences. By discussing their roles in building reuse and urban regeneration, we try to explain how the dual strategy of industrial building reuse was applied in the West Bund. The information obtained from interviews and documents also reveals the potential conflict existing between the general public and an entrepreneurial state, particularly in post-pandemic Shanghai.

4. The Dual Strategy of Adaptive Reuse in the West Bund

The Shanghai West Bund refers to a downtown waterfront area located in the Xuhui District along the Huangpu River, with a shoreline of 11.4 km and an area of 9.4 square kilometres. It is home to a series of galleries and landscaped zones renovated from former industrial sites and buildings (Figure 2). The name “West Bund” comes from its location on the west bank of the Huangpu River, which is one of the earliest and densest districts to attract foreign and national capital to finance the modernisation of Shanghai. The Bund refers to a mile-long embankment of the Huangpu River [56]. The two banks of the Huangpu River are both the origin and engine room of Shanghai’s industrial development. The waterfront has vast open spaces and numerous water channels
servicing industrial estates and national enterprises. A large number of industrial sites are distributed along both banks of the Huangpu River. As a cultural symbol, they commemorate the unique wealth of the city.


4.1. The History of the West Bund

As an important urban waterfront section of south Shanghai, the west bank of the Huangpu River attracted much of the nation’s industrial capital in the 1930s. Industrial buildings constructed by the government at that time included the Longhua Airport, Beipiao Wharf, Nanpu Railway Station and Rihui Port (Figure 3). On the founding of the People’s Republic of China in 1949, with the central government’s adjusting of the nation’s industrial strategic layout, Shanghai played an important role in the construction and acceleration of China’s industrialisation. The factories on the Xuhui waterfront were fully or partially nationalised, and some new factories, such as the Shanghai Aircraft Factory and Shanghai Cement Facto were built there. The Xuhui waterfront had become an important functional area of the city, busy with transport, logistics, warehousing, production and processing. There were a large number of industrial plants and industrial vestiges distributed along the river [57].
In the 1990s, with the urban expansion and construction of new large-scale transportation hub facilities, the riverside area of Xuhui gradually lost its prominence in transport and logistics. Traditional factory enterprises in the waterfront area faced difficulty. Many factories were relocated, absorbed or even closed down. The Xuhui waterfront gradually turned into an urban industrial rust belt with a relatively depressed economy, deteriorated living environment, lack of public facilities and floating population. An urgent transformation of the regional functional structure, and a revitalisation of the community, were required.

In 2002, with the official launch of the “Comprehensive Development Plan for both banks of the Huangpu River”, the original production functions of the waterfront, mainly docks and factories, began to be replaced by modern service and residential functions (Figure 4). The World Expo 2010 Shanghai became the engine for the urban renewal project at the Xuhui Waterfront. The systematic regeneration of the West Bund did not progress, however, until 2012, when the Shanghai West Bund Development (Group) Company was established. This state-owned enterprise is responsible to the government of Shanghai Xuhui District for the comprehensive development of the Xuhui waterfront area. The company identifies the West Bund as an urban branding and development project aimed at promoting the cultural and commercial heritage of the Xuhui waterfront. The original production facilities will be transformed into artistic and cultural venues, and the decayed edge of the city will be converted into an urban public space, producing a comprehensive revival of the economy, society and culture of the riverside area [58].
4.2. Art-Led Building Reuse in the West Bund

The art-led building reuse in the West Bund means the refurbishing of former factory buildings into galleries or art museums. By the end of 2022, there were 19 various cultural or art institutions located in the West Bund, including galleries, museums, theatres, and art studios. Dotted over the former industrial site, some of those venues were refurbished from disused plants, while others were newly constructed on sites that had been cleared. The West Bund now has the highest concentration of art facilities in Asia and has become a scene of urban culture. Among its art institutions, the West Bund Art Center, the TANK Shanghai and the Yuz Art Museum have earned recognition as preeminent examples of industrial building reuse.

Opened in April 2015, the West Bund Art Center functions as a single building for art exhibitions. Its long-span structure, converted from a vast workshop of the former Shanghai Aircraft Manufacturing Factory, conveys a strong impression of spaciousness (Figure 5a). The interior space, with two spans measuring 24 m and 30 m, is enormous, and is 120 m in length and 15 m in height. Although the original factory building was expected to maintain its scale and spatial integrity, four spans in its western section were demolished to make way for the construction of city roads. For this reason, the west façade was given a steel framework of diamond-shaped mesh to strengthen lateral stability, which is now a visual attraction for visitors arriving from the west by subway (Figure 6). The main entrance however is on the eastern side of the building. A structure of glass and steel was placed adjacent to the main entrance and now functions as a coffeehouse. A new concrete framework conjoining existing anti-seismic columns and ring beams was also built on this facade to support the gable wall of the 24 m span part of the factory, which was completely opened out with glass to provide an easterly view of the Huangpu River. Internally, a mezzanine was added to the 24 m span section at the west end via a terrace and ramp, thus forming an enclosed circulation area to facilitate the exhibition flow (Figure 7). The ramp also connects visually to the Huangpu River from where the sun rises. Also, new steelwork vestibules were added to the east and south sides of the building to accommodate the necessary auxiliary facilities for art fairs and other exhibitions.
Another elaborate art centre, TANK Shanghai, comprises five thick steel aviation oil tanks. Designed by OPEN Architecture and opened to the public in 2019, this non-profit institution provides a space for the public to connect with contemporary art. On the flat site that once served as Shanghai’s Longhua Airport, an artificial surface known as the “super-surface” connects the five separate aviation tanks that used to serve the airport (Figure 8). Above the undulating surface is an open urban park, and below is a huge interior space integrating various exhibition spaces, plazas, gardens, lawns, a bookstore, an education centre and a restaurant. The TANK Shanghai is designed for holding multiple exhibitions concurrently. The striking oil tanks, as vestiges of industrial architecture abounding with new functions, mark this artistic building complex.
Figure 8. (a) Five thick steel aviation oil tanks before renovation; (b) TANK Shanghai. (source: photo courtesy of the Shanghai West Bund Development (Group) Company).

The renovations of the five oil tanks were elaborately designed individually. Tank 1 and 2, adjacent to Longteng Avenue, have separate entrances and exits. A protruding circular entrance first leads visitors to Tank 1, located in the site’s northwest corner. Inside Tank 1, a drum-shaped inserted container constitutes “a tank within a tank”, where a circular doorway leads visitors into the interior chamber (Figure 9). This chamber room is conceived as a dining room but can also double as an independent exhibition hall. A staircase running between the two tank walls leads visitors up to the second-floor exhibition hall. Tank 2, adjacent to Tank 1, is the only tank of the five that is mostly open facing. It also has a circular pipe-like entrance facing Longteng Avenue. Once past the tunnel-like entrance to the top of a spiral staircase inside the tank, visitors finally find themselves in an outdoor circular courtyard. A series of small exhibition halls surround the outdoor courtyard from which a staircase leads visitors to a rooftop terrace with views of the city, park and waterfront. The design of Tank 2 is key to the architect’s intention to make TANK Shanghai as open a venue as possible. From the circular inner courtyard entrance to the roof terrace, the walkway is entirely open to public view.

Figure 9. The interior of Tank 1. (source: photo courtesy of Di Lan).

In contrast, Tanks 3, 4 and 5 are connected by a large internal space covered by the “super-surfaces”. The main entrance of the whole TANK Shanghai and a landscape square were set on the south of the surface, where the designer created a full-scale glass curtain wall to invite natural light. The concrete columns that serve as structural supports of the surface are not uniformly arranged. They were installed to coordinate the existing structure of tanks and the new-built surface. Serving as a whole exhibition hall, Tank 3 has no internal divisions. The architects simply cut a circular hole in the centre of its dome
to create light and shadow effects. The huge internal space of tank 3 is mainly used to display large-scale installation art. Different from Tank 3, Tank 4 is divided into three layers for displaying easel paintings and small installations. The bottom two floors are primarily white-box spaces, while the top floor, with a rooftop terrace overlooking the river, is for the arts centre’s offices and visitors. Tank 5 is composed of a multifunctional large exhibition hall and a relatively more secluded small exhibition hall attached, suitable for new media art shows and small performances.

Yuz Art Museum is another case of adaptive reuse in the West Bund. The 9000 square meter site of this museum was previously home to Longhua Airport. The main exhibition hall, more than 3000 square meters in area, was rebuilt from the old hangar and funded by the famous Chinese-Indonesian collector Budi Tek (Figure 10a). He developed the museum in collaboration with renowned Japanese architect Sou Fujimoto, whose sweeping design lends a sense of relentless grandeur and expanse to the magnificent installations within. The museum opened to visitors in 2014. The original truss structure was retained, and a glass entrance hall was attached to its front (Figure 10b). The truss structure supports the tall wide interior exhibition space, while the glass house attached to its front is planted with bamboo, like a towering glass greenhouse. The space is divided by stairs and platforms, providing enough room for the future construction of small exhibition spaces. The museum retains an aeroplane hangar’s original structure and appearance but now includes trees and well-lit glass halls to accommodate large-scale exhibitions. The museum’s glass hall offers guests an array of amenities, a coffeehouse, restaurant, souvenir shop and exclusive showroom, on district levels. The spaces of this multi-layered structure ascend and descend, providing a fantastic space experience for visitors.

![Figure 10. (a) The hangar of Longhua Airport before renovation; (b) Yuz Art Museum (sources: (a) photo courtesy of the Shanghai West Bund Development (Group) Company; (b) photo courtesy of Pengfei Ma).](image)

The art-led reuse of industrial buildings in the West Bund is predominantly realised by means of spatial re-organisation and external transformation. Art institutions often need grand-scale spaces for collection, exhibition, research, communication and education. They also need a close connection with the city’s public space. Despite their unique shapes, an aircraft manufacturing workshop, aviation oil tank or aircraft hangar can offer enough internal space to meet such requirements. The designers manipulate the industrial space through repartition and organisation to accommodate new functions. If required, an extra structure can be added to existing structures to create a connection or additional space, such as the super-surface of TANK Shanghai and the glass hall of the Yuz Art Museum. Additionally, the art-led reuse of the West Bund features a visual conversion of buildings from dilapidated factories to attractive art museums. The façades of these three museums were all renovated by designers using a mixture of old industrial elements, new materials, new structures, glass and steel. These unique creations produce a sense of transparency that establishes a close contact with the surrounding regenerating urban areas and provides visitors with a spectacular view of the city. The cultural,
historical and aesthetic values of industrial buildings thus coincide with the appeal of art galleries.

4.3. Landscape-Led Building Reuse in the West Bund

In tandem with building reuse for art institutions, specific industrial equipment and facilities in the West Bund were renovated into outdoor public landscapes for visitors to access and enjoy. Such landscape-led building reuses fall into two categories. Some structures are contained in the site of the new art venues to enhance the buildings’ appeal, while others are set separately in public open spaces along the river as public amenities. Typically, the Start Museum and the Long Art Museum are entirely new constructions interspersed with former industrial remains for landscaping, while industrial facilities of tower cranes, conveyer belt, airport runway, trains, rails and Marine Tower are kept and renovated as attractions in public areas of jogging tracks and camping parks.

The Start Art Museum, adjacent to the west bank of the Huangpu River, is the starting point of the Shanghai West Bund Cultural Corridor. It was founded by He Juxing and designed by Jean Nouvel, a Pulitzer-Prize-winning French architect. The building is on the site of the early freight transport railway station, Nanpu Railway Station, which is a symbolic reminder of the city’s remarkable industrialisation (Figure 11a). Elements from the old station have been incorporated into the new buildings. An old train has been closely placed on one side of the new building (Figure 12), while the other side has the former station platform and rails (Figure 11b), making the museum’s main structure feel like a station.

![Figure 11. (a) Nanpu Railway Station before renovation; (b) Start Museum. (sources: (a) photo courtesy of the Shanghai West Bund Development (Group) Company; (b) photo courtesy of Pengfei Ma).](image)

![Figure 12. An old train placed on one side of the Start Museum (source: photo courtesy of Pengfei Ma).](image)

By contrast, the Long Art Museum has enclosed the former industrial structure, a coal wharf, into the new building. The 1950s-built concrete bridge used to transport coal
to train hoppers and the railway tracks needed for shipment remain. Architect Liu Yichun constructed the new museum around it using a similarly stark concrete design (Figure 13). Walking through the square court in front and following the stretching coal-hopper unloading bridge, visitors find the museum’s concealed main entrance in the middle of the concrete bridge. This bridge from the square to the river connects the gallery’s functional and exhibition areas vertically, occupying a prominent central position in the layout. The four-storey main building features stately umbrella-like overhangs and the first and second floors showcase paintings, sculptures, installation art, new media and the latest in contemporary art. The architecture stays true to the site’s historical role as a coal-loading wharf: this industrial heritage is celebrated by preserving the iconic coal-hopper unloading bridge. As the architect stated, his design inspiration came from the remaining bridge of the coal wharf—“It is material evidence of the past urban industrial civilisation”.

![Figure 13](image-url) The 1950s-built concrete hopper bridge in the Long Art Museum (source: photo courtesy of Pengfei Ma).

The landscape-led building reuses can also be glimpsed along the Huangpu River. The 8.4 km long avenue along the river is a public amenity of the West Bund with a hydrophilic walkway, fitness track, recreational bicycle path and landscaped avenue. The completed 800,000 square meter waterfront zone includes five landscape bridges, an 8.4 km flood control wall and 100,000 square meters of water platforms. Within this open space is a landscaped park of about 80,000 square meters, adjacent to Yunjin Road and designed by SASAKI, a renowned landscape design company. In this prototype of a walkway park is the airport runway, a reminder of the site’s aviation history.

Dotted through the public waterfront park are industrial buildings renovated as landscape features. The old large-scale tower crane has been painted red or green, and the Marine Tower is decorated in the shape of a flower bud (Figure 14). The “Sea Gallery Bridge”, rebuilt from the conveyer belt of the former Beipiao Coal Wharf, is now a landscaped platform open to the public from which to view the mountains. The designer converted the former Longhua airport runway into a modern runway for cars, bicycles and joggers, meeting today’s transport, leisure and sports needs. The project was carefully designed regarding road paving, pedestrian access, sport facilities and road construction to accommodate competing functional requirements. Streets and gardens are organised into a unified runway system and interspersed with diverse linear spaces, water systems and green areas. As a result, it brings the comfort of a modern urban public space to this historic Xuhui Waterfront memorial.
The West Bund’s industrial landscapes showcase the unique surrounding urban space by using Shanghai’s skyline and natural features as a backdrop. A 2.5 km railway near the riverside terrace adjoins a large harbour, opening onto expansive vistas of flora, valleys and the river. By the light of the railway signals from the Nanpu Platform, Crane Tower and the Marine Tower, steam engines and stones appear at once rugged, impassive and inspiring. A skywalk has been made from a coal plant conveyor belt. Pedestrians arriving at the promenade from the convenient bus, cycle and tram systems find themselves in a fascinating, organic environment that lends present-day meaning to genuine relics from Shanghai’s industrial revolution.

5. The Social Significance of Building Reuse in the West Bund

The dual adaptive reuse strategy for industrial heritage waterfront buildings in the West Bund achieves a pattern of mixed place-remaking of art avenues and public parks. The waterfront, through galleries and parks, physically accommodates various art events and leisure activities, which lead concurrently to the social transformation of the locality, to art-led gentrification and landscape-led publicness. Industrial reuse began, however, to stall in the West Bund with the COVID-19 outbreak and has had difficulty reviving since. Furthermore, with the change in economic and social circumstances in the post-pandemic era, the significance of building reuse in the West Bund has declined.

5.1. Art-Led Gentrification and Landscape-Led Publicness

A close interlocking of public and private interests ensures unified and rapid art and culture prosperity in the West Bund. China’s administrative system makes the government’s role decisive in capital orientation. As the main national power broking body, and an important consumer of space, the government is the capital in deciding land transaction and the future of cultural production. The Shanghai West Bund Development (Group) Company, established in 2012, is a wholly state-owned enterprise under the Xuhui District Government [59]. The company acted as agent for the government to implement land transfer in the West Bund. One company manager admitted that 70% of land transfer fees go to the Shanghai Municipal Government and 30% to the Xuhui District Government. As a result, both levels of government funded the company to construct waterfront regeneration and industrial building reuse [60].
With efficient administrative support, the West Bund created a thriving art and culture scene to make itself famous. Following Expo 2010, the company’s role gradually evolved from land developer to back-end value-adding service provider to the culture industry. It was tasked with exploring how to drive the development of enterprises through project financing and improve revenue generation in the culture industry. The West Bund hosts many influential art events, such as gallery openings, the Biennial of Architecture and Contemporary Art and the Art and Design Fair (Table 1). All have been resoundingly successful.

Table 1. The regeneration of waterfront space on the West Bund triggered by art events.

<table>
<thead>
<tr>
<th>Time</th>
<th>Events</th>
<th>Industrial Building Reuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 December 2012</td>
<td>Opening of the Long Art Museum Biennial of Architecture and Contemporary Art</td>
<td>Beipiao Port</td>
</tr>
<tr>
<td>2 October 2013</td>
<td>Opening of the Yuz Art Museum</td>
<td>Shanghai Cement Factory</td>
</tr>
<tr>
<td>18 May 2014</td>
<td>Opening of the Yuz Art Museum</td>
<td>Hangar of Shanghai Aircraft Factory</td>
</tr>
<tr>
<td>25 September 2014</td>
<td>Design and Art Fair</td>
<td>Workshop of Shanghai Aircraft Factory</td>
</tr>
<tr>
<td>September to December 2015</td>
<td>Urban Space Art season</td>
<td>Workshop of Shanghai Aircraft Factory</td>
</tr>
</tbody>
</table>

These urban art events created in the West Bund have become catalysts for the construction and adaptive reuse of the waterfront. The reuse of industrial buildings has advanced steadily in terms of the area over time, producing a radiation-like art-led progression in the West Bund [61]. Over the course of time, important events play a determining role, producing regeneration and development in physical locations. For the West Bund, space allocation is only gradually granted in proportion to the progress of art events. As West Bund Art Center designer Yichun Liu states: “The unused resources have been put to good use and the abandoned spaces in the city revitalised. With the sustained increase in exhibition activity, more warehouses and factories have been organised and utilised, greatly improving the urban environment, so the value of industrial buildings is further recognised by the public”.

The art agglomeration effect on the West Bund produced a vast redistribution of urban capital in a short time. The reason for this capital adjustment is the significant change in the physical environment of the whole riverside area. It could benefit from a deeper, more efficient integration of its art and culture events, a vast wave of infrastructure investment and urbanisation projects. The West Bund’s regeneration strategy promotes accumulating cultural capital and forming art areas. Unlike the 798 Art Zone in Beijing, few artists occupied the industrial spaces in the West Bund before, as these dilapidated industrial buildings are difficult to use without renovation. For this reason, industrial buildings have been transformed to provide a comfortable environment for creators. A preferential land rental policy has encouraged a large number of artists and well-known architects to set up studios there. In fact, artists have flocked into their own area in the West Bund. One art photographer who settled his studio in the West Bund said that he really likes the artistic atmosphere and working environment here, where he has more opportunities to contact art exhibitions and young people who love art.

These art venues in the West Bund have formed a significant cultural cluster, thus dramatically increasing property values in the surrounding neighbourhoods and triggering gentrification. The art venues and accompanying events in the West Bund soon made the area a recognised centre for art in Shanghai. The wealthy have begun to settle in the West Bund, resulting in a sharp rise in local housing prices and rents. Between 2014 and 2016, when art activity in the West Bund was at its most intense, the average home price virtually doubled [62,63]. Many high-end closed residential communities have
sprung up around the West Bund and have begun the process of monopolising local urban resources.

Meanwhile, accessible public parks and their industrial landscape features improve the West Bund’s public appeal. The waterfront parks house running tracks, playgrounds and striking architectural follies renovated from industrial buildings and facilities: the Crane Tower, Marine Tower, skywalk, railways, platforms, wharf, anchoring pile and more. During the holidays, especially at night, the open parks of the West Bund turn into a sports and leisure haven for residents and others from all around Shanghai. Young people engaged in all kinds of sports—skateboarding, jogging, camping and rock climbing—can be seen everywhere (Figure 15). Various long-distance running and fitness activities are held here from time to time [64]. A range of organised outdoor activities, like the JPMorgan Chase Corporate Challenge, Adidasunbase and Marathon Energy Party, are also held here [65]. A middle-aged woman who jogs here told the author that she runs here almost every evening, and her 16-year-old child comes here on weekends to skateboard. An officer from the West Bund Development (Group) Company disclosed that the maximum number of people in West Bund public areas at any one time can reach 20,000.

![Image](a) (b)

**Figure 15.** Leisure and sports in the West Bund (a) rock climbing; (b) jogging (source: photo courtesy of Di Lan).

The publicness of the West Bund can also be appreciated in terms of arts activity. During the day, locals from all over the city and visitors from far and wide are attracted to exhibitions and art activities. It is noticeable that visitors, most in their twenties and forties [66], commonly have no deep appreciation of art works and exhibitions. Instead, they consider art works and exhibitions more as backdrops to show off in social media posts. As a 25-year-old lady described it: “I don’t care what kind of art is on display in these exhibitions. I just want to be ‘punching in’ here, imitating internet celebrities by taking photos and sharing beautiful photos on my WeChat Moments”.

The dual strategy of adaptive reuse adopted in the West Bund is of social significance. Re-appropriating industrial buildings leads, concurrently, to social transformation, art-led gentrification and landscape-led publicness. Art avenues and cultural events are used to create brand effect and accelerate the process of regional gentrification, while the public places and leisure activities highlight the publicness of the waterfront. However, this situation is evolving in the post-pandemic era.

### 5.2. The Changing Strategy for the West Bund in the Post-Pandemic Era

This art and culture prosperity waned in the post-pandemic era, although the decline of the West Bund predates the pandemic, which merely accelerated the process. Over the past three decades, China’s development has owed much to a booming real estate market and the construction of a massive infrastructure associated with rapid urbanisation. A large part of local government revenue comes from selling land to property developers and investing the proceeds in public projects such as art and culture. Soaring housing
prices also mean that residents have invested a large amount of money into real estate and spent less on non-essential items such as cultural and artistic pursuits. During the epidemic, lockdowns caused a sharp decline in the number of visitors to art galleries, meaning that many art galleries made no profit from holding exhibitions and cultural events. As a result, they lost money and needed more government assistance. Now, however, with an abundance of commercial housing under construction, the real estate market is reaching saturation point. In 2018, the rapid rise in house prices in the area around the West Bund came to an end. The enterprise-driven government found itself unable to raise more revenue from increased real estate values around art clusters, thus losing any incentive to further invest in the art industry. In these circumstances, the dual strategy in the adaptive reuse of industrial heritage buildings was no longer viable.

Yet the public’s demand for cultural and public space has risen in the post-pandemic era. In 2022, when COVID-19 struck Shanghai, people needed urgent relief from the trauma caused by the city’s two-month lockdown. It also increased their desire for outdoor activities. The reuse strategy of the West Bund has provided the opportunity to build a more resilient local society: “When there is a trauma, people really need to hold on to their cultural landmarks” [67]. The Sendai Framework for Disaster Risk Reduction 2015–2030 identifies the role of culture as a component of disaster risk management. In fact, Priority 4 adopts the “Build Back Better” approach to recovery and rehabilitation [68]. The reuse strategy’s aim is to ensure that, after the epidemic, heritage sites do not slip back into the routine of standard urban development but instead achieve more, binding locals together as a community. The art museums and landmarks replacing the old buildings are significant to the local communities. Through cultural expression, they offer the appropriate means to address potential social traumas like COVID-19 and heal affected communities. Adaptive reuse promotes sustainable community development by investing in culture, urban regeneration and resilience in an integrated way.

Despite this, substantial financial and employment imperatives compel governments to focus on projects that can swiftly generate economic benefits and tax revenue. As a result, they have little incentive to create more public space and refurbish heritage landmarks. In 2023, the meetings and documents from the Shanghai West Bund Development (Group) Company shed new light on its planning and revised strategy for promoting the West Bund. The company is now committed to remodelling the Xuhui Riverside into a modern urban waterfront area integrating creative media, cultural tourism and financial business [69]. Policymakers are turning their attention to new business projects to attract investment. These include the previously planned West Bund Media Port, West Bund Smart Valley and West Bund Financial Centre, all expected to benefit the district more economically.

6. Discussion

Over the past decade, urban regeneration, and waterfront regeneration in particular, has been a topic widely covered in the discourse of contemporary urban China. Although the regional government, as decision maker and executor, still has a decisive say in urban regeneration projects, diverse stakeholders such as architects, managers and residents are more engaged in the regeneration process, searching for sustainable development. The emphasis is placed on social harmony, so regenerated urban spaces are expected to serve the public. The social significance of waterfront regeneration attracts increasing attention not only from scholars but from decision makers and citizens as well.

From the perspective of urban renewal, the development process of West Bund has undergone a transformation from the dominance of a single government to policy guidance, capital for profit and mass demands. It exemplifies the attempt to balance urban gentrification and publicness. However, there is a potential conflict between managers and the public in the post-pandemic era. Despite the growing local demand for public amenities, waterfront publicness has ceased to be the key focus of policymakers in the future planning of the West Bund. The West Bund is a microcosm of industrial heritage
building reuse in China. Can the cultural and artistic tendency to reutilise industrial heritage relics meet the needs for urban regeneration and sustainable development? This question still needs an answer.

7. Conclusions

This article discusses the adaptive reuse of industrial heritage waterfront buildings and their social significance as a critical research issue. Through a qualitative research approach of triangulation, this paper analyses a series of galleries and landscapes created from former industrial buildings and facilities along the Huangpu River. It concludes that the West Bund exemplifies a dual strategy of adaptive reuse. It found a mixed place-remaking formula to realise waterfront regeneration. The large-scale built spaces in old factories and plants were re-appropriated as art galleries for exhibition and cultural activities, while the industrial facilities and machines along the river were renovated for public recreation and sports. As a result, re-appropriating the West Bund heritage buildings led to social transformation, art-led gentrification and landscape-led publicness. This dual strategy can be considered an endeavour to balance urban gentrification and publicness in the megalopolis.

Yet, an analysis of observations and policy documents further concludes that this type of dual adaptive reuse approach is not viable within the framework of the entrepreneurial state. This is especially true when the pressure for economic growth increases. In industrial heritage reuse, the reputation and operation of the renovated facilities are essential but secondary to urban renewal’s economic and social objectives. The key point of urban renewal is to revitalise the economic cycle model and provide more employment opportunities for society. It is a widely accepted belief in China that any urban development or regeneration project must simultaneously satisfy political, economic and residents' living needs if it expects to be sustainable.

Author Contributions: Conceptualisation, P.M.; methodology, D.L.; formal analysis, P.M.; investigation, D.L. and P.M.; writing—original draft preparation, P.M.; writing—review and editing, D.L.; supervision, X.L.; funding acquisition, X.L. All authors have read and agreed to the published version of the manuscript.

Funding: This research was sponsored by the Shanghai Pujiang Program (founder: Shanghai Municipal Human Resources and Social Security Bureau, funding number 21P[C111]).

Institutional Review Board Statement: The semi-structured interview in this study was approved by the Ethics Committee of Tongji University (Project identification code: tjdxsr021).

Informed Consent Statement: All interviewees gave their informed consent for inclusion before participating in the interview. The exemption from signing informed consent statement was approved by the Ethics Committee of Tongji University (Project identification code: tjdxsr021).

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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