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Unveiling Urban Regeneration Risks in China: A Social Perspective

Hong Xie, Saina Zheng *, Yue Zhai, Jingfeng Yuan and Qiming Li

Department of Construction and Real Estate, School of Civil Engineering, Southeast University, Nanjing 211189, China

* Correspondence: sena.zheng@gmail.com; Tel.: +86-13290003509

Abstract: China's urbanization process is currently in a transition phase from rapid growth to slow growth, necessitating the implementation of sustainable measures in urban planning. Urban regeneration (UR), being one of the fundamental mechanisms for achieving sustainable urban development, has received considerable attention. UR promotes sustainable development by reusing abandoned land and buildings, improving energy efficiency, and enhancing the ecological environment. However, UR involves numerous stakeholders who may have conflicting interests due to factors such as the environment, technology, and economy, thereby giving rise to social risks (SRs). These SRs pose a threat to the success of UR projects and can also lead to social instability, as well as hindering sustainable urban development. Identifying risk sources forms the foundation of and key to risk management. Therefore, this research employs an integrated qualitative and quantitative method to explore the SR factors (SRFs) related to UR for China. On the basis of the grounded theory method, case study examination was used for data collection, resulting in the identification of 22 specific categories and five main categories. Through quantitative analysis, the identified SRFs and five main classifications of UR in China were verified, namely the negative effects of demolition and relocation, the negative environmental effect, the negative effect of technology, the organization-related negative effect, and the negative effect of policy. Among them, the unfair compensation for demolition and relocation has the greatest impact on the SRs in UR. Based on further analysis of the quantitative results, this study proposes three measures to alleviate the UR-related SRs for China on the macro, meso, and micro levels, which include improving policy and the legal system, enhancing collaborative governance capacity, and strengthening public participation. This research also has reference value in the context of promoting UR for other developing countries.

Keywords: urban regeneration; social risk factor; grounded theory method; questionnaire survey; China

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1. Introduction

According to the National Bureau of Statistics, the urbanization rate in China was approximately 60% in 2020 [1]. This marks a significant increase from the rate of 17.9% in 1978, around the beginning of the reform and opening-up policy, reflecting China's accelerated pace of urbanization over the past decade. Nevertheless, this swift urbanization has brought a host of sustainability issues, such as the depletion of land resources [2], environmental pollution [3–5], social inequality [6], concentrated areas of poverty [7], urban expansion [8,9], and unsustainable land use [10].

To address the above issues, the Chinese government has been vigorously promoting urban regeneration (UR) to establish an effective model for sustainable urban development [2,11]. UR is acknowledged as a potent strategy for achieving urban sustainability. Reusing and redeveloping unsustainable urban areas can optimize urban land use, reduce energy consumption [12], improve the efficiency of urban infrastructure [11], enhance the ecological environment [13], mitigate the negative effect of climate change [14], and

improve social equity and inclusiveness. China's central and local governments have implemented numerous policies and measures to promote UR. On 12 March 2021, the "Outline of the 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Long-Range Objectives through the Year 2035" was issued by the State Council, proposing to implement UR actions to optimize and improve the urban spatial structure [15]. In the "14th Five-year Plan" period, 219,000 old residential areas completed before the end of 2000 are planned to be renovated [15]. In 1 September 2021, the "Shanghai Urban Regeneration Regulations" officially came into effect via the Standing Committee of Shanghai Municipal People's Congress, and concurrently, the "Shanghai Urban Regeneration Implementation Rules (Trial)" were introduced [16]. Shanghai became the first city in China to elevate the practice of urban stock regeneration to a local regulation [16]. In November 2021, the General Office of the Ministry of Housing and Urban–Rural Development issued a file, "Notice Regarding the Initiation of the First Batch of Urban Regeneration Pilot Projects", which made the decision to conduct pilot projects in 21 cities or districts, including Beijing [17]. The "Notice" stipulated a two-year timeline, launched in November 2021, for the first batch of pilot projects, with a focus on exploring mechanisms for coordinated UR planning [17]. A series of UR projects are being implemented to achieve multiple goals related to sustainable development.

Despite the significant contributions made by numerous scholars to the study of UR, the focus has been predominantly placed on performance evaluation within UR, whereas research on UR-related SRs has not been systematically reviewed. With the rapid advancement of UR, the claims of various stakeholders have been profoundly affected by UR projects [18,19]. As UR involves the renovation and transformation of existing buildings and environments, it involves multiple stakeholders, including local, provincial, and national government officials from economic and environmental development departments, as well as private sector institutions and individuals seeking investment capital, risk reduction, profit generation, and reputation improvement [20,21]. Furthermore, in view of the potential effects of UR projects on the health and quality of life of the surrounding indigenous residents and the public, they should also be included [22,23]. Different stakeholders guide sustainability with different objectives [24]. In UR implementation, an equitable balance of rights and power among stakeholders is often lacking. In the Chinese context, social risks (SRs) are often related to collective events, violent incidents, and social unrest caused by conflicting interests among stakeholders [25]. The demands of different stakeholders can easily lead to conflicts of interest, triggering SRs that hinder social sustainable development. For example, legal disputes regarding compensation for demolition and relocation often lead to cost overruns and delays in the delivery time of UR projects [18]. Unreasonable demolition plans can easily cause dissatisfaction among the relocated residents, leading to SRs [26]. Misunderstandings among the government, developers, and displaced residents can also result in mass incidents, thereby hindering the successful implementation of UR projects [18,27].

UR plays a crucial role in addressing the sustainability challenges caused by China's rapid urbanization [11,28]. However, SRs within UR can negatively affect sustainable urban development. To maintain social harmony and stability, SRs associated with UR must be examined, and measures to control them should be implemented. Scholars have conducted a one-year questionnaire survey and on-site tracking using a famous project in Guangzhou, China, and found that residents' needs, cooperation status, and level of trust are key factors in risk management [29]. Other scholars have employed social network analysis to study risk management in the housing demolition phase of urban regeneration projects from the perspective of stakeholders [18]. There are also scholars who have developed an assessment system to measure the social sustainability of urban housing demolition [19]. However, current research on the SRs of UR has mainly focused on the demolition stage, but UR involves the entire process of planning, demolition, reconstruction, and operation. The value of UR must be promoted and protected through the scientific management of SRs in the process of UR. The foundation of and key to risk management is to identify risk

factors. Therefore, this study aims to explore the SR factors (SRFs) in the entire process of UR in China by adopting an integrated qualitative and quantitative method. The research findings can provide important references for decision makers in formulating appropriate strategies to avoid related SRs, consequently paving the way for successful UR projects and promoting sustainable urban development in China. These findings can also be beneficial for other developing countries with similar backgrounds wishing to implement sustainable UR strategies.

The remainder of this article is organized as follows. Section 2 introduces the research methodology. Section 3 utilizes the grounded theory method (GTM) to conduct content analysis on the case information collected initially, aiming to identify the UR-related SRFs under sustainable development in China. In Section 4, a structured questionnaire survey is conducted in China to explore the perceptions of the obtained SRs. The findings of this study are analyzed and discussed in Section 5. Finally, Section 6 presents the conclusions of this study and future research directions.

2. Research Methodology

2.1. Research Framework

To explore the UR-related SRFs under sustainable development in China, this research adopts an integrated qualitative and quantitative method. The research employs the GTM to analyze the collected case information from selected websites. A structured questionnaire survey is conducted in China to explore the attitudes of respondents toward the obtained UR-related SRFs. Descriptive statistical analysis (DSA), analysis of variance (ANOVA), and principal component analysis (PCA) are employed to analyze the questionnaire data. Lastly, the outcomes of qualitative and quantitative research are discussed. Figure 1 shows the framework diagram for this study.

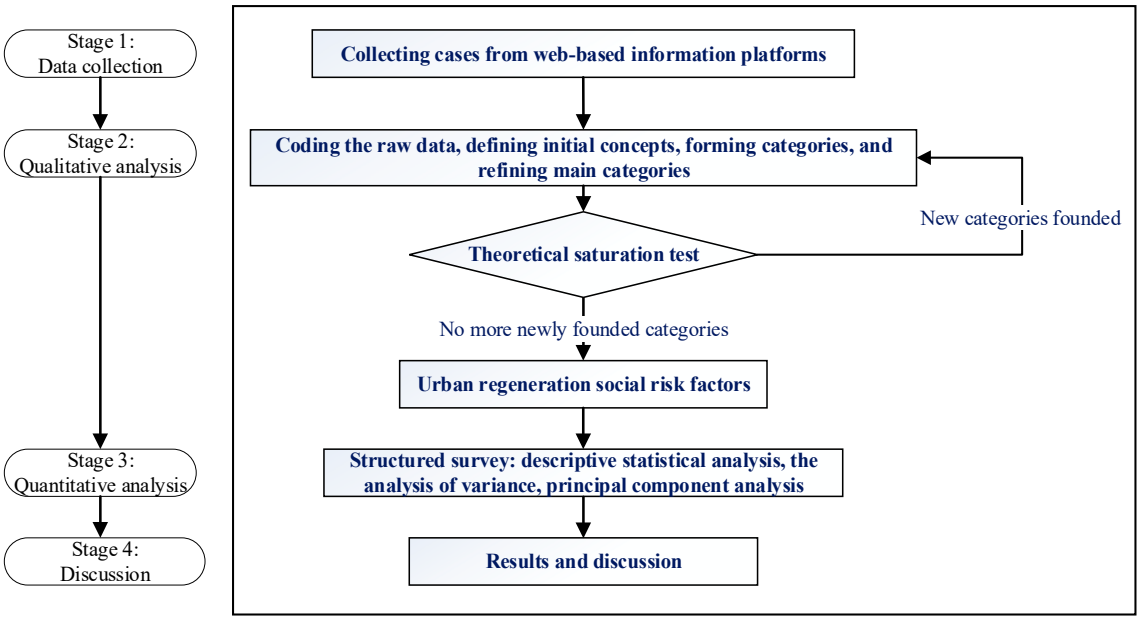

Figure 1. Research framework diagram.

2.2. Data Collection

To identify UR-related SRFs, this study utilized multiple channels for relevant case searches, including government websites, news platforms, and professional institution websites, among others. This ensured a broader range of information. Government websites and reputable news media are usually reliable sources of information. Moreover, in China, they are the primary platforms for UR-related information. First, government official websites, such as those of the central, provincial, and municipal governments, were

included [30]. These government official websites are authoritative and directly managed and maintained by the Chinese government. Government departments and officials often release important statements, policy interpretations, and notifications related to UR on these websites to promote its sustainable development. Second, online news platforms, such as People's Daily Online, NetEase News, and The Paper, were considered [30]. Online news plays an important role in UR social events [31]. It serves as a widespread medium to report, disseminate, and interpret social events related to UR in a timely manner, influencing public opinions and sentiments [32]. Lastly, the Peking University (PKU) Law platform, a legal information resource platform developed and maintained by PKU Law School, was utilized. In UR, legal issues may cover aspects such as land use rights, land acquisition and demolition, urban planning and design, municipal facility construction, real estate development and sales, and protection of residents' rights and interests [33,34]. The online platforms selected for this study include various levels of government websites, multiple news platforms, and legal platforms, making them authoritative sources for UR-related SRs in China. Therefore, the collected cases based on these platforms are representative. Moreover, these information platforms are all official websites, the authenticity of which can be verified.

Subsequently, the careful identification and selection of keywords were undertaken to guarantee a close correlation between the cases selected and the research focus. In the Chinese context, due to the different objects and scopes of UR, the term "urban regeneration" is extremely broad. Therefore, this study includes keywords such as "urban regeneration", "old neighborhood renewal", "transformation of shanty towns", "community regeneration", "area redevelopment", "old building renovation", and "old factory transformation" [35–37]. During UR implementation, a series of social problems arise, leading to conflicts of interest among various stakeholders. SRs are usually related to collective events, violent incidents, and social unrest caused by these conflicts of interest in the context of China [25]. Therefore, this study includes social problems such as "traffic congestion", "environmental destruction", "noise pollution", "unreasonable relocation compensation", "disruption of feng shui", "unemployment", "racial discrimination", and "social network disruption" as keywords.

In the first round of searches (updated to 18 June 2022), a total of 1211 cases were collected through the three channels mentioned above. Subsequently, the summaries of the obtained cases were reviewed to extract a list of case and determine their relevance to UR. After this round of screening, 779 cases were selected to remain in the database. These cases were then examined word-for-word to guarantee their relevance. Finally, the researchers selected 608 cases for coding. Corbin and Strauss [38] suggested randomly selecting 25% of the obtained cases for theoretical saturation testing to ensure sufficient credibility and validity for coding. Therefore, 152 of the 608 cases were randomly selected for theoretical saturation testing, leaving 456 cases to be coded initially.

2.3. GTM

The GTM is a qualitative research method first proposed by the American sociologists Glaser and Strauss in 1967 [39]. It facilitates the in-depth, systematic examination of the background, causality, and causal relationships associated with particular phenomena or issues to gain a profound understanding and explanation of these subjects [40]. This method emphasizes the in-depth analysis and interpretation of phenomena, which usually involves the collection, organization, and analysis of a large amount of hidden information in texts and data to reveal the patterns, relationships, and motivations behind a phenomenon [41,42]. The GTM has its roots in medical sociology and has now been applied to management, nursing, psychology, organization, education, and other research fields [43–46]. In the GTM, data analysis follows a well-defined process, starting from basic description, then concept sorting, and finally theorizing [47]. Coding is the core process of the GTM and can be divided into three basic stages, namely open, axial, and selective coding [46]. Given the extensive practical cases and experience summaries of UR projects in China, this study

adopts the GTM as an effective content analysis tool to conduct exploratory research on UR-related SRFs in selected cases.

2.4. Questionnaire Survey

A questionnaire survey is a research method used for collecting quantitative or qualitative data; it is used to obtain information such as the opinions, attitudes, and behaviors of respondents regarding specific themes, problems, or phenomena [48]. Usually, researchers design a series of questions, which are then turned into questionnaires for respondents to fill out. Then, various tools (e.g., Statistical Program for Social Sciences 25, Minitab 19, and Python 3.10) and analytical methods (e.g., DSA, regression analysis, and factor analysis) are used to obtain and explain information about the respondents' opinions and behaviors. Questionnaire surveys can be used in various research fields, such as social sciences, market research, and medical research, to understand people's perspectives, habits, and behaviors.

3. Identification of SRFs in UR

3.1. Open Coding

Open coding is a data integration process that disaggregates, reads, labels, and codes raw data to define concepts and categories [38]. In this study, the collected case information is initially read and labeled word by word and then encoded into a concept. Then, the new case information is read and compared with previous information and concepts to determine whether to code a new one or modify existing ones. Through the iterative process of reading, comparing, coding concepts, and forming categories, this study defined 56 initial concepts and 22 categories. However, only a few selected concepts and categories are presented in this study due to space constraints (Table 1).

Table 1. Results of open coding.

Number	Categories	Original Data (Initial Concepts)
1	Unfair compensation for demolition and relocation	C2 Different regions or government departments may have varying compensation standards, resulting in different compensation amounts for demolished households facing the same situation. (Inconsistent compensation standards) C8 When calculating compensation, the government may overlook the value of the demolished housing property, property losses, and relocation expenses, leading to unfair compensation amounts. (Unfair compensation calculations) C23 Some families facing demolition may be relocated to inconvenient areas with inadequate infrastructure, while others may be relocated to better locations. (Unfair relocation site placements) C47 The compensation methods may differ, with some households receiving lump-sum payments while others accept staggered payments, causing varying financial pressures. (Unfair compensation methods) C66 The government might have failed to adequately protect the rights and interests of families whose homes have been demolished, such as not providing reasonable resettlement plans. (Inadequate protection of the rights and interests of households facing demolition)
2	Construction-related environmental pollution	C5 During the implementation of UR, a large amount of dust is generated, and construction machinery and transportation vehicles also emit pollutants, affecting the surrounding air quality. (Air pollution) C29 UR is accompanied by demolition, construction, and the use of machinery, triggering noise pollution potentially resulting in sleep disorders, hearing damage, and psychological stress for nearby residents. (Noise pollution) C34 The process of UR may lead to an increase in the discharge of building wastewater, industrial wastewater, and stormwater runoff, which contain harmful substances. If not treated promptly, this could lead to pollution in nearby water bodies and harm the physical health of the surrounding residents. (Water pollution) C52 UR generates a large amount of construction waste. If not handled on time, it could cause issues such as occupying space and land pollution. (Construction waste)

Table 1. *Cont.*

Number	Categories	Original Data (Initial Concepts)
3	Lack of information	C1 In UR's planning and decision-making process, relevant departments may not fully disclose the project's planning content, objectives, and impacts to the public. (Lack of planning and decision-making information) C16 The details and standards of the compensation policy may not be adequately disclosed to households facing relocation, leaving them unaware of their rights and the compensation they should receive. (Lack of compensation policy information) C58 The government may not provide detailed compensation calculation processes and justifications to the relocated households, resulting in their lack of understanding of the compensation calculation methods. (Lack of compensation calculation information)
4	Improper construction management	C11 The lack of effective supervision and control during the implementation of UR may lead to quality issues and project delays. (Lack of supervision) C33 In pursuing greater profits, enterprises may neglect construction quality, causing building safety hazards. (Failure to meet construction quality standards)
5	Insufficient construction funds	C13 UR is typically led by the government, but insufficient government finances may hinder the provision of adequate funding for UR projects. (Insufficient government finances) C25 UR involves a significant amount of demolition and relocation, and the increased expenditure on compensation may trigger insufficient construction funds. (Increased compensation expenses) C43 The originally planned scale of UR may expand or require increased investment, resulting in an insufficient budget for construction funds. (Expansion of urban regeneration scale) C67 Attracting external investment may be affected by policy or market uncertainties, leading to insufficient construction funds for UR. (Difficulties in attracting external investment)
6	Unimplemented resident resettlement	C18 UR involves many demolitions, but the resettlement housing provided is insufficient to meet the housing needs of all households facing relocation. As a result, some families are only temporarily resettled. (Insufficient resettlement housing) C22 The resettlement houses provided may have quality issues, such as unstable structures or outdated facilities, which affect residents' normal living conditions. (Poor quality of resettlement housing) C36 The newly resettled areas may lack essential social service facilities, such as schools, hospitals, etc., affecting residents' normal lives. (Inadequate social service facilities in resettlement areas) C55 Some residents may not receive appropriate temporary resettlement after demolition, causing disruptions in their lives. (Issues with temporary resettlement)

Note: C* refers to the * case's information materials. The phrases in parentheses at the end of each sentence are the initial concepts.

3.2. Axial Coding

Axial coding is the process of further generalizing and summarizing major categories based on the common or similar characteristics of all the categories obtained from open coding [38]. Therefore, this study identified five major categories: the negative effects of demolition and relocation, the negative environmental effect, the negative effect of technology, the organization-related negative effect, and the negative effect of policy. Table 2 presents detailed information about each major category, their corresponding initial categories, and their implications.

3.3. Theoretical Saturation Test

According to the GTM, all codes that are symbolically linked in open and axial coding should undergo theoretical saturation testing to meet the requirements [38]. Therefore, this study encoded the information from the remaining 152 cases. During this process, no new concepts, categories, or main categories emerged, demonstrating that the UR-related SRFs in China had been fully identified. On the basis of these factors, the subsequent structured questionnaire survey was designed.

Table 2. Results of axial coding.

Major Categories	Correlated Categories	The Implications of Categories
Negative effects of demolition and relocation	Unfair compensation for demolition and relocation (F1)	The demolition has triggered a series of unjust compensation actions, such as inconsistent compensation standards, unfair compensation calculation, unfair location of resettlement areas, and unfair compensation methods. These can lead to dissatisfaction among those whose households have been demolished and consequently cause SRs.
	Forced demolition (F2)	Forced demolition or land expropriation and unreasonable or non-negotiable compensation can harm the interests of the families whose households have been demolished, resulting in conflicts and triggering SRs.
	Unimplemented resident resettlement (F3)	If the promised resettlement measures are not implemented after demolition, it may disrupt the indigenous way of life, damage residents' social relationships, and give rise to psychological problems such as deprivation, ultimately leading to social risks.
	Rising rents (F4)	The residents and tenants in urban villages and shanty towns need to bear higher rents after their houses are demolished, causing problems such as difficulties in renting for low-income groups, which in turn leads to SRs.
Negative environmental effect	Construction-related environmental pollution (F5)	During the implementation of UR, the generated noise, air pollution, water pollution, and construction waste may affect nearby residents' daily life and physical health. It will likely result in conflicts and SRs if not promptly and properly addressed.
	Traffic congestion (F6)	Transportation vehicles, materials, or mechanical equipment used in the UR process may occupy roads, leading to traffic congestion in the area and increasing commuting time for nearby residents, thus triggering SRs.
	Destruction of historical heritage (F7)	As a result of UR, historical heritage in the area may be removed or damaged, causing dissatisfaction among city residents and resulting in conflicts and SRs.
	Ethnic minority cultural conflict (F8)	Due to different religious beliefs and cultural practices, there may be ideological and cultural conflicts among ethnic minorities, leading to SRs.
	Disruption of feng shui (F9)	The demolition and reconstruction may disrupt the feng shui of houses and towns, triggering dissatisfaction and conflicts among residents that cause SRs.
Negative effect of technology	Technical errors (F10)	During the demolition or reconstruction in UR, technical errors may result in safety hazards in buildings, posing a threat to the safety of nearby residents and workers, thereby causing SRs.
	Inadequate technical specifications (F11)	Some new technologies may lack proper specifications, or the construction may not meet the standards of technical specifications, which will not only lead to the failure of the urban regeneration project but also result in SRs.
	Construction safety hazards (F12)	Due to a lack of safety protection and improper facility setup, construction may result in safety issues such as high-altitude falling accidents, traffic accidents, etc., all of which can trigger SRs.
Organization-related negative effect	Limited channels for public expression (F13)	When avenues for public expression of opinions are blocked or not responded to and dealt with in time, it can lead to intense conflicts and cause SRs.
	Nonstandardized workflow processes (F14)	Flaws in the UR procedures or confusion in the practical steps may result in hidden dangers and trigger SRs.
	Lack of information (F15)	The government's failure to properly publicize relevant information about UR infringes upon the public's right to know, which can easily raise doubts about the project's legitimacy and lead to SRs.
	Unreasonable decision-making (F16)	Improper design and construction decisions can hinder the smooth implementation of the UR project and lead to serious SRs.
	Improper construction management (F17)	The mismanagement by developers in terms of cost control, project schedule, and coordination with relevant stakeholders has led to a loss of control over the project construction process, which triggers SRs.
	Insufficient construction funds (F18)	Difficulties in financing, delays in sales, and increasing sale prices may lead to uncertainties in project funding, posing a threat to the smooth implementation of the UR project and causing SRs.

Table 2. *Cont.*

Major Categories	Correlated Categories	The Implications of Categories
Negative effect of policy	Unclear responsibility entities (F19)	The unclear boundaries of responsibilities among the government, developers, and other stakeholders may lead to a situation in which none of the parties take responsibility, resulting in conflicts and causing SRs.
	Lack of social security (F20)	During the implementation of UR, insufficient social security may lead to a series of social problems, such as homelessness and unemployment, resulting in severe SRs.
	Unstable policy environment (F21)	The limited role of local UR policies in guiding practice and the project discontinuity caused by the change of government leadership will not only threaten the success of the UR projects but also cause SRs.
	Unreasonable feasibility studies (F22)	Unreasonable feasibility studies can affect the feasibility and sustainability of UR projects, leading to resource wastage and causing public dissatisfaction, thereby triggering SRs.

4. Research Survey and Results

4.1. General Information about the Survey

Although the 22 UR-related SRFs were identified based on cases using GTM, the relative importance of each factor remains unclear. To determine the most important factors, the researchers conducted a structured survey questionnaire based on the 22 UR-related SRFs to gather the opinions of professionals and relevant personnel on these factors. The questionnaire consisted of two parts. The first part covered the background information of the respondents, such as educational level, occupation, and work experience. The second part employed a five-point Likert scale to investigate the respondents' views of the 22 UR-related SRFs. The scale interpretations are as follows: (1) negligible, (2) potentially important, (3) important, (4) quite important, and (5) extremely important.

Before the official investigation, the researchers conducted a pretest by distributing the questionnaire one-on-one to 16 professionals with rich work or research experience in UR and relevant personnel to check whether the questionnaire questions were easy to understand and answer. After the pretest, the questions in this questionnaire were determined to be clear and understandable, and the respondents did not find it cumbersome to answer. UR is a governance system that coordinates multiple stakeholders and emphasizes the participation of different participants. Therefore, the development of UR should incorporate the opinions of stakeholders. From December 2022 to March 2023, the researchers distributed questionnaires through various channels to practitioners with relevant knowledge and experience in UR, including residents and tenants affected by UR activities. A total of 200 questionnaires were sent out, with 130 being collected, resulting in a valid response rate of 65%. Table 3 shows the respondents' background information.

Table 3. Background information about respondents.

Role	Government Officers	Enterprise Employees	Researchers	Citizens	N/A	Total
Number	35	44	41	10	--	130
Percentage	26.9	33.9	31.5	7.7	--	100.0
Working experience	3 years or under	3–5 years	6–10 years	11–20 years	Over 20 years	Total
Number	53	36	27	10	4	130
Percentage	40.8	27.7	20.7	7.7	3.1	
Educational background	college	undergraduate	postgraduate	Ph.D.	--	Total
Number	18	63	32	17	--	130
Percentage	13.8	48.5	24.6	13.1		100.0

Table 3 indicates that the respondents came from various stakeholders involved in UR, including 35 government officials, 44 business employees, 41 researchers, and

10 citizens. The occupational distribution of the respondents demonstrates the appropriate coverage of these variables. In terms of educational background, 86.2% of the surveyed individuals possessed a bachelor's degree or higher. Furthermore, most of the respondents had over 3 years of work or research experience associated with UR. The respondents' work experience and educational level demonstrate their good understanding of UR-related SRFs, further ensuring the questionnaire's reliability.

4.2. SRF Ranking

DSA provides fundamental yet significant information about the outcomes and reflects the respondents' perceptions of UR-related SRFs. The questionnaire's reliability was assessed by adopting Cronbach's alpha, yielding a result of 0.889, indicating the high consistency of the collected data [49]. As shown in Table 4, the average values of the 22 UR-related SRFs range from 3.87 to 4.51. All factors have average scores above 3.5, suggesting that the respondents believe that these factors are important to the SRs associated with UR [50]. The researchers selected the average values of the 22 UR-related SRFs from the questionnaire survey as the main indicators and ranked these factors according to their relative importance [50,51]. If a UR-related SRF has a relatively high average value, then it is considered to relatively pose a significant threat to social sustainability, which could lead to SRs. The top five UR-related SRFs are unfair compensation for demolition and relocation (F1), unimplemented resident resettlement (F3), traffic congestion (F6), construction-related environmental pollution (F5), and lack of information (F15). These factors are identified as having the most significant influences on SRs. To successfully advance UR and promote sustainable urban development, government officials and business managers should focus their attention on these risk factors.

Table 4. Results of DSA.

Factors	Min	Max	Mean	Standard Deviation	Rank
F1	2	5	4.51	0.828	1
F3	2	5	4.42	0.776	2
F6	2	5	4.39	0.894	3
F5	1	5	4.35	0.904	4
F15	2	5	4.28	0.797	5
F21	1	5	4.25	1.116	6
F4	1	5	4.23	1.117	7
F18	1	5	4.18	1.082	8
F13	1	5	4.15	1.093	9
F7	1	5	4.09	1.074	9
F20	1	5	4.09	1.178	9
F8	1	5	4.09	1.052	12
F17	1	5	4.07	1.058	13
F10	1	5	4.06	1.032	14
F2	1	5	4.06	1.032	15
F12	1	5	4.05	0.943	16
F14	1	5	4.05	1.033	16
F16	1	5	4.01	1.023	18
F19	1	5	4.01	1.096	18
F22	1	5	4.00	1.042	20
F11	1	5	3.93	0.908	21
F9	1	5	3.87	1.366	22

4.3. Agreement on SRFs

The relevant background factors of the respondents may influence their assessment of the relative importance of UR-related SRFs [50]. Usually, the professional background of the interviewees tends to affect their evaluation of UR-related SRFs, whereas demographic characteristics, such as gender and age, do not significantly affect the participants' assessment of UR-related SRFs [52]. Thus, to test the presence of a consistent perception of each

SRF among different respondents (government officials, company employees, researchers, and citizens), ANOVA was adopted in this study [52]. If the significance for a given SRF is higher than 0.05, then a significant agreement exists in the perceived relative importance of that factor among the respondents. Table 5 indicates that the 130 respondents in this survey provided consistent evaluations for all 22 UR-related SRFs. In particular, the first category of SRFs (F1–F4) arising from demolition activities were recognized by all groups. At the same time, they also recognized that the second category of SRFs (F5–F9) have caused adverse and negative effects on the living, cultural, and psychological environments of the affected residents during UR. In the third category, different groups reached a high level of consensus regarding the technical errors (F10), inadequate technical specifications (F11), and construction safety risks (F12). Limited channels for public expression (F13), non-standardized workflow processes (F14), lack of information (F15), unreasonable decision making (F16), improper construction management (F17), and financial risk (F18) were also considered significant factors leading to SRs in UR by the main respondents from different groups. The evaluation of the last category of SRFs (F19–F22) caused by imperfect UR policies was also unanimously recognized by all groups.

Table 5. Results of ANOVA.

Group Description		Sum of Squares	df	Mean Square	F	Significance
F1	Between Groups	1.178	3	0.393	0.567	0.638
	Within Groups	87.314	126	0.693		
	Total	88.492	129			
F2	Between Groups	1.250	3	0.417	0.385	0.764
	Within Groups	136.258	126	1.081		
	Total	137.508	129			
F3	Between Groups	2.416	3	0.805	1.347	0.262
	Within Groups	75.315	126	0.598		
	Total	77.731	129			
F4	Between Groups	0.690	3	0.230	0.181	0.909
	Within Groups	160.387	126	1.273		
	Total	161.077	129			
F5	Between Groups	4.979	3	1.660	2.082	0.106
	Within Groups	100.444	126	0.797		
	Total	105.423	129			
F6	Between Groups	2.339	3	0.780	0.976	0.406
	Within Groups	100.653	126	0.799		
	Total	102.992	129			
F7	Between Groups	7.132	3	2.377	2.113	0.102
	Within Groups	141.760	126	1.125		
	Total	148.892	129			
F8	Between Groups	7.766	3	2.589	2.414	0.070
	Within Groups	135.126	126	1.072		
	Total	142.892	129			
F9	Between Groups	11.777	3	3.926	2.160	0.096
	Within Groups	229.000	126	1.817		
	Total	240.777	129			
F10	Between Groups	4.087	3	1.362	1.287	0.282
	Within Groups	133.420	126	1.059		
	Total	137.508	129			
F11	Between Groups	2.022	3	0.674	0.814	0.489
	Within Groups	104.355	126	0.828		
	Total	106.377	129			

Table 5. *Cont.*

Group Description		Sum of Squares	df	Mean Square	F	Significance
F12	Between Groups	5.241	3	1.747	2.012	0.116
	Within Groups	109.382	126	0.868		
	Total	114.623	129			
F13	Between Groups	5.006	3	1.669	1.409	0.243
	Within Groups	149.218	126	1.184		
	Total	154.223	129			
F14	Between Groups	2.481	3	0.827	0.770	0.513
	Within Groups	135.242	126	1.073		
	Total	137.723	129			
F15	Between Groups	3.254	3	1.085	1.735	0.163
	Within Groups	78.777	126	0.625		
	Total	82.031	129			
F16	Between Groups	2.987	3	0.996	0.951	0.418
	Within Groups	132.005	126	1.048		
	Total	134.992	129			
F17	Between Groups	3.054	3	1.018	0.908	0.439
	Within Groups	141.323	126	1.122		
	Total	144.377	129			
F18	Between Groups	9.276	3	3.092	2.750	0.146
	Within Groups	141.655	126	1.124		
	Total	150.931	129			
F19	Between Groups	6.231	3	2.077	1.759	0.158
	Within Groups	148.761	126	1.181		
	Total	154.992	129			
F20	Between Groups	8.105	3	2.702	1.993	0.118
	Within Groups	170.787	126	1.355		
	Total	178.892	129			
F21	Between Groups	6.357	3	2.119	1.731	0.164
	Within Groups	154.266	126	1.224		
	Total	160.623	129			
F22	Between Groups	1.295	3	0.432	0.392	0.759
	Within Groups	138.705	126	1.101		
	Total	140.000	129			

4.4. Exploratory Factor Analysis (EFA)

As a statistical method, EFA can effectively reduce dimensions and classify variables [53,54]. As mentioned above, the 22 UR-related SRFs obtained based on the GTM could be categorized into five main categories. This hypothesis should be validated using EFA in the Chinese context. EFA could classify these SRFs for UR into several categories according to the correlations among different factors. Typically, SRFs in the same dimension exhibit similar characteristics [19,53].

The Kaiser–Meyer–Olkin (KMO) test and Bartlett's sphericity test are statistical tests commonly used before conducting a factor analysis to assess its applicability and rationality [55]. The KMO test result was 0.896, which exceeded 0.8, indicating that the data obtained from the questionnaire survey are highly suitable for factor analysis [56,57]. In addition, Bartlett's sphericity test yielded a value of 1636.022 with a significance result of $0.000 < 0.001$, showing a strong correlation among the variances [53]. According to the test results, the collected questionnaire data could be used for factor analysis.

PCA with maximization of the varimax rotation is a valuable technique that could be used to reveal the interrelationships among the 22 UR-related SRFs. Highly correlated factors were grouped into a few major components. By using EFA, five principal components

were extracted, with eigenvalues exceeding 1. These components collectively account for 69.667% of the total variance. Although the overall score is somewhat low, according to Jolliffe [54], representing the data with a model based on the five-factor solution in PCA as an EFA is acceptable.

Table 6 shows the rotated component matrix of the 22 UR-related SRFs. Each retained UR-related SRF should be exclusively assigned to a single category identified through factor analysis; hence, the maximum loading of each SRF should exceed 0.5 in all categories [4,55]. To facilitate reading, absolute values below 0.5 were suppressed.

Table 6. Rotated component matrix for the 22 UR-related SRFs.

Factor Groupings	Factors	Components				
		1	2	3	4	5
Negative effects of demolition and relocation	F3	0.825				
	F1	0.823				
	F2	0.804				
	F4	0.526				
Negative environmental impact	F6		0.800			
	F7		0.798			
	F5		0.759			
	F9		0.747			
	F8		0.660			
Negative impact of technology	F11			0.827		
	F12			0.750		
	F10			0.628		
Organization-related negative impact	F15				0.765	
	F13				0.750	
	F17				0.729	
	F18				0.701	
	F16				0.698	
	F14				0.621	
Negative impact of policy	F20					0.800
	F21					0.737
	F22					0.719
	F19					0.718

Table 6 also indicates that F1–F4, which are called "negative effects of demolition and relocation", are grouped in the first category, and these SRFs are all caused by demolition and relocation activities. F5–F9 are aggregated in the second category, which is named "negative environmental effect"; these SRFs have adverse effects on the living, cultural, and psychological environments of the residents. F10–F12 are clustered in the third category, called "negative effect of technology"; the SRFs in this category are mainly caused by the lack of complete technical specifications and accurate technical guidance and operation. F13–F18 are in the fourth group, which is named "organization-related negative effect"; this type of SRF is mainly caused by improper organizational management by the government and developers during the UR implementation. F19–F22 are clustered in the fifth group, named "negative effect of policy"; these SRFs are mainly caused by imperfect UR policies. The outcomes of EFA validates the discoveries obtained through GTM in the previous section.

5. Discussion

5.1. Implication of the Classification of SRFs in UR

On the basis of the collected cases, this study adopted GTM to identify the 22 UR-related SRFs in China. These factors were classified into five main categories: the negative effects of demolition and relocation, the negative environmental effect, the negative effect

of technology, the organization-related negative effect, and the negative effect of policy (Figure 2). Further investigation of the UR-related SRFs, as determined through qualitative research, was conducted using structured questionnaires. The PCA results verified the grouping explored through GTM. The five categories represent the five major obstacles to the social influence of UR in China.

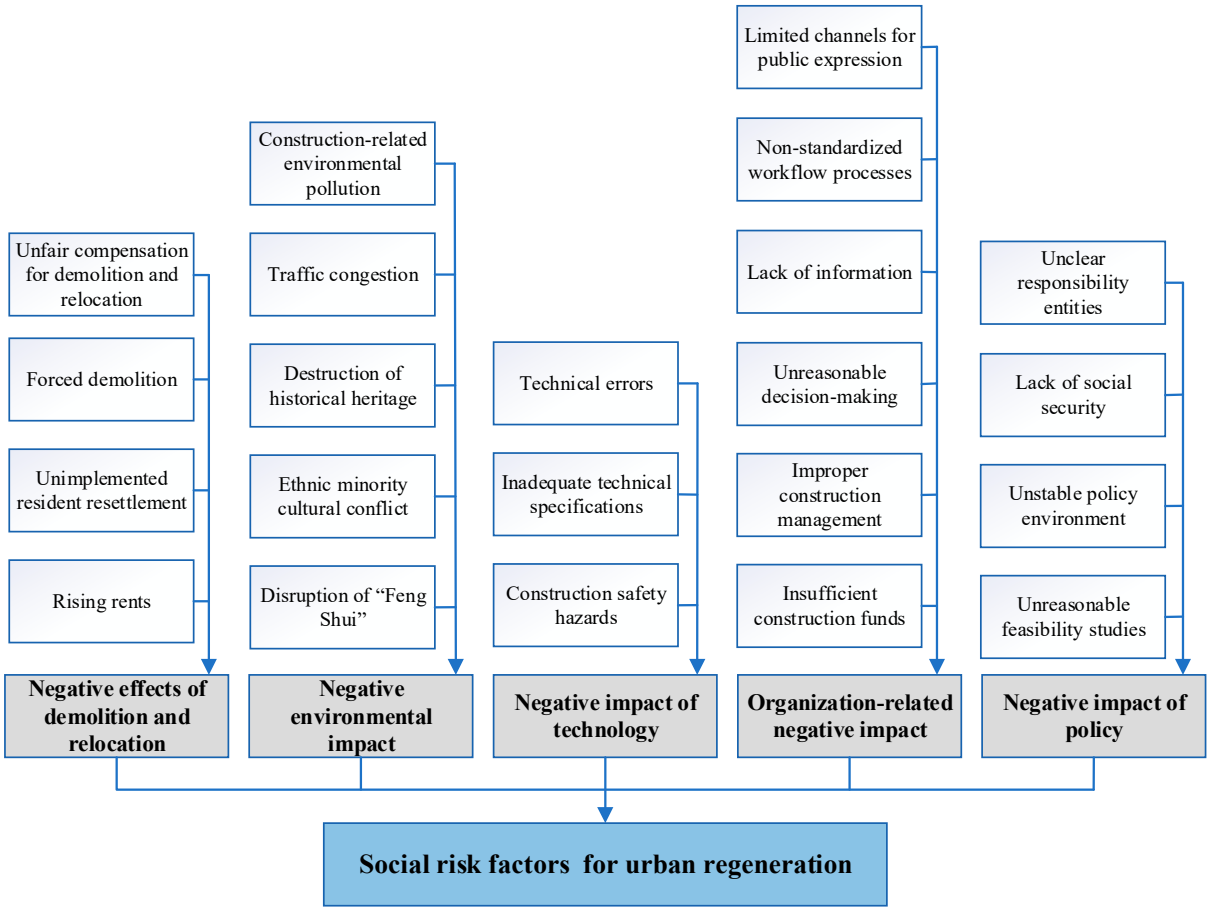

Figure 2. Classification of SRFs.

5.1.1. Negative Effects of Demolition and Relocation

The first category of UR-related SRFs includes unfair compensation for demolition and relocation (F1), forced demolition (F2), unimplemented resident resettlement (F3), and rising rents (F4), collectively referred to as the negative effects of demolition and relocation. All these SRFs stem from demolition activities. UR projects, which are based on the demolition of existing buildings, inevitably affect the livelihoods of the residents involved. In many cases, to reduce development costs, the government or developers may provide unfair compensation for housing demolition and relocation (F1) to original residents [18,27]. Illegal actions can also take place during the implementation of UR projects, with forced demolitions (F2) occurring without proper administrative permits, causing severe harm to the interests of the original residents [58]. However, with the issuance of the "Notice on Preventing Large-scale Demolition and Construction Issues in the Implementation of Urban Regeneration Actions" by the Ministry of Housing and Urban–Rural Development in 2021, the occurrence of illegal demolitions has significantly decreased [59]. As their houses have been demolished and the resettlement houses have not yet been built, the indigenous people have had to leave their homes and live temporarily in other places (F3) [32]. Low-income groups renting in shanty towns are also negatively affected, as the clearance of shanty towns leads to higher rents (F4) for them [36,60].

5.1.2. Negative Environmental Effect

The second category of UR-related SRFs includes construction-related environmental pollution (F5), traffic congestion (F6), the destruction of historical heritage (F7), ethnic minority cultural conflicts (F8), and the disruption of feng shui (F9), collectively termed as the negative environmental effect. These SRFs have adverse effects on the living, cultural, and psychological environments of the affected residents. In the implementation process of UR, environmental pollution caused by construction activities (F5), such as air, water, and noise pollution, severely affects the health of nearby residents [61]. Construction equipment, such as vehicles transporting demolition waste, often occupy public roads for extended periods, leading to traffic congestion (F6) and increased commuting time for residents, significantly affecting their daily lives [19]. In pursuit of a unified and revitalized environment, UR projects may clear dilapidated shanty towns, leading to the destruction of historical heritage (F7) [62]. Historical heritage, which carries the historical activities and cultural characteristics of previous generations, should be protected for the benefit of the public [19]. The ethnic minority have their own religious beliefs and lifestyle habits, and conflicts (F8) can easily arise in UR, causing social instability. Feng shui is an ancient Chinese traditional doctrine that emphasizes the influence of the environment on people, especially in terms of the living environment and architectural layout. UR involves the demolition, reconstruction, renovation, and transformation of existing buildings and environments, which inevitably leads to changes in the existing buildings and environments. During this process, if the traditional principles of feng shui are not respected or protected, then UR may be perceived by affected residents as a disruption of feng shui (F9). In turn, the disruption of feng shui can bring negative effects to them, causing dissatisfaction among affected residents and consequently giving rise to SRs.

5.1.3. Negative Effect of Technology

The third category of UR-related SRFs includes technical errors (F10), inadequate technical specifications (F11), and construction safety risks (F12), collectively referred to as the negative effect of technology. UR projects involve the demolition, renovation, reconstruction, or construction of buildings, but the lack of proper technical specifications (F11) and accurate technical guidance (F10) may lead to building safety risks, threatening the safety of nearby residents and workers [63]. In UR activities, SRs caused by construction safety (F12) are a common problem. As a result of inadequate safety precautions and improper arrangement of facilities, construction may result in safety issues, such as high-altitude falls and traffic accidents. When these accidents occur or are not handled properly in a timely manner, they can further cause social conflicts and trigger SRs [64].

5.1.4. Organization-Related Negative Effect

The fourth category of UR-related SRFs includes limited channels for public expression (F13), nonstandardized workflow processes (F14), a lack of information (F15), unreasonable decision-making (F16), improper construction management (F17), and financial risk (F18), collectively referred to as the organization-related negative effect. Limited channels for public expression (F13) refer to the situation where indigenous people, tenants, nearby residents, and other members of the public cannot easily express their opinions, demands, concerns, or provide feedback on the project decisions during the UR process [35]. When the public find it difficult to effectively express their opinions and needs, they may feel unvalued and neglected, which can trigger mass emotions and protest actions that hinder sustainable urban development [65]. SRs may arise in UR projects when there exists a deficiency in clear, rational, and standardized workflows and procedures (F14) during the planning, execution, and supervision processes. Information plays a vital role as a valuable resource in UR, and the scarcity of relevant information (F15) can affect the accuracy, fairness, and transparency of decision making, thereby giving rise to various SRs [66]. The decisions made by governments, designers, or contractors, such as excessive building heights, insufficient spacing between buildings, or overexcavation in foundations, that do

not meet basic requirements (F16) can lead to severe social problems due to inappropriate design and construction decisions [67]. Improper management of costs, progress, and relevant stakeholders (F17) during the implementation of UR projects by developers may cause interruptions in the projects [68]. UR requires significant financial compensation to be provided to the relocated residents for their economic losses [69]. To safeguard the rights and interests of vulnerable residents, the government must ensure an adequate amount of compensation funds before conducting any demolition activities [18]. As a result, local governments are urgently required to raise substantial amounts of money within a limited timeframe. Moreover, the uncertainty surrounding property prices and compensation negotiations adds to the potential financial risks (F18) associated with UR [70].

5.1.5. Negative Effect of the Policy

The fifth category of UR-related SRFs includes unclear responsibility entities (F19), the lack of social security (F20), an unstable policy environment (F21), and unreasonable feasibility studies (F22), collectively referred to as the negative effect of policy. The unclear delineation of responsibilities among government, developers, and other entities (F19) in UR can lead to the evasion of responsibility and nobody taking charge of solving problems, thereby triggering SRs [71]. In addition, due to the lack of social security (F20), UR activities may bring negative effects on the lives and health of relevant residents; some residents may have to leave their homes, and some may even need to give up their jobs, which will lead to social unrest [72]. Uncertainty or changes in policies (F21) can also cause SRs [25]. For instance, differences in official compensation standards may lead to severe conflicts between the government and the affected residents. These SRs can have adverse effects on the progress of UR projects and may lead to their eventual termination [18]. Feasibility studies are crucial for decision making in UR projects because they assess the feasibility, sustainability, and potential impacts. Therefore, unreasonable or flawed feasibility studies (F22) may result in resource wastage and cause discontent in society, among other issues [73].

5.2. Suggestions for Mitigating SRs of UR

On the basis of the theoretical saturation testing mentioned earlier, 22 UR-related SRFs and five main categories were identified. By combining the stakeholders of UR-related SRFs, the five major categories could be further divided into dimensions, allowing the translation of these theoretical foundations into the practice of UR. As shown in Figure 3, the negative effects of demolition and relocation, the negative environmental effect, and the negative effect of technology belong to the potential risks in the process of project execution, which belong to the microlevel. The stakeholders of these risks are mainly the original property owners, tenants, and the public, which are in a relatively weak position in UR [74]. The organization-related negative effect is usually caused by the inadequate management of the governments or developers, who are the leading party of UR and have a strong voice [75,76]. The negative effect of the policy is brought about by the relatively unstable political environment and belong to the macrolevel. Therefore, this study proposed three major measures to mitigate the SRs associated with UR in China on the macro, meso, and micro levels, namely improving policy and the legal system, enhancing collaborative governance capacity, and strengthening public participation.

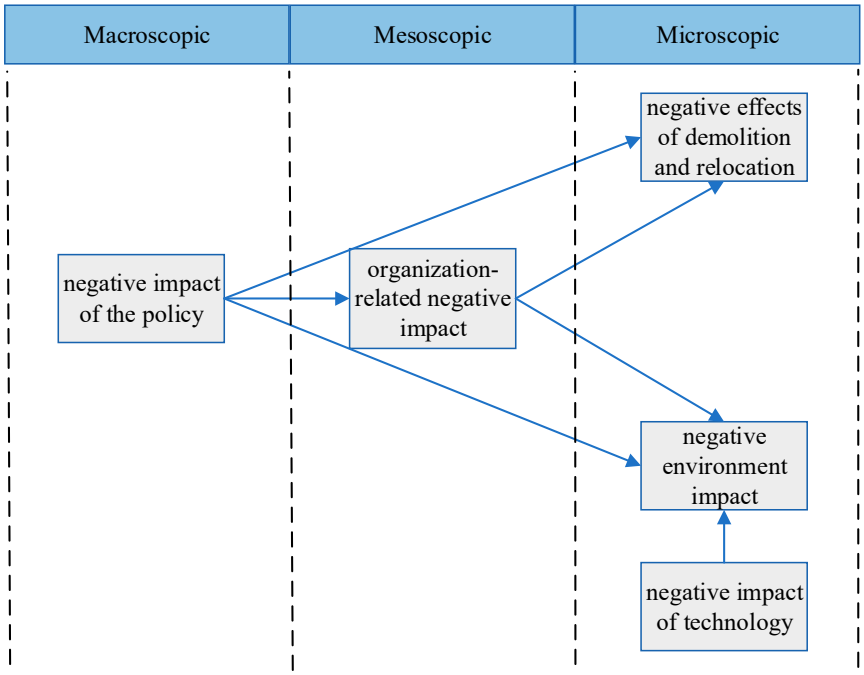

Figure 3. Further classification of SRs for UR.

5.2.1. Improving Policy and the Legal System

To ensure the successful implementation of UR, at the macro level, the top-level design must be strengthened; special legislation for UR must be promoted; and support for policies, standards, and regulations should be promoted [29,69]. Policy plays a critical role in guiding, supervising, motivating, and balancing different interests in UR [66]. A sensible and effective policy framework can help ensure that UR is sustainable and socially beneficial [77]. Enacting national-level policies that clearly define the responsibilities and authority of local governments and developers can help mitigate SRs caused by the negative policy effect in UR [71]. Moreover, by advocating a culture-led microtransformation mode and avoiding large-scale demolition and reconstruction through policies, the SRs caused by demolition and relocation can be eliminated, and historical heritage, urban culture, and image can be protected to the greatest extent, thereby removing SRs caused by the negative environmental effect [68,78]. To perform urban physical examination for houses that cannot meet the residential needs or even have safety hazards and have to be demolished and rebuilt, unified and appropriate compensation standards, compensation methods, and compensation calculation methods that protect the rights and interests of vulnerable groups should be established through policy formulation. This approach can reduce the SRs caused by demolition compensation. It can also mean increased financial investment or setting up special funds for UR through policies to ensure the continuity of UR activities and avoid SRs caused by the breakdown of the capital chain [78,79]. Policies can also dictate the extent and modalities of public engagement, maintain communication with residents and stakeholders, and mitigate organization-related negative effects such as those arising from limited channels for public expression [18]. Promoting special legislation for UR can ensure that UR projects comply with laws and regulations, safeguard public interests and safety, and eliminate SRs caused by illegal forced demolitions [19].

5.2.2. Enhancing Collaborative Governance Capacity

UR is a massive and complex project, which mainly involves three stakeholders: government, enterprises, and the public [71,80]. In particular, the government and related departments play a central role in UR as organizers, leaders, regulators, and institutional providers [18]. Enterprises are responsible for the implementation and governance of UR, mainly including developers, construction companies, design companies, audit compa-

nies, and consulting companies [18]. As the leading parties in UR activities, government departments and enterprises have more voice and have a greater influence on the risk perception of other stakeholders, which are also the main sources of SRs. Therefore, only by enhancing the collaborative governance capacity of government departments and enterprises can the SRs caused by the organization-related negative effect be reduced, thereby ensuring successful UR projects. This platform can not only facilitate information sharing among participants but also provide a foundation for decision makers to collect relevant information about stakeholders, thereby reducing SRs caused by insufficient information and unreasonable decision making [81]. At the same time, establishing a supervision and management mechanism for UR projects ensures that the projects are carried out in accordance with laws and policies, thereby alleviating SRs caused by forced demolition, nonstandardized workflow processes, and improper construction management [66].

5.2.3. Strengthening Public Participation

Strengthening public participation in UR is the key to ensuring the success and sustainability of UR projects [23,65,82]. As a vulnerable group in UR projects, the public (e.g., residents facing demolition and relocation, tenants living in regeneration areas, residents living around UR projects, and ordinary citizens) can ensure the success and sustainability of UR only when their rights and interests are safeguarded [60]. The public should be provided with clear, timely, and understandable information to ensure their comprehension of the goals, plans, and effects of UR projects, thereby eliminating public doubts and misunderstandings about the projects [71]. At the same time, multiple channels (e.g., social media, municipal government websites, and bulletin boards) should be provided to convey relevant information to the public, which can help eliminate SRs caused by insufficient information [83]. Furthermore, multiple levels of participation mechanisms should be established, including public hearings, community representative committees, and online surveys, to meet the needs of different groups [84]. This approach can reduce SRs caused by limited channels for public expression. Overall, by strengthening public participation and addressing the concerns and needs of the public, UR projects can be implemented successfully and sustainably.

6. Conclusions

China's rapid urbanization has brought a series of unsustainable problems. UR is acknowledged as an effective solution by means of which to address these problems and promote sustainable urban development. Despite the significant contributions made by scholars in the field of UR, research regarding the SRs associated with this process is still not well-developed. However, the implementation of UR projects can easily give rise to SRs due to the involvement of numerous stakeholders, long construction periods, and the complex nature of the projects. These SRs not only disrupt UR initiatives but also cause social unrest, hindering sustainable urban development. The identification of risk factors is fundamental and crucial for risk management. Therefore, this study proposed a combined qualitative and quantitative approach to investigate the SRFs throughout the entire process of UR in China, including the planning, demolition, reconstruction, and operation stages. This approach addresses the limitations of previous research that focused only on the risks of housing demolition in UR, providing a more comprehensive theoretical foundation for the practice of UR.

This study obtained relevant cases from three types of network-based information platform to comprehensively identify the UR-related SRFs. These information platforms include government official websites, online news platforms, and the PKU Law platform. A total of 1211 cases were collected for this study, and 608 cases closely related to the research question were selected. By using the GTM, 22 UR-related SRFs were identified. The researchers conducted a structured questionnaire survey to investigate the respondents' perceptions of the identified SRFs. The survey results indicated that all 22 identified factors have significant effects on SRs associated with UR. Qualitative exploration based on

the GTM and quantitative research through the questionnaire survey demonstrated that the influencing factors of SRs related to UR mainly fall into five categories: the negative effects of demolition and relocation, the negative environmental effect, the negative effect of technology, the organization-related negative effect, and the negative effect of policy. Therefore, this study proposed three measures to alleviate the UR-related SRs for China from the macro, meso, and micro levels, that is, to improve policy and the legal system, enhance collaborative governance capacity, and strengthen public participation. The research findings can not only assist government officials in exploring effective approaches to promote and develop UR but also provide guidance for other developing countries with similar characteristics in governing SRs in UR.

This paper is not without limitations, and further research is needed to gain a comprehensive and practical understanding on the governance of SRs related to UR. In the future, this paper will broaden collection channels, continue to gather data, and enrich the research findings. Given the differences in economic, cultural, and educational aspects among countries, future studies could expand the data collection stage to verify the universality of the findings. Moreover, in the future, when collecting data, information about stakeholders should be gathered to study the effects of the UR-related SRFs on different stakeholders.

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