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Article

Exploring the Diverse Expectations of Stakeholders in Industrial Land Redevelopment Projects in China: The Case of Shanghai

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Abstract: In China, while large-scale industrial land redevelopment has played a significant role in promoting economic growth, it has also triggered a series of unsustainable problems. To date, few studies have explored the expectations of stakeholders in industrial redevelopment projects in China. Gaining an in-depth understanding of the diverse expectations among core stakeholders is an essential step towards realizing social sustainability. This study aims to analyze these diverse expectations in industrial land redevelopment projects. For this purpose, 19 factors were identified and compared across the following core stakeholders: local governments, consulting experts, the general public, and original land users of state-led redevelopment and land user-led redevelopment projects, using questionnaires and interviews conducted in Shanghai, China. The findings show there to be tremendous differences between the expectations of different stakeholder groups in terms of economic, social and environmental aspects. Major differences were also found between the expectations of original land users across different project types. Moreover, the negative externalities, the balance between industrial and residential space, the diverse needs of original land users in different project types, and the barriers to stakeholders' participation, in industrial land redevelopment in China were discussed. The findings of the current paper are conducive to optimizing stakeholder participation in industrial land redevelopment so as to enhance social sustainability.

Keywords: industrial land redevelopment; stakeholders' expectations; social sustainability; China

1. Introduction

Since its reform and opening up, China has experienced a period of rapid urbanization, with the rate of increasing from 17.91% in 1978 to 59.58% in 2018 [1]. According to the dynamics of urbanization, significant amounts of the country's rural population are expected to continue to flow into the cities in the future. Predictions estimate that China's urbanization rate will reach 80% by 2030, and that its urban population will increase by about 300 million [2]. To guarantee the needs of urbanization and sustainable economic growth in the future, more urban space must be provided; however, most cities in China currently face the problems of urban decline and land shortage. Urban renewal is considered to be an effective way to solve urban decline, improve the quality of the environment and the efficiency of urban land use, and promote the inclusion of vulnerable groups [3–5]. As such, urban renewal can be seen as an important way of dealing with the problem of China's shortage of urban space.

In China, local governments have given priority to the supply of industrial land for a long period of time, resulting in industrial land in most cities accounting for an excessive proportion of urban construction land and inefficiency [6]. According to the *Statistical Yearbook of Urban Construction in*

China [7], and as shown in Figure 1, from 2006 to 2017, China's industrial land accounted for more than 19% of China's urban construction land each year, with the proportion of this land in Eastern China reaching over 20%, far higher than the general proportion of industrial land in the world, of 5% to 15% [6]. As an increasing number of large and medium-sized cities in China are now entering the post-industrialized era, the demand for industrial land is set to fall sharply. A large amount of industrial land is expected to be redeveloped to meet the demands for urban space brought about by the increase of urban populations. For example, from 2010 to 2016, Shenzhen City successfully implemented the redevelopment of 660.33 hm^2 of industrial land, 6.7 times the size of the residential land redeveloped in that city [8]. Considering this, the industrial land redevelopment in China may be seen to have become a major aspect of urban renewal.

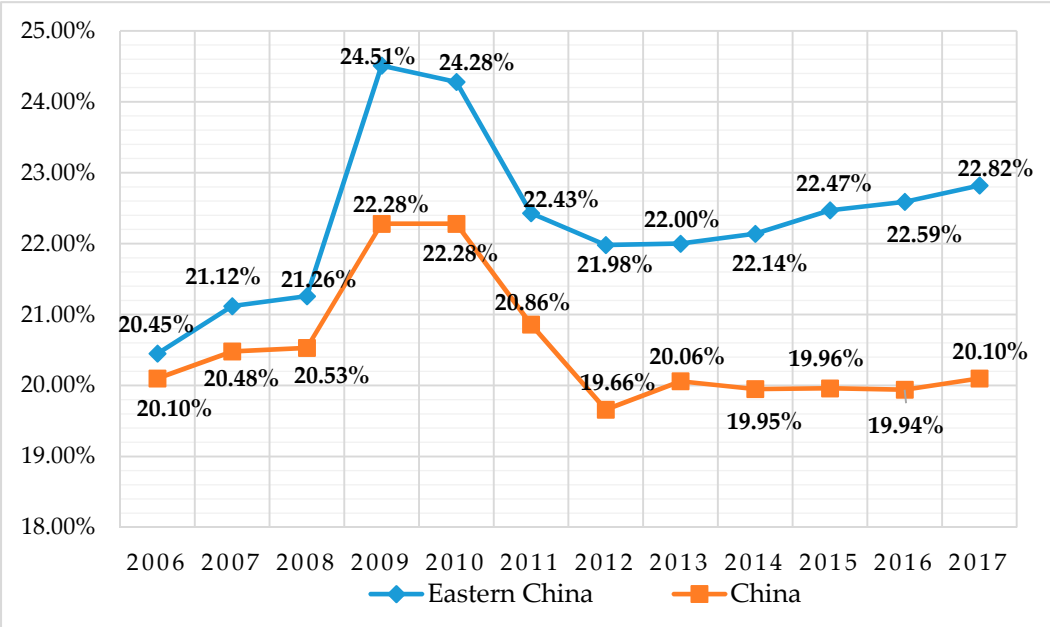

Figure 1. The Change of the Proportion of Industrial Land to Urban Construction Land from 2006 to 2017.

Industrial land redevelopment projects refer to the activities of demolition and reconstruction of urban industrial land where idle, inefficient, or existing land use does not meet the requirements of urban socioeconomic development [6]. The redevelopment mode of industrial land in China has mainly followed two models: the state-led redevelopment model, and the land user-led redevelopment model [9,10]. The state-led redevelopment projects are those in which local governments levy land use rights by paying the original land users compensation for demolition and resettlement, and then transferring the land use rights to state-owned enterprises or developers, for them to complete the industrial land redevelopment. Land user-led redevelopment projects are those in which the original land users independently undertake the industrial land redevelopment under the guidance of the government's policy and planning.

Large-scale industrial land redevelopment is a complex process involving multiple stakeholders, which often engenders various social problems triggered by conflicts of interest between stakeholders [11,12]. The power held by different stakeholders in industrial redevelopment projects is not equally distributed, and there are also significant differences between their interests and expectations [13]. Many social conflicts occur because of the lack of systematic identification and analysis of the diverse expectations of different stakeholders in the process of industrial land redevelopment, in turn complicating policy makers' ability to propose effective strategies for balancing interests [14]. Therefore, acquiring an in-depth and comprehensive understanding of the diverse expectations of core

stakeholder groups may be seen as a key step towards social sustainability in the context of China's industrial land redevelopment.

Social sustainability includes two aspects: moral values and norms (e.g., social equity), related to stakeholder participation [15]. Effective stakeholder participation can promote sustainable urban renewal in a variety of ways, as mentioned in extensive research [16,17]. However, these studies have typically focused on neighborhood renewal projects, with less research focusing on stakeholder participation in industrial land redevelopment projects, especially in the context of China [18]. The former approaches are not fully applicable to industrial land redevelopment projects, since stakeholders' expectations will vary with different project types and local contexts. In China, the issue of stakeholder participation in industrial land redevelopment is a challenging one.

Few studies have comprehensively explored stakeholders' expectations in different types of industrial land redevelopment projects in China. Therefore, this study aims to analyze the diverse expectations of the core stakeholder groups involved, namely, local governments, consulting experts, the general public, and original land users, comparing them in the context of both state-led redevelopment and land user-led redevelopment projects. This paper first reviews the literature about sustainable industrial, state-led redevelopment and land user-led redevelopment projects, and stakeholders' expectations, in the remit of industrial land redevelopment. Then, 19 factors were identified and compared across the key stakeholder groups, based on the results of questionnaires and interviews. The research found there to be significant differences in expectations between different stakeholder groups. The negative externalities, the balance between industrial and residential space, the diverse needs in state-led redevelopment and land user-led redevelopment projects, and the barriers to stakeholders' participation, in industrial land redevelopment in China were discussed. It is hoped that the findings of this paper can provide policy-facing insights into how stakeholder participation in industrial land redevelopment can be optimized, so as to improve social sustainability.

2. Review of Past Studies in Sustainable, Different Project Types and Stakeholders' Expectations in Industrial Land Redevelopment

2.1. Sustainable Industrial Land Redevelopment

In 1987, the concept of sustainable development was defined by the World Commission on Environment and Development, as follows: "Development that meets the needs of the contemporary people without compromising the ability of future generations to meet their needs" [19]. The term "sustainability" has been interpreted differently by different groups, with the definition and components of sustainability having been widely discussed across the world over the past three decades [20,21]. However, the economy, environment and society are generally agreed to be the three critical components of the concept of sustainability. Over the past two decades, the theory of sustainable development has been introduced and widely used in the remit of urban renewal [22]. Sustainable urban renewal has attracted much scholarly attention, including its economic, environmental, and socially sustainable aspects [23–26]. Industrial land redevelopment is an important aspect of urban renewal. In the post-industrial context, the decline of the manufacturing industry in the inner city has become a global problem, leaving a large number of inefficient industrial sites in cities. Consequently, sustainable industrial land redevelopment has attracted substantial academic attention. With regard to the economic dimension, economic sustainability in industrial land redevelopment refers to more efficient land use, the attraction and retention of firms, the promotion of industrial competitiveness, and the stimulation of sustained economic growth [27,28]. In the narrow sense, economic sustainability in industrial land redevelopment also means the sustained growth of local governments finance, sustainable redevelopment benefits for original land users, and the sustainable increase of property values near industrial redevelopment projects, etc. [11,29,30].

In terms of environmental concerns, sustainable industrial land redevelopment refers to improving environmental quality through industrial land redevelopment [31,32]. On one hand, this refers to improving the living environment and urban landscape. On the other hand, it refers to reducing air and

water pollution caused by industrial production and buildings' energy consumption [33,34]. Although there has been a growing number of studies focusing on sustainable industrial land redevelopment, existing studies mainly focus on the economic and environmental dimensions. Little research has focused on social sustainability, especially in the Chinese context.

The concept of social sustainability refers to maintaining and improving the well-being of present and future generations by understanding the needs of people's lives and work [35]. An industrial redevelopment project is said to be socially sustainable when it strengthens stakeholder participation, reduces social inequality, and balances the interests and needs of various stakeholder groups (e.g., affordable housing, public open spaces, job opportunities, etc.) [36–39]. However, given that the urban system is involved in performing socioeconomic functions [40], it is extremely difficult to decrease social inequity by meeting all the needs of a large number of stakeholders [38,41]. Thus, identifying alignment and misalignment in the expectations of various stakeholder groups in industrial land redevelopment can be seen as an important research issue.

Although much effort has been made to enhance social sustainability, the dissatisfaction of original land users, local governments and the public, caused by various social conflicts still occurs frequently in the process of industrial land redevelopment [11]. Without satisfying the key stakeholders, social sustainability cannot be achieved in this context. Therefore, an in-depth and comprehensive understanding of the expectations of different stakeholders may be seen as the foundation of achieving social sustainability in industrial land redevelopment.

2.2. State-Led and Land User-Led Industrial Land Redevelopment Projects in China

In China, urban land is state-owned. Individuals or enterprises only own the land use rights and buildings on the land [6,42]. Considering this, the owners of these properties in the context of industrial land redevelopment are defined as the original land users in the current study. The redevelopment mode of industrial land in China has mainly followed two models: the state-led redevelopment model and the land user-led redevelopment model. State-led redevelopment projects are those where the government recovers land use rights by paying out demolition compensation to the original land users. Under this mode, the government has two ways to obtain income: one is to transfer the land use rights to the state-owned enterprises in order to obtain the development income; the other is to sell the land use rights to developers in order to obtain land transfer payments by means of land auctions [9,11,43]. The original land users do not participate in the implementation stage of industrial land development in neither of these two approaches.

Land user-led redevelopment projects are those where the original land users pay the government the price of the change of land function and the increase of volume ratio, thereafter undertaking the industrial land redevelopment independently under the guidance of the government's policy and planning [9,44]. In this context, the original land users participate in the whole process of industrial land redevelopment.

In China, a large number of studies have been conducted on different state-led and land user-led redevelopment projects. With regard to the former, a large number of studies have focused on land use policy, urban planning and design, decision support and governance [45,46]. Regarding the latter, major studies have focused on incentive mechanisms, and government planning guidance and governance [47,48]. There exist substantial differences between the expectations of original land owners in the contexts of state-led redevelopment and land user-led redevelopment projects, due to the fundamental differences between these redevelopment models and their results. However, existing industrial land redevelopment policies and research have rarely considered the differences in the expectations of original land users of different project types in China.

2.3. Stakeholders' Expectations in Industrial Land Redevelopment

Roberts and Sykes [49] point out that the core stakeholders of urban redevelopment include mainly those who influence the process and results of urban redevelopment, and those who are

affected by urban redevelopment. Based on this, the stakeholders of industrial land redevelopment projects mainly include local governments, consulting experts, original land users, general public, developers, builders and the various suppliers [43,50]. Among these stakeholders, local governments consulting experts, original land users and the general public have the highest level of participation and the deepest interests involved [11,51]. Moreover, even though developers, builders and various suppliers are also important stakeholders, their expectations are clearly profit-oriented, and their aims are to pursue economic gain [52,53]. Thus, the expectations of the latter stakeholder groups are not included in this study. On this basis, five stakeholder groups were identified as the core stakeholders of industrial land redevelopment in China: local governments, consulting experts, the general public, and original land users in state-led and land user-led redevelopment projects.

In China, local governments play a dominant role among the stakeholders of industrial land redevelopment, as they make the rules guiding industrial land redevelopment and can directly affect the participation of other stakeholders [43]. Consulting experts are important stakeholders in industrial land redevelopment projects. Their expertise and professional advice exert a major influence on the decision making and implementation of these projects. The general public are those affected by industrial land redevelopment, their supervision and needs can drive the agenda of the projects and influence government's decision making. In either state-led or land user-led redevelopment projects, the original land users are those who have played an important role in industrial land redevelopment; since they hold the land use rights, the extent to which their interests are satisfied determines whether this redevelopment can be successfully implemented [11].

The expectations of different stakeholder groups in industrial land redevelopment projects tend to be highly complex and varied. As shown in Table 1, 19 expectation-related factors were identified based on government documents and literature reviews.

Table 1. Expectation-related Factors of Stakeholders of Industrial Land Redevelopment Projects.

Factor	Explanation	References
F1. Promotion of Local Economic Development	Stimulating economic growth, such as GDP growth and the improvement of the investment environment, etc.	[9,11,27,31,32,39,54–56]
F2. Industrial Transformation and Upgrading	Transforming the low-end manufacturing industry into advanced manufacturing and high-tech industries through the redevelopment of industrial land	[9,36,54,57]
F3. Economic Benefits for Governments and Other Stakeholders	(1) Increase in local finances, such as income from land transfer fees and tax increases (2) Income increases such as property appreciation, higher rental income and lower cost of living, including reductions in transportation, energy and other costs	[11,28,31,33,39,55,58–60]
F4. More Efficient Land Use	Improving land use efficiency through the redevelopment of industrial land	[4,9,27,36,39,54,57,61]
F5. Protection of Industrial Heritage	Preserving industrial heritage that has historical and cultural value in the process of industrial land redevelopment	[17,31,32,34,36,54,61]
F6. Promotion of Local Employment	Increasing local employment through industrial land redevelopment	[11,28,31,32,36,38,39,59,61,62]

Table 1. *Cont.*

Factor	Explanation	References
F7. Improvement of Public Service Facilities	(1) Improvement of living service facilities such as domestic waste disposal, water supply, power supply, gas supply, medical treatment, etc. (2) Improvement of cultural entertainment facilities	[9,23,28,36,57,61,63]
F8. Improvement of Security around the Project	Reducing crime rates through the redevelopment of industrial land in such a way that enhances the safety of the project perimeter	[27,28,31–33,61]
F9. Improving the Quality of Buildings	(1) Improving building safety performance such as structural safety performance, fire prevention, etc. (2) Ensuring adequate work and daily life functions, space layout, ventilation, lighting etc., that increase buildings' comfort performance for work and daily living	[31,59,60,62,64]
F10. Improving Traffic Conditions	Optimizing the transportation system to improve traffic convenience	[4,17,23,27,39,61,63]
F11. Moderate Mixed Use of Land Functions	A redeveloped area should moderately mix industrial, residential, office, retail and recreational land use functions	[4,23,38,65]
F12. Maintaining Social Stability	Avoiding social conflicts in the process of industrial land redevelopment	[36,58,61]
F13. Good Compensation and Resettlement Plan	Providing reasonable compensation schemes for original land users and their employees, which is an important aspect of social equity	[11,55,56,59,66]
F14. Increasing Information Transparency	Industrial land redevelopment is a public affair, and its information should be made public to stakeholders	[54,56,61]
F15. Enhanced Participation and Collaboration	Key stakeholders actively participate and collaborate in the process of industrial land redevelopment	[4,17,36,61,63,64]
F16. Increasing Open Space	Providing more open public spaces, such as green spaces, parks, etc.	[4,17,27,31–33,61,63]
F17. Improvement of Environmental Quality	Improving environmental quality, such as air and water quality, landscaping, and reducing noise pollution, through industrial land redevelopment	[10,11,17,39,54,57,61]
F18. Appropriate Land Development Intensity	Implementing an appropriate building volume ratio and building density to minimize negative impacts on the quality of life in surrounding communities	[23,38,63]
F19. Improvement of Building Energy Efficiency	Improving buildings' energy saving efficiency through industrial land redevelopment	[4,36,38,54,61,63,66]

3. Methodology

3.1. Study Area

Shanghai is one of the modern metropolitans in China, and the first Chinese city that stepped into the post-industrial era. The excessive proportion and inefficient utilization of existing

industrial land have become two major obstacles to the sustainable development of Shanghai in the post-industrialization era [67]. Today, there is an increasing number of large and medium-sized cities in China that are entering the post-industrial era. It is believed that the urban development modes of Shanghai can be seen as a typical sample in China [68]. Due to the policy issued by the Shanghai Municipal Government in 2014, industrial land redevelopment projects were considered as one of the key urban development strategies [69]. From 2014 to 2016, there were 96 industrial land redevelopment projects in the area of 628 hectares being planned and implemented in Shanghai [70]. Characterized by the massive redevelopment of industrial land, Shanghai provides plenty of cases and resources for studying industrial land redevelopment. Therefore, Shanghai was selected as a sample case city for the industrial land redevelopment in China in this study.

Putuo District is located in the central area of Shanghai. Currently, there are still a large number of inefficient industrial lands which do not meet the requirements of the urban social and economic development. In order to improve the land use efficiency, urban industrial transformation and upgrading, and the urban environment so as to achieve regional sustainable development, the Putuo District Government plan to implement massive redevelopment on 725.4 hectares area of industrial land in 2013–2020 [71]. It represents one of the hotspots of industrial land redevelopment comparing with other districts in Shanghai. Therefore, Putuo District was selected as the representative district in Shanghai for data collection. The data of governments and consulting experts were widely collected within the Putuo District. Since much of the data were collected from the original land users and the general public, it is extremely difficult to conduct field study in dozens of projects. Therefore, the Changzheng Industrial Park redevelopment project in Putuo District was selected as the representative case project to collect the data of original land users and the general public for the current paper, as shown in Figure 2.

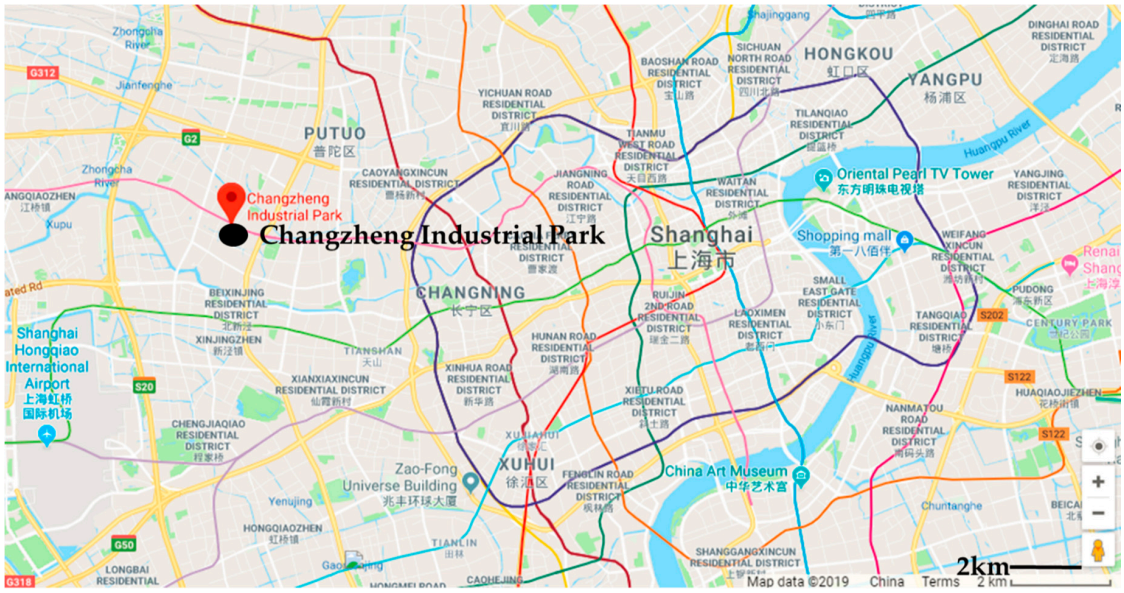

Figure 2. Map of Changzheng Industrial Park Redevelopment Project in Putuo District, Shanghai, China.

Changzheng Industrial Park redevelopment project is located in Changzheng Town of Putuo District. Most of its buildings were built in the 1990s. It was planned to be redeveloped in 2017, because the project is located in the center area of Putuo District, but most of its industries are low-end industries emitting environmental pollution and the industrial zone is inefficient in its land use, with an average building volume rate of only 1.3. This is a complex large-scale industrial land redevelopment project, with a total land area of 222 hectares and more than 1700 existing registered enterprises, and 6 residential communities within a 1.5 km radius of the project. Its redevelopment will have a significant impact on various stakeholders.

Two methods of data collection were applied in Putuo District, Shanghai: semi-structured interviews and a questionnaire survey, which were conducted between August and December 2018. The results of this study were based on the combination of semi-structured interviews and questionnaire data analysis. The latter was a numerical comparison analysis. The former was an in-depth interpretation, support and supplement of the latter's data analysis results.

3.2. Semi-Structured Interview

Based on the criterion of the project experience, professional knowledge and job position, 21 representatives from five different stakeholder groups of industrial land redevelopment projects in China were selected for semi-structured interviews. The information of interviewees is shown in Table 2. All of the selected stakeholder representatives were local officials, experts, original land users, and citizens are either those who are currently participating in or had participated in industrial land redevelopment projects with extensive practical experience of, or sufficient knowledge in, industrial land redevelopment. Telephone interviews and face-to-face interviews were applied to conduct semi-structured interviews in this study. The face-to-face interviews were conducted in August 2018, with each interview lasting for around 30 min. The telephone interviews were conducted in September 2018, with each interview lasting for around 20 min.

Table 2. Background of the Stakeholders Interviewed.

Group/No.	ID	Role/Position	Department Profile and Qualification	Interview Way
Local governments (7)	L1	Government officer	Shanghai Municipal Bureau of Planning and Natural Resources, urban planning specialist, over 20 years' working experience	Telephone interview
	L2	Government officer	Shanghai Putuo District Planning and Land and Resources Management Bureau, urban and rural land resource management specialists, over 10 years' experience in land management in industrial land redevelopment projects	Telephone interview
	L3	Government officer	Shanghai Putuo District Investment Promotion Office, urban development specialist, over 15 years' working experience	Face-to-face
	L4	Government officer	Shanghai Putuo District Environmental Protection Bureau, over 10 years' experience in environmental management in industrial land redevelopment projects	Telephone interview
	L5	Government officer	Shanghai Putuo District Housing Security and Housing Administration, over 15 years' experience in land expropriation in industrial land redevelopment projects	Face-to-face
	L6	Government officer	Changzheng Town People's Government, Putuo District, Shanghai City, over 5 years' experience in industrial land redevelopment projects	Face-to-face
	L7	Government officer	Shanghai Changzheng Industrial Zone Management Committee, over 5 years' experience in industrial land redevelopment projects	Face-to-face

Table 2. *Cont.*

Group/No.	ID	Role/Position	Department Profile and Qualification	Interview Way
Consulting experts (6)	C1	Urban Planner	Shanghai Tongji Urban Planning and Design Institute, Urban design specialist, over 15 years' experience in consulting services in industrial redevelopment projects	Telephone interview
	C2	Urban Planner	Shanghai Tongji Urban Planning and Design Institute, Urban planning specialist, over 25 years' experience in consulting services in industrial redevelopment projects	Telephone interview
	C3	Urban Planner	Shanghai Tongji Urban Planning and Design Institute, over 10 years' experience in consulting services in industrial redevelopment projects	Face-to-face
	C4	Professor of Land Resources Management	Tongji University, over 10 years' research and practical experience in industrial land redevelopment	Face-to-face
	C5	Professor of Urban Planning	Tongji University, professionals of industrial land redevelopment	Face-to-face
	C6	Professor of Urban Economics	Chongqing University, urban development specialist, over 15 years' research and practical experience in industrial land redevelopment	Telephone interview
Original land users (4)	O1	Manager	Original Land User in State-led Redevelopment Project	Telephone interview
	O2	Manager	Original Land User in State-led Redevelopment Project	Face-to-face
	O3	Manager	Original Land User in Land User-led Redevelopment Project	Face-to-face
	O4	Manager	Original Land User in Land User-led Redevelopment Project	Face-to-face
General public (4)	G1	Citizen	Resident Who Lives within a 1.5 km Radius of the Changzheng Industrial Park	Face-to-face
	G2	Citizen	Resident Who Lives within a 1.5 km Radius of the Changzheng Industrial Park	Face-to-face
	G3	Citizen	Resident Who Lives within a 1.5 km Radius of the Changzheng Industrial Park	Face-to-face
	G4	Citizen	Resident Who Lives within a 1.5 km Radius of the Changzheng Industrial Park	Face-to-face

The government departments involved in the process of industrial land redevelopment projects mainly included land, planning, housing management, investment management and environmental protection departments at the municipal and district level. Seven representatives from these departments were selected for interviews. With regard to consulting experts, five researchers and industry experts with extensive practical experience in the consultation of industrial land redevelopment projects were selected as interview representatives. The interviewees of original land users and the general public included those who are currently participating in industrial land redevelopment.

Four interviewees who were original land users were selected from the Changzheng Industrial Park redevelopment project. In order to divide the original land users into the aforementioned two types so as to compare their opinions, they were asked the following pre-interview question: "Would you like to choose state-led redevelopment or choose land user-led redevelopment?" With regard to the general public, four residents living within a 1.5 km radius of the Changzheng Industrial Park were selected as representatives, all of whom were deemed to have sufficient knowledge of industrial land redevelopment.

During the interview, the interviewees were asked: (1) to verify the rationale of stakeholders' expectations, as previously listed; (2) to clarify the stakeholder roles they represent in these projects; (3) to illustrate the conflicts between them and other stakeholders; (4) to answer the obstacles to stakeholder participation. The four questions in the semi-structured interview were closely related to the content of the questionnaires, and the results of the semi-structured interview were used to deeply interpret, support and supplement the results of the questionnaires data analysis. Through these interviews, the identified stakeholder expectations were validated, and the target groups requiring questionnaires were adjusted. In the interviews, the expectation-related factors which were identified based on the government documents and literature reviews were unanimously agreed by the interviewees, and no other factors were figured to be added. In the initial study design, the target stakeholder groups included local governments, original land users, consulting experts, the public, and NGOs. In the end, NGOs were removed since few NGOs are involved in industrial land redevelopment in China [72,73].

3.3. Questionnaire Survey

On the basis of the validation of the identified stakeholder expectations and target stakeholders, a questionnaire was administered in order to obtain the required data. The stakeholders surveyed were asked to score the importance level for each factor. The level of importance was measured by a five-point Likert scale, where 1 represented "extremely unimportant", 2 "unimportant", 3 "neutral", 4 "important", and 5 "extremely important". To improve the survey return rate and representativeness, the questionnaires were sent out via email and administered in person. The questionnaires were sent to those representing the five target stakeholder groups. To ensure that the majority of respondents had sufficient knowledge or experience in industrial redevelopment projects, potential respondents from the local governments, consulting experts, the general public and original land users in the different two project types were purposefully selected on the basis of criterion of the project experience, professional knowledge and job position. The local governments sample distribution included all relevant core departments of the municipal, district, town, and industrial zone management committee levels. With regard to original land users in Changzheng Industrial Park, the questionnaires were collected by e-mail. In addition, a question was set in the questionnaires sent to the land users, namely, "Would you like to choose state-led redevelopment or choose land user-led redevelopment?" to classify the original land users into two types. For the general public, the questionnaires were collected through on-site surveys of residents living within a 1.5 km radius of Changzheng Industrial Park. Comrey points out that when the number of questions in the questionnaire was less than 40, the medium sample size was about 150, and the better sample size is 200 [74]. Based on this, the sample size of the questionnaires in this study was determined to be more than 200.

A total of 520 questionnaires were sent to the target stakeholders and 215 valid questionnaires were returned. Their distribution across the five stakeholder groups was relatively balanced, with a reasonable response rate of 41.35% [75]. Of those respondents who replied, 39.08% had more than 2 years' experience in industrial land redevelopment. Although more than 60% of the respondents had less than 2 years' experience, they were mainly non-professional stakeholders (original land users and the general public) who were experiencing industrial land redevelopment and thus had enough experience in industrial land redevelopment. The demographic characteristics of the questionnaire respondents are summarized in Table 3.

Table 3. Demographic Characteristics of the Questionnaire Respondents.

Feature	Type	Frequency	Percentage (%)
Gender	Male	97	45.12%
	Female	118	54.88%
Stakeholder groups type	Local governments	41	19.07%
	Consulting experts	43	20.00%
	General public	49	22.79%
	Original land users in state-led redevelopment projects;	40	18.60%
	Original land users in land user-led redevelopment projects	42	19.53%
Age	45–54	31	14.42%
	35–44	77	35.81%
	25–34	86	40.00%
	15–24	21	9.77%
Education	Master's degree or Ph.D.	47	21.86%
	College or Bachelor's degree	139	64.65%
	High school or below	29	13.49%
Years of work experience in industrial land redevelopment	10 years and above	17	7.91%
	5–10 years	52	24.19%
	2–5 years	15	6.98%
	2 years and below	131	60.93%

3.4. Analysis Method: Combination of Independent Sample T-Test and One-Way ANOVA

Norman points out that when using data collected by Likert scales, parametric tests are more reliable than non-parametric tests, even for small samples, as the variance is not equal and the data are not normally distributed [76]. Based on this, parametric tests were used to analyze the data in this study.

First, the importance degree of each factor in each stakeholder group was compared by calculating the mean score of each factor. Second, the mean score of different paired groups was compared. Before making a comparison, the Levene's test was used to test the hypothesis that the variance between two specific paired groups is equal, and the threshold value was set to $P < 0.05$. Then, the independent sample T-test was used to test whether there was a significant difference in the mean scores between two specific paired stakeholder groups. The threshold probability P (two-tailed) was also set to $P < 0.05$. When the mean scores of pairwise comparison was proven to be significant, it was shown that these two stakeholder groups have different opinions on this factor. However, only the factors with the greatest mean differences among these proven significance factors can be seen as important and worthy of further discussion. Finally, the one-way ANOVA was used to analyze whether the expectations among all of the stakeholder groups involved in the industrial land redevelopment projects were different as a whole. The Levene's test was applied once again and a threshold of $P < 0.05$ was set to estimate the homogeneity of variance between the five stakeholder groups.

4. Results and Analysis

4.1. Comparison of Expectations within Each Stakeholder Group

The importance degree of each factor in each stakeholder group was measured by mean scores, standard deviations and rankings, as shown in Table 4. Here, it can be seen that the standard deviation scores of all of the factors in each stakeholder group range between 0.43 and 0.86. Such a low standard deviation indicates that the data collected are reliable, since each sample is close to the means.

Table 4. Mean Scores of Expectations within Each Stakeholder Group in Industrial Land Redevelopment Projects.

Factor	Local Governments			Consulting Experts			General Public			Original Land Users (Land User-Led)			Original Land Users (State-Led)		
	Mean	Standard Deviation	Rank	Mean	Standard Deviation	Rank	Mean	Standard Deviation	Rank	Mean	Standard Deviation	Rank	Mean	Standard Deviation	Rank
F1	**4.76**	**0.435**	**1**	4.05	0.615	9	3.96	0.676	15	3.48	0.505	13	3.20	0.564	12
F2	**4.66**	**0.480**	**2**	3.86	0.560	12	3.94	0.517	16	3.10	0.656	18	3.38	0.490	7
F3	**4.39**	**0.703**	**5**	3.49	0.631	16	4.16	0.657	9	**4.83**	**0.377**	**1**	3.35	0.622	8
F4	**4.51**	**0.597**	**4**	4.12	0.731	7	4.04	0.611	12	3.71	0.457	11	3.25	0.630	10
F5	4.12	0.781	6	**4.44**	**0.590**	**4**	4.08	0.607	11	2.71	0.508	19	3.23	0.577	11
F6	3.98	0.851	10	3.88	0.586	11	3.92	0.571	17	3.69	0.468	12	3.45	0.639	6
F7	4.10	0.735	7	3.63	0.655	13	**4.43**	**0.577**	**5**	**4.33**	**0.477**	**5**	2.93	0.616	15
F8	3.76	0.860	12	3.51	0.631	15	4.33	0.591	6	3.90	0.576	10	2.88	0.648	16
F9	3.66	0.825	14	3.60	0.583	14	3.49	0.545	18	**4.40**	**0.587**	**3**	2.98	0.698	14
F10	4.07	0.648	8	**4.53**	**0.505**	**3**	4.24	0.560	7	**4.36**	**0.533**	**4**	3.30	0.608	9
F11	2.73	0.633	19	**4.65**	**0.529**	**1**	4.00	0.612	14	3.93	0.640	9	3.48	0.599	5
F12	**4.59**	**0.499**	**3**	3.44	0.590	17	3.20	0.612	19	3.21	0.606	17	3.13	0.686	13
F13	3.44	0.502	17	**4.35**	**0.613**	**5**	4.02	0.595	13	3.43	0.630	14	**4.88**	**0.335**	**1**
F14	3.22	0.475	18	3.23	0.684	19	**4.51**	**0.505**	**4**	4.31	0.563	6	**4.58**	**0.501**	**3**
F15	3.88	0.600	11	**4.63**	**0.536**	**2**	**4.61**	**0.492**	**2**	**4.64**	**0.533**	**2**	**4.70**	**0.464**	**2**
F16	3.76	0.582	13	4.21	0.638	6	**4.71**	**0.456**	**1**	3.40	0.587	15	2.70	0.608	19
F17	4.00	0.500	9	4.09	0.610	8	4.20	0.612	8	4.14	0.566	8	3.50	0.555	4
F18	3.59	0.499	15	3.91	0.570	10	**4.57**	**0.500**	**3**	3.29	0.457	16	2.78	0.577	18
F19	3.46	0.552	16	3.30	0.674	18	4.14	0.645	10	4.24	0.617	7	2.80	0.516	17

Note: Bold and underline mean the information are the most important results that need to be interpreted in detail.

The Promotion of Local Economic Development (F1), Industrial Transformation and Upgrading (F2), Maintaining Social Stability (F12), More Efficient Land Use (F4), and Economic Benefits for Governments and Other Stakeholders (F3) were ranked as the top five by local governments. By conducting interviews with seven government officials, the main interest of local government in industrial land redevelopment projects was found to be that of "public interests". From the perspective of the local governments, responding to "public interests" in industrial land redevelopment inferred stimulating local economic growth, growing high-tech industries, improving the efficiency of land resource utilization, social stability, and increasing local fiscal revenue. For the government, these were also considered as the success of industrial land redevelopment.

Moderate Mixed Use of Land Functions (F11), Enhanced Participation and Collaboration (F15), Improved Traffic Conditions (F10), Protection of Industrial Heritage (F5), and Good Compensation and Resettlement Plan (F13) were found to be the factors of greatest concern for the consulting experts. The consulting experts are stakeholders with expertise who could influence the industrial land redevelopment projects by providing suggestions to the local governments. The interviews with all of the consulting experts highlighted that they expected to realize their personal values by providing advisory services for the project. Therefore, they strongly hope to participate more in industrial land redevelopment. Furthermore, the optimization of land use, traffic accessibility, industrial heritage protection and reasonable distribution of economic benefits are the main technical elements which need to be taken seriously.

From the perspective of the public, their most concerned factors were Increasing Open Space (F16), Enhanced Participation and Collaboration (F15), Appropriate Land Development Intensity (F18), Increased Information Transparency (F14), and the Improvement of Public Service Facilities (F7). According to the opinions of the public representatives interviewed, environmental improvements and having a higher quality of life brought about by the industrial land redevelopment were of great concern to them. In addition, as the general public rarely has the opportunity to participate in the decision-making process pertaining to industrial land redevelopment, they expect to reduce the negative externalities of the project through more participation.

For the original land users in state-led redevelopment projects, Good Compensation and Resettlement Plan (F13), Enhanced Participation and Collaboration (F15), and Increased Information Transparency (F14) were the three main factors with a mean score higher than 4.57. The other factors were considered unimportant, because the mean scores of them were relatively low. It was also reported by the interviewees who were original land users in state-led redevelopment projects. Since they have to move out after the project is completed, they are not concerned with the benefits of the project for the redevelopment area. Rather, their main concerns lie in obtaining more information and participating in industrial land redevelopment decision making processes, so as to maximize individual economic benefits.

The original land users in land user-led redevelopment projects were found to be most concerned with the Economic Benefits for Governments and Other Stakeholders (F3), Enhanced Participation and Collaboration (F15), Improving the Quality of Buildings (F9), Improving Traffic Conditions (F10) and the Improvement of Public Service Facilities (F7). As they were project holders who would be able to enjoy the benefits of improved redevelopment areas, they were eager to participate in the process of industrial land redevelopment and contribute ideas to regional redevelopment programs. In this way, the quality of buildings, traffic conditions and public service facilities around the project can be significantly improved, and land users can reap economic benefits from added property values and rent increases.

4.2. Comparison of Expectations between Pairs of Stakeholder Groups

The mean differences between group pairs proved to be significant using the independent sample T-test, as shown in Table 5 (LG = Local Governments, CE = Consulting Experts, GP = General Public,

OLUS = Original Land Users in State-led Redevelopment Projects, OLUL = Original Land Users in Land User-led Redevelopment Projects).

Overall, there emerged great differences between the expectations of the original land users in state-led redevelopment projects and other stakeholders. Except for eight factors, all of the remaining factors were significantly different in the mean scores of four comparisons with other stakeholders. Furthermore, the mean difference for most factors was higher than 0.80, with a total of 13/19 compared with local governments, 8/19 compared with consultants, 9/19 compared with the general public, and 7/19 compared with original land users in land user-led redevelopment projects.

For more details of the independent sample T-test for each group pairs, please refer to the Supplementary Materials: Tables S1–S10.

Table 5. Significant Mean Differences between Pairs of Stakeholder Groups.

Factor	LG & CE	LG & GP	LG & OLUL	OLUS & LG	OLUS & GP	OLUS & CE	OLUS & OLUL	CE & GP	CE & OLUL	GP & OLUL
F1	0.710	0.797	**1.280**	**−1.556**	−0.759	−0.847	−0.276	-	0.570	0.483
F2	0.798	0.720	**1.563**	−1.284	−0.564	−0.485	0.280	-	0.765	0.844
F3	**0.902**	-	−0.443	−1.040	−0.813	-	**−1.483**	−0.675	**−1.345**	−0.670
F4	0.396	0.471	0.798	−1.262	−0.791	−0.866	−0.464	-	0.402	0.327
F5	−0.320	-	**1.408**	−0.897	−0.857	**−1.217**	0.511	0.360	**1.728**	**1.367**
F6	-	-	-	−0.526	−0.468	−0.434	-	-	-	0.228
F7	0.470	−0.331	-	−1.173	**−1.504**	−0.703	**−1.408**	−0.801	−0.705	-
F8	-	−0.570	-	−0.881	−1.452	−0.637	**−1.030**	−0.815	−0.393	0.422
F9	-	-	−0.746	−0.684	−0.515	−0.630	**−1.430**	-	−0.800	**−0.915**
F10	−0.462	-	−0.284	−0.773	−0.945	**−1.235**	**−1.057**	0.290	-	-
F11	**−1.919**	**−1.268**	−1.197	0.743	−0.525	−1.176	−0.454	0.651	0.723	-
F12	**1.144**	**1.381**	**1.371**	**−1.460**	-	−0.317	-	-	-	-
F13	**−0.910**	−0.581	-	**1.436**	0.855	0.526	**1.446**	0.328	0.920	0.592
F14	-	**−1.291**	−1.090	**1.355**	-	**1.342**	0.265	**−1.278**	**−1.077**	-
F15	−0.750	−0.734	−0.765	0.822	-	-	-	-	-	-
F16	−0.453	−0.958	0.351	−1.056	**−2.014**	**−1.509**	−0.705	−0.505	0.805	**1.310**
F17	-	-	-	−0.500	−0.704	−0.593	−0.643	-	-	-
F18	−0.322	**−0.986**	0.300	−0.810	**−1.796**	−1.132	−0.511	−0.664	0.621	**1.286**
F19	-	−0.679	−0.775	−0.663	−1.343	−0.502	**−1.438**	**−0.841**	**−0.936**	-

Note: "-" Means the mean difference proved to be not significant. Bold and underline mean the information are the most important results that need to be interpreted in detail.

4.2.1. Comparison between Local Governments and Other Stakeholders

When comparing local governments with the consultants, there emerged 13/19 of factors with significant differences in terms of expectations. The Moderate Mixed Use of Land Functions (F11), Maintaining Social Stability (F12), Good Compensation and Resettlement Plan (F13), and Economic Benefits for Governments and Other Stakeholders (F3) were found to be the four factors with the biggest mean differences. According to the interviews with the six consulting experts, in many cases, their recommendations were not what local governments expected, and they also pointed out that local governments pay too much attention to social stability and the increase of local fiscal revenue. However, consulting experts pay more attention to the technical factors and the balance of economic interests among stakeholders. As described by a representative of consultants: "In many instances, local governments have determined the goals of industrial land redevelopment before we provide consulting services. All they want to do is to use our expertise to demonstrate the rationality of their targets".

The comparison between local governments and the general public indicates that 13 of the 19 expectation factors had significant differences. Among those factors, the mean difference of Maintaining Social Stability (F12), Increasing Information Transparency (F14), Moderate Mixed Use of Land Functions (F11), and Appropriate Land Development Intensity (F18) have biggest mean

differences. Based on the views of the 11 interviewees from local governments and the public, while the latter can benefit from social stability, they do not pay attention to it. Instead, they are eager to obtain more information to safeguard their interests and reduce the negative externalities of industrial land redevelopment. Proper development intensity can minimize the negative impact of industrial land redevelopment projects on the surrounding community's living environment, which is a factor of great concern to the public. However, for the local governments, in order to reduce the cost of industrial space rents and thus stimulate local economic growth, the highest possible development intensity is permitted.

In the comparison between local governments and original land users in land user-led redevelopment projects, 14 of the 19 factors were found to have significant differences in terms of the mean difference. Among all of the factors, the top four differing expectations were Industrial Transformation and Upgrading (F2), Protection of Industrial Heritage (F5), Maintaining Social Stability (F12), and the Promotion of Local Economic Development (F1). Three of these four factors were of the greatest concern to local governments, and were regarded as the key elements of public interests that needed to be achieved. According to the nine interviewees with local government representatives and original land users, although the latter in land user-led redevelopment projects can benefit from social stability and local development in the long-term, they are not concerned about these factors. While providing more industrial space for advanced industry emerged as the expectation of greatest concern to the local government, original land users in land user-led redevelopment projects were not interested in this. Instead, they were keen to shift industrial land to commercial and office functional uses, in order to accrue more economic benefit. Moreover, the local governments regarded the protection of industrial heritage as an important issue in industrial land redevelopment, but land users held different opinions. As one of the latter representatives commented: "We are also aware of the importance of protecting industrial heritage, but the lack of a reasonable compensation mechanism for industrial heritage protection will harm our reasonable interest."

4.2.2. Comparison between Original Land Users in State-Led Redevelopment Projects and Other Stakeholders

As displayed in Table 5, the biggest differences of opinion between original land users in state-led redevelopment projects and local governments pertained to the Promotion of Local Economic Development (F1), Maintaining Social Stability (F12), Good Compensation and Resettlement Plan (F13), and Increasing Information Transparency (F14). Local governments regarded local development and social stability as two core elements of "public interest", while the original land users in state-led redevelopment projects were not concerned with them. Instead, the latter's greatest concern was that of obtaining compensation for demolition and resettlement. They hoped to acquire more information to influence government decision-making, and thus obtain a greater degree of economic compensation.

Increasing Open Space (F16), Appropriate Land Development Intensity (F18), and the Improvement of Public Service Facilities (F7) were the three top disagreements between the original land users in state-led redevelopment projects and the general public, as shown in Table 5. These factors center on the promotion of the surrounding living environment and the convenience of daily life, which were of the greatest concern to the public; however, since land users in state-led redevelopment projects need to move out of the area, they pay little attention to these aspects.

The most conflicting opinions between original land users in state-led redevelopment projects and consulting experts regarded Increasing Open Space (F16), Increase Information Transparency (F14), Improve Traffic Conditions (F10), and Protection of Industrial Heritage (F5). According to the interviews with the six consultants, their priority was that of making the area under redevelopment more sustainable on a technical level. Therefore, technical factors such as the improvement of space quality and traffic conditions, and protecting cultural aspects, were of greater concern to them. Conversely, the original land users in state-led redevelopment projects were not concerned with the changes in the area under redevelopment. Rather, as previously stated, they viewed the resettlement compensation

offered by local governments as a vital important opportunity to maximize their economic benefits and enable them properly to resettle their employees. Therefore, they had a strong motivation to obtain more information and intervene in the decision-making around the industrial land redevelopment.

The comparison between the original land users under the two project types showed that although they are both original land users, there were significant differences in their expectations. Economic Benefits for Governments and Other Stakeholders (F3) and Good Compensation and Resettlement Plan (F13) ranked first and second in all of the mean difference rankings, respectively, with the others being the factors related to the improvement of the area under redevelopment (F19, F9, F7, F10, F8). Due to original land users in land user-led redevelopment projects not actually moving out of the area in question, improving the quality of the properties and promoting the area's attractiveness to investors emerged as their core interests. In comparison, the original land users in state-led redevelopment projects who did move out of the redevelopment area did not expect these aspects. Instead, their primary focus was on the demolition and resettlement compensation.

4.2.3. Comparison between Other Pairs of Stakeholders

In comparing the expectations of consultants and those of the general public, there emerged 11 factors with significant differences. Increasing Information Transparency (F14) and the Improvement of Building Energy Efficiency (F19) were two factors with biggest mean differences in terms of this difference. From the perspective of the four public representatives, they believed that their supervision and participation could make industrial land redevelopment more sustainable, giving them a strong incentive to remain informed about the process of industrial land redevelopment. Although all of the consultant interviewees agreed that both the public and land users have the right to know the relevant information regarding the redevelopment, they feared that information transparency may cause over-interference and lead to inefficiency. For its part, building energy efficiency is an effective method of dealing with climate change in urban redevelopment, which was found to be a factor of great concern to the public. However, although consultants agreed that improvement of building energy efficiency was important, this was not their priority compared with other factors.

From the perspective of the consultants and original land users in land user-led redevelopment projects, 14 factors were found to have significant differences. Similarly, Increasing Information Transparency (F14) and the Improvement of Building Energy Efficiency (F19) were two of the four most differing expectations in this group, while the Protection of Industrial Heritage (F5) and Economic Benefits for Governments and Other Stakeholders (F3) were the other two. All of the consultant interviewees agreed that industrial heritage was an important part of the city's historical memory and should be well protected. Although original land users in land user-led redevelopment projects were also aware of the importance of industrial heritage protection, they will ignore it because industrial heritage protection will reduce their personal economic interests.

Upon comparing the expectations of the general public and those of original land users in land user-led redevelopment projects, 11 factors proved to have significant differences. Protection of Industrial Heritage (F5), Increasing Open Space (F16), Appropriate Land Development Intensity (F18) and Improving the Quality of Buildings (F9) were the top four differing views among these two stakeholder groups. The distinguishing features between them were that the land users were concerned with the internal effects of the project, while the public were concerned with the external effects. Thus, the original land users expected that more of their participation would enhance the quality of properties on the land and accrue them greater economic benefits. In contrast to the general public, the external effects of industrial land redevelopment such as the protection of industrial heritage, increased open space, and an appropriate intensity of development were less important to original land users in land user-led redevelopment projects.

4.3. Comparison of Expectations among all Stakeholder Groups

In order to analyze the overall concordance between stakeholder groups with regard to the expectation-related factors of the industrial land redevelopment project studied here, a one-way ANOVA was applied, the results of which are displayed in Table 6.

Table 6. Test of Significant Difference between all Stakeholder Groups.

Factor	Between Groups		Within Groups		F	Sig.
	Sum of Squares	df	Sum of Squares	df		
F1	58.277	4	68.263	210	44.820	0.000
F2	59.389	4	62.193	210	50.133	0.000
F3	64.310	4	78.127	210	43.215	0.000
F4	36.436	4	78.652	210	24.321	0.000
F5	87.674	4	80.215	210	57.382	0.000
F6	**7.638**	**4**	**83.944**	**210**	**4.777**	**0.001**
F7	64.375	4	79.765	210	42.371	0.000
F8	49.874	4	93.075	210	28.132	0.000
F9	43.395	4	88.238	210	25.645	0.000
F10	37.511	4	68.582	210	28.715	0.000
F11	**84.707**	**4**	**76.577**	**210**	**58.074**	**0.000**
F12	61.787	4	75.961	210	42.704	0.000
F13	62.420	4	63.505	210	51.603	0.000
F14	**80.231**	**4**	**63.695**	**210**	**66.129**	**0.000**
F15	**19.637**	**4**	**58.112**	**210**	**17.740**	**0.000**
F16	**103.204**	**4**	**69.196**	**210**	**78.302**	**0.000**
F17	**13.270**	**4**	**68.730**	**210**	**10.136**	**0.000**
F18	**80.763**	**4**	**57.126**	**210**	**74.223**	**0.000**
F19	61.674	4	77.284	210	41.896	0.000

Note: Bold and underline mean the information are the most important results that need to be interpreted in detail.

Since all of the *P* values emerged as less than 0.05, it was clear that all of the factors contained significant differences between all of the stakeholder groups. Increasing Open Space (F16), Appropriate Land Development Intensity (F18), Increasing Information Transparency (F14), and the Moderate Mixed Use of Land Functions (F11) yielded the highest F values, meaning that these factors were those that generated the most differing views across all stakeholders. The Promotion of Local Employment (F6), Improvement of Environmental Quality (F17), and Enhanced Participation and Collaboration (F15) were the factors that generated the least differing opinions.

Based on the four interviewees with members of the general public, Increasing Open Space (F16) and Appropriate Land Development Intensity (F18) should also be basic elements of public interest considered in such redevelopment projects. This was in agreement with the views of the consultant respondents. As described by a representative of consultants: "The "public interest" defined by the government pays too much attention to urban development at the macro level, but the human needs at the micro level should also be the important elements of public interest". However, local governments and land users held different opinions. For the local authorities, industrial land redevelopment should benefit the residents of surrounding communities, but, more importantly, it should stimulate urban economic growth and bring benefits for all citizens. The interviews with the original land users in land user-led redevelopment projects conveyed that they were eager to maximize their personal economic benefits, hence, a maximum intensity of development was what they expected. The interviews with four members of the general public and four original land users showed all of them to be strongly motivated to obtain information, firmly believing that information transparency is one of the best approaches for protecting their interests. Nevertheless, the local government and consultant respondents had different opinions on this. The former feared that transparency of information would affect social stability, while

the latter were concerned that it would lead to over-interference from other stakeholders in the process of industrial land redevelopment.

The 14 interviewees with consultants, members of the general public and original land users all contained strongly appealed for the proper mixing of land use functions, especially to increase the reasonable proportion of affordable housing. However, the rationale behind this differed across these stakeholder groups. The consultants argued that increasing reasonable affordable housing can optimize land use structure and promote a balanced distribution of residential and employment space to reduce energy consumption due to work-related commuting. The general public respondents believed that increasing reasonable affordable housing may alleviate the housing shortage in big cities. For the original land users, the mixed use of land functions was seen as able to provide them with higher land development benefits. Nevertheless, local government representatives held the opposite opinion. According to interviews with local government representatives, providing more industrial space to stimulate economic growth was the most important goal of industrial land redevelopment. Since the profit of residential function is higher than industrial function, in order to prevent the real estate-led industrial land redevelopment extruding the space of industry development, the local governments can only restrict the residential function in the industrial land redevelopment projects.

Increasing employment is an important goal of industrial land redevelopment. Although none of the stakeholders ignored this factor, it was not highly valued by all. With the exception of the original land users in state-led redevelopment projects, the other stakeholders were very concerned with the improvement of the environmental quality. All stakeholders insisted that their participation should be strengthened in industrial land redevelopment projects; however, their rationale behind this differed. The local government respondents believed that only by strengthening the government's participation could the project realize the public interest. The consultants argued that their expertise could facilitate the successful implementation of the project. The members of the general public argued that their effective supervision could reduce the negative externalities of the project and ensure social equity. Finally, the original land users believed that strengthening their involvement was the best way to maximize economic benefits.

5. Discussion and Policy Suggestions

5.1. Discussion

5.1.1. The Expectations of Stakeholders in Sustainable Industrial Land Redevelopment

The results of this study can inform a comprehensive understanding of the expectations of various stakeholder groups involved in industrial land redevelopment projects. In sustainable industrial redevelopment, many studies have focused on social factors, such as job creation, public participation, the reduction of crime, equity, and reducing urban sprawl, etc. [27,28,30]. Maintaining social stability in industrial land redevelopment has rarely been mentioned. However, in the context of China, although the other stakeholders in this study were not concerned with it, social stability remained a focal issue for local governments. Industrial heritage is an important catalyst for realizing social sustainability in urban redevelopment, and should be well protected [34,77]. However, due to the lack of an effective incentive mechanism for industrial heritage protection to compensate land users' losses, in the current research there emerged a great conflict of opinion between land users in land user-led redevelopment projects and other stakeholders. The transparency of information can help stakeholders to safeguard their interests so as to achieve social equity [78,79]. However, in the Chinese context, neither local governments nor consultants were willing to share information with the three other stakeholder groups. Increasing open spaces and appropriate development intensity are two key elements of social sustainability of urban redevelopment [39]. These factors should also form the basis of the "public interest" in the perspective of the general public and consultants interviewed in this research. However, economic factors were seen to be more valued by local governments and original land users, thus making the former factors less important.

Regarding the environmental dimension, with the exception of the original land users in state-led redevelopment projects, the other stakeholders were very concerned about the improvement of the environmental quality. The proper mixing of land use functions, especially to increase the reasonable proportion of affordable housing, was seen as able to reduce the energy consumption caused by commuting [4,23,65]. However, although most of the stakeholders had strong motivations to seek the increase of affordable housing, local governments tend to restrict the residential functions in industrial land redevelopment projects in order to provide more industrial space for economic growth. Building energy conservation is considered to be one of the most important measures to address climate change in the remit of industrial land redevelopment [39]. However, although this was of great concern to the general public and the original land users in land user-led redevelopment projects in the current study, this emerged as less important than other factors for governments and consulting experts.

Economic well-being is the top priority consideration for stakeholders implementing industrial land redevelopment projects in China. However, in current research, different stakeholder groups were seen to have different standpoints regarding their expectations of economic benefits. The local governments were more concerned with the growth of the local economy, while land users pursued the maximization of demolition compensation; this, in turn, leads to the conflict of economic interests between the two groups, as has been covered by much research [6,43]. However, this study found that original land users involved in different types of projects encounter different forms of economic conflict with local governments, with the above-mentioned conflict existing only in state-led redevelopment projects. The economic conflict between local governments and original land users in land user-led redevelopment projects is such that local governments hope to realize the transformation and upgrading of urban industries through industrial land redevelopment, while the land users are keen to shift industrial land to non-industry use in order to obtain more economic benefits. This disparity between local governments and different types of original land users may affect the realization of "public interest" in China.

5.1.2. Avoiding Negative Externalities in Industrial Land Redevelopment

Social equity in urban renewal refers to balancing the interests and needs of all stakeholder groups without sacrificing the interests of any of these groups [80,81]. However, in the context of industrial land redevelopment in China, this study found that the governments and original land users paid too much attention to the economic expectations and ignored the expectations most concerned by the general public, such as increasing open space, appropriate land development intensity, etc. The most common way for local governments to balance the economic benefits between them and original land users is to increase the development density and reduce the amount of open space. This seemingly realizes a "Pareto Improvement", which satisfies the "public interest" of local governments and the economic interests of the original land users. However, the resulting external costs have been transferred to the public, which increases the burden of the surrounding public service facilities and reduces the quality of the communal living environment of the whole region, in turn, exerting a negative external impact on the public. As a core stakeholder group, if the public cannot really benefit from industrial land redevelopment, it will never achieve real sustainability. Therefore, the local government needs to formulate strategies to prevent negative external effects accruing on the public in the process of industrial land redevelopment.

5.1.3. Diverse Needs of Original Land Users in Different Project Types

State-led redevelopment and land user-led redevelopment are two effective redevelopment models for industrial land redevelopment, which have been widely accepted [6]. In most of China's industrial land redevelopment policy systems, these two different project types share similar policy documents and decision-making procedures [54,57,61]. The relevant pre-redevelopment assessment, project validation and planning are completed by government departments, with the support of consultants. However, this study found there to be great differences in the expectations of original land

users in different project types. The original land users in state-led redevelopment projects focused only on compensation for demolition and resettlement, while those in land user-led redevelopment projects were not only concerned with economic interests, but also with the improvement of social and environmental aspects. Therefore, in order to achieve sustainable industrial land redevelopment, it is necessary to listen more to the voices of original land users and meet the diverse needs of original land users in different project types.

5.1.4. The Balance between Industrial Space and Residential Space

In the context of post-industrialization, the moderate mixing of land functions in industrial land redevelopment projects, especially the increase of a reasonable proportion of housing, is a widely accepted method of optimal land utilization [31]. Tan [82] points out that most cities are facing the problem of the shortage of affordable housing due to land shortages, and that the industrial land redevelopment is one of the effective ways to solve this problem. However, this study found that in the context of China, there were different opinions among stakeholders on the expectation factor of moderate mixed use of land functions. Although most stakeholder groups strongly appeal for the proper mixing of land use functions, especially to increase the reasonable proportion of affordable housing in industrial land redevelopment projects, local governments restrict residential functions in these projects so as to provide more industrial space to stimulate economic growth. Most cities in China have an excessive proportion of total industrial land, with the existing industrial land being distributed in the form of large industrial zones within inner cities. In the context of post-industrialization, such land use structure is arguably unreasonable. Therefore, in the context of the shortage of affordable housing, how to balance the relationship between industrial space and residential space is a key issue that must be solved for most cities in China in order to achieve sustainable industrial land redevelopment.

5.1.5. Barriers to Current Stakeholder Participation

Stakeholder participation can be beneficial to project planning and implementation, which can promote the successful implementation of urban renewal [83,84]. Although all of the stakeholders in this study showed a strong willingness to strengthen their participation in industrial land redevelopment, this does not mean that the results would be better if they actually participated more. This is because based on the semi-structured interviews in this study found that there exist two barriers to stakeholder participation in industrial land redevelopment: lack of trust, and lack of an effective multi-stakeholder negotiation platform.

Edelenbos and Klijn [85] point out that mutual trust among stakeholders has a significant impact on stakeholder participation and collaboration. However, this study found that in China, there exist distrust and disrespect among stakeholders in industrial land redevelopment projects. The local governments argued that their main goal with industrial land redevelopment was to achieve the long-term "public interest" of the whole city, while land users and the public only care about their own and short-term interests and cannot understand the government's strategic intentions. Both land users and the members of the public interviewed believed that local governments and consultants would not really protect their interests, and barely trust decision makers. The consultants argued that the lack of expertise and effective organization leads to the inadequate capacity of public participation, and that an overemphasis on public participation would reduce efficiency. Therefore, distrust among stakeholders can be seen as one of the major obstacles to stakeholder participation.

An effective negotiation platform is beneficial for stakeholders to express their interests and balance conflicts of interest through continuous dialogue, in order to reach a consensus [86]. However, the lack of an effective multi-stakeholder negotiation platform in the process of industrial land redevelopment in China has led to the inability of land users and the public to effectively express their interests and participate in decision making, which is another major barrier to stakeholder participation. In summary, the lack of trust and the lack of a multi-stakeholder negotiation platform are two major barriers in industrial land redevelopment that lead to a deadlock. Without rebuilding trust among stakeholders

and building an effective multi-stakeholder negotiation platform, it will be difficult to reach consensus in stakeholder participation.

5.2. Policy Suggestions

Yang and Chan [87] point out that successful stakeholder participation relies on a deep understanding of the different needs of different stakeholders, and balances conflicts of interest among stakeholders through establishing effective dialogue mechanisms. Due to there being a large disparity of expectations across various stakeholders in industrial land redevelopment projects. Therefore the top priority of local government is to build an effective multi-stakeholder consultation platform to help stakeholders resolve conflicts of interest through dialogue, and so as to achieve sustainability.

Kronenberg [88] argues that NGOs can effectively enhance the strength and participation ability of vulnerable stakeholders and play a bridging role in stakeholder participation so as to enhance trust among stakeholders. Due to the lack of relevant expertise and the absence of assistance from NGOs in industrial land redevelopment, the public's participation ability has been skeptically viewed by local governments and consultants in China. Therefore, by vigorously cultivating NGOs, local governments can effectively enhance the participation ability of the public and the mutual trust among stakeholders.

In order to effectively resolve conflicts among stakeholders, local governments can also formulate relevant laws and regulations to ensure stakeholders participation. Cheung and Leung [89] believe that government accountability is an effective measure to improve stakeholder satisfaction, especially for the vulnerable groups. Therefore, strengthening government accountability could increase their willingness to cooperate with the public and original land users in the process of industrial land redevelopment.

Moreover, due to the inadequate ability of public participation and most citizens' lack of awareness of public participation, the power of the public has not been fully exerted [90]. Therefore, strengthening education and promotional efforts related to industrial land redevelopment may be seen as long-term strategies to help improve stakeholders' willingness and ability to participate.

6. Conclusions

Industrial land redevelopment projects play an extremely important role in meeting the land demands of urbanization and promoting the sustainable development of urban society and economy in China. Gaining an in-depth understanding of the expectations of different stakeholders forms the foundation of sustainable industrial land redevelopment. Considering this, the current study has systematically analyzed the diverse expectations of key stakeholder groups: local governments, consulting experts, the general public, and original land users in state-led redevelopment and land user-led redevelopment projects. Regarding the social aspect, all of these stakeholders hope to strengthen their involvement in industrial land redevelopment. Social stability emerged as a key concern of local governments in this context, even though the other stakeholders paid little attention to it. Except the original land users in land user-led redevelopment projects, the stakeholders were very concerned about the protection of industrial heritage. Although the public and land users regarded information transparency as an effective way to protect their interests, local governments and consulting experts were reluctant to share information. Moreover, from the perspective of the public and consulting experts, increasing public space and implementing an appropriate density of development should also comprise the basic elements of "public interest"; however, these aspects were found not to be valued by local governments and original land users in land user-led redevelopment projects.

Regarding the environment, with the exception of the original land users in state-led redevelopment projects, the other stakeholders were very concerned with the improvement of environmental quality. Although building energy efficiency was a factor of great concern to the public and original land users in land user-led redevelopment projects, it was less important compared with other factors for the local government representatives and consultants interviewed. The proper mixing of land use functions, especially increasing residential functions, can effectively reduce social energy consumption, which was supported by most stakeholders. However, in order to prevent real estate-led industrial land

redevelopment, local governments restrict residential use in industrial land redevelopment projects. For the economic aspect, industrial transformation, upgrading and local economic growth were the top priorities of local governments, and the core elements of "public interest" from the perspective of local governments, however, land users were not concerned with these. The priority of the original land users in state-led redevelopment projects was to maximize their resettlement compensation, while the original land users in land user-led redevelopment projects assigned priority to obtaining more land development income.

Due to ignorance and misunderstanding of the expectations of core stakeholders, conflicts among stakeholders are frequent in industrial land redevelopment. Clearly, it is contrary to the social sustainability. To prevent the negative externalities, understanding and meeting the needs of land users of different project types, and how to effectively balance the relationship between industrial space and residential space, are the key issues for local governments. Moreover, establishing a multi-stakeholder consultation platform and promulgating relevant laws and regulations would also be effective measures to help stakeholders to reduce conflict, so as to achieve cooperation. Strengthening education and publicity on industrial land redevelopment and cultivating NGOs are long-term strategies to enhance stakeholders' mutual trust and participation ability.

This study has systematically analyzed diverse stakeholders' expectations of industrial land redevelopment projects in China, the results is conducive to optimizing stakeholder participation in industrial land redevelopment projects so as to enhance social sustainability. This is the first step in obtaining a comprehensive picture of stakeholder participation in the context of industrial land redevelopment.

The stakeholder analysis method will be applied in future research to analyze the roles of core stakeholder groups and the relationships between them in industrial land redevelopment in China to build a multi-stakeholder governance mechanism to achieve participatory industrial land redevelopment.

Supplementary Materials: The following are available online at http://www.mdpi.com/2071-1050/11/17/4744/s1, Table S1: Test of Significant Difference between Local Governments and Consulting Experts. Table S2: Test of Significant Difference between Local Governments and General Public. Table S3: Test of Significant Difference between Local Governments and Original Land Users in Land User-led Redevelopment Projects. Table S4: Test of Significant Difference between Original Land Users in State-led Redevelopment Projects and Local Governments. Table S5: Test of Significant Difference between Original Land Users in State-led Redevelopment Projects and General Public. Table S6: Test of Significant Difference between Original Land Users in State-led Redevelopment Projects and Consulting Experts. Table S7: Test of Significant Difference between Original Land Users in State-led Redevelopment Projects and Original Land Users in Land User-led Redevelopment Projects. Table S8: Test of Significant Difference between Consulting Experts and General Public. Table S9: Test of Significant Difference between Consulting Experts and Original Land Users in Land User-led Redevelopment Projects. Table S10: Test of Significant Difference between General Public and Original Land Users in Land User-led Redevelopment Projects.

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