

SUSTAINABLE IMPROVEMENT AND MANAGEMENT FOR OLD URBAN RESIDENTIAL AREA IN CHINA

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Summary

The protection, utilization and sustainable improvement of old urban residential area is one of the key actions for sustainability during the rapidly urbanization process in China. The sustainable management of existing building is one of the key fields for the improvement of old urban residential area. In this paper, the significance and the demands of sustainable improvement for old urban residential area were discussed; the general planning framework of sustainable improvement composed of existing building improvement, environmental quality improvement and weak population improvement was set up. Based on the cooperation program of urban renewal in Wuhan city, the evolution of historic Lilong residential building was studied; the present conditions and utilizable resources of existing Lilong were analyzed; the living environment investigation of existing Lilong was made; then, four basic ways, main tasks and four models of sustainable improvement for existing Lilong were put forward. Next, the targets of sustainable improvement of residential environment for weak population in urban renewal were set up; the system and participation mechanism of sustainable improvement of residential environment for weak population were established; and the related strategies were offered. Finally, three action cases of sustainable improvement for old urban residential area were introduced briefly.

1. Old Urban Residential Area and Its Sustainable Improvement

1.1 Significance and Background

Old city is the real urban area that has been founded for a long history. Old urban area, for several years transformation, has been formed a comparative stable social and economical structures and particular regional customs and cultural, which has abundant resource for urban sustainable development.

Old urban residential area is the evolvement process that its primary functions have been "comprehensive aging" under the influence factors of physics, economy and society with the time. It is also one of the necessary urbanization process in China.

Sustainable improvement for old urban residential area is one of the important parts of China's Agenda 21, and the key field of harmoniously sustainable development between new and old urban area in the urban modernization process in China, which is also the common action of sustainable utilization for existing building and sustainable improvement for residential area in developing countries of the world.

The aging and decline in old urban residential area have been becoming serious social and economical problems that developing countries and developed countries faced. Main including: economic depression of old city and relocation of population from downtown areas lead to hollow downtown areas and lack of occupation and investment attraction; as most old houses been seriously aging and of low standard in old urban area, urban renewal has been becoming more and more difficult while the price raising of house and land; residential environment has been becoming deteriorated day by day and traditional urban economy and

structure of community are damaged; architectural cultural heritages of historical residential building can't deserve proper protection and utilization, even been destroyed and demolished.

The sustainable improvement and management action for old urban residential area is of great significance to resolve the common conundrums on renewal and renovation of old urban residential area in the process of local and urban sustainable development, and promote the coordinate development of old urban economy and society. The successful action experiences will be of widespread demonstration and guidance for renewal and renovation to China's several hundreds of big or medium cities.

Wuhan, the capital city of Hubei province, is the famous historical and cultural city in China. Jiang'an district is the old city proper with the most profound history and culture accumulation in Wuhan city, where recent historical buildings and traditional residential area style and features are in the most complete and concentrated preservation; and Jiang'an district is also the only famous historical district in China for its integration with five countries' "ex-concession" architecture sites of Britain, Russia, France, Germany and Japan. Therefore, it is abundant in historical residential environment and cultural heritage resources.

However, the severe decline problems in old urban residential area occurs now. The traditional economy and social foundation in old residential area has had a great loss; most old existing housing has been aging badly and the residential environment is deteriorating. The style and features of historical buildings and traditional residential area was destroyed or lost in the process of old city's transformation. The residents' income in old city proper is going down, which becomes the potential source resulting in "weak population".

Since 1996, Wuhan city has started the old urban renewal project. In support of Ministry of Science and Technology of China, Ministry of Construction of China and Wuhan Municipal Government, Huazhong University of Science and Technology has studied on sustainable improvement and management for old urban residential area continually cooperated with local planning & construction departments and real estate corporations. In 2003, the project "Sustainable Improvement Management of Environmental Quality for Old Urban Residential Area of Jiang'an District of Wuhan City" was as the demonstration project as EU-CHINA Environmental Management Cooperation Program (EMCP/LMD). HUST provides the technological support for the project implementation.

1.2 General Planning Framework

The basic principles of sustainable improvement action for old urban residential area are: sustainable protection and utilization of historical architectural cultural heritage resources; economy industry resuscitation and sustainable increase; sustainable improvement of residential environmental quality; neighborhood relationship improvement and sustainable society equity.

The general planning objectives of sustainable improvement for old urban residential area are:

- To provide improvement planning for old urban residential area and protection & restoration planning of building heritages; to provide long-term overall guidelines for sustainable development of old urban residential area.
- To present the management mechanism of residentially environmental quality improvement for the weak population in old urban community, to improve all residents' quality of life in old city proper.
- To encourage public participation and enhance the awareness and capabilities of local sustainable development.

The general planning framework of sustainable improvement for old urban residential area is as Figure 1.

2. Sustainable Utilization and Improvement for "Lilong" Residential Building

2.1 Evolution of Lilong Residential Building

Preservation and utilization of the local dwellings and their traditional residential environment are very urgent for today's China.

The Lilong residential building is one kinds of common architectural heritages at the end of 19th century in modern Chinese cities such as Shanghai, Tianjin, Guangzhou and Wuhan. As a neighborhood style of lane and ally, Lilong is noted with its characteristic form combined Chinese traditional courtyard house and European row-house.

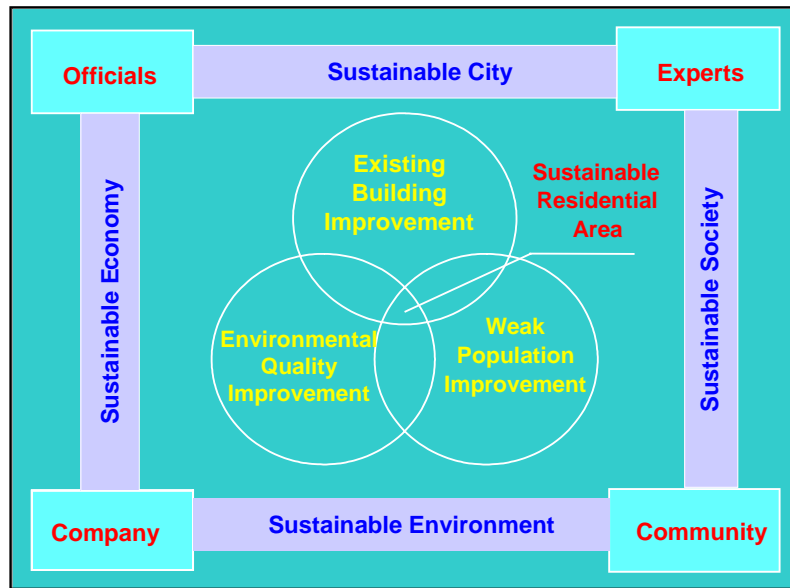


Figure 1 The general framework of sustainable improvement for old urban residential area

There had 208 main Lilong neighborhoods included 3294 house which had 3 millions square meters in 1949 at Wuhan. These traditional Lilong buildings are the priceless historical and utilizable characteristic resources in Wuhan and China. However, the Lilong preservation has been brought to a serious crisis because of urban redevelopment and modernization since the 1980's.

The early Lilong neighborhood was built in ex-concession, the former "Foreign Leased Territory" of Hankou, at the end of 19th century. It has been developed through five evolving periods:

- 1895 - 1910 Formation of old style Lilong
- 1911 - 1919 Extension of new style Lilong
- 1920 - 1937 Establishment of Lilong characteristics at local style
- 1938 - 1996 Obsolescence and Decline of Residential Function and Environment of Lilong
- 1998 - Protection, Utilization and Sustainable Improvement for Lilong

2.2 Present Conditions and Utilizable Resources of Existing Lilong

2.2.1 Classification of existing Lilong

The types of existing Lilong can be classified as Table 1.

Table 1 Classification of Lilong Building

No.	Depending on	Classification of Lilong Style
1	Construction time	Early Lilong, middle period Lilong, latter Lilong
2	Architectural characters	Old style Lilong, new style Lilong, garden Lilong, apartment Lilong
3	Urban protection planning	Excellent Lilong, style and features conservation Lilong, landscape conservation Lilong, useless Lilong
4	Protection and renewal method	Protective maintenance Lilong, alteration Lilong, reconstruction Lilong, demolition Lilong
5	Building quality	First grade (excellent) Lilong, second grade (good) Lilong, third grade (general) Lilong, fourth grade (disrepair) Lilong, Fifth grade (dangerous) Lilong

Our research group surveyed 58 Lilong neighborhood including 1316 existing buildings in Wuhan. The quality evaluation of existing Lilong building see Table 2.

Table 2 Quality Evaluation of Lilong Building

Quality Grade	Total	1st grade	2nd grade	3rd grade	4th grade	5th grade
Surveyed Houses	1316	88	249	352	530	97
Percent	100%	6.7%	18.9%	26.7%	40.3%	7.4%

2.2.2 Utilizable resources of existing Lilong

The core of sustainable improvement of traditional Lilong is making scientific evaluation and reasonable redevelopment for its utilizable resources. The main utilizable resources of existing Lilong are: Characteristics resource of historic cultural city; land redevelopment and utilization resource; street commercial utilization resource; infrastructure utilization resource; tourism utilization resource.

2.3 Living Environment Investigation of Existing Lilong

The old residential area Rushouli Lilong built in 1924, covered 14780 square meter, had 99 joined line-up modern buildings with two layers brick and wood structure. Because the time was very long, the residential environment of Lilong declined seriously.

We chose 130 householders to carry questionnaire investigation at random, who occupied 25.54% of the total householders of Lilong, and took back 109 valid answer books; callback rate of answer books was 83.85%, totally investigated 26 problems up to 130 choice indexes. The analytical result of the questionnaire investigation from householders see Table 3.

Table 3 Analysis of Questionnaire Evaluation by Householders of Rushouli Lilong

Type	Content	Evaluation		Evaluation		Evaluation		Evaluation		Evaluation	
		Grade	(%)	Grade	(%)	Grade	(%)	Grade	(%)	Grade	(%)
Outdoor Environment	1 Service Environment	VG	29.21	G	42.70	Gen.	21.35	P	6.74	VP	0.00
	2 Educational Condition	VG	23.81	G	20.24	Gen.	44.05	P	5.95	VP	5.95
	3 Traffic Convenience	VG	26.67	G	28.89	Gen.	24.44	P	10.00	VP	10.00
	4 Sanitary Condition	VG	9.52	G	13.10	Gen.	36.90	P	27.83	VP	13.10
	5 Public Security and Fireproofing	VG	15.30	G	20.00	Gen.	29.41	P	23.53	VP	11.76
	6 Evaluation to Committee	VG	32.61	G	33.70	Gen.	29.35	P	2.17	VP	2.21
Indoor environment	7 Sunlight and Lighting	VG	26.42	G	22.64	Gen.	15.09	P	14.15	VP	21.70
	8 Ventilation and Damp-proof	VG	17.89	G	22.11	Gen.	23.16	P	12.63	VP	24.21

Note: VG(very good); G(good); Gen.(general); P(poor); VP(very poor)

2.4 Ways of Sustainable Improvement for Existing Lilong

We set up four basic ways of protection and Sustainable Improvement for existing Lilong:

Type I : The Excellent Lilong of Protective Maintenance. There are 13 Lilongs need to be conserved strictly by the building code. These Lilongs are about 10% of all existing Lilongs.

Type II: The Lilong of Whole Architectural Scenery Conservation. These are more than 30 Lilongs and which are about 30% of all existing Lilongs.

Type III: The Lilong of Historic Environmental Conservation. These are about 40% of all existing Lilongs.

Type IV: The Useless or Dangerous Lilong. This type of Lilong need to be demolished and which is about 20% of all existing Lilongs.

We made the sustainable utilization planning for existing Lilong of Wuhan city into three tasks:

- One General Protection Lilong Area.
- Three Revitalization Characteristic Lilong Districts. Including: The core conservation Lilong district; the scope restoration Lilong district; the characteristic renewal Lilong district.
- Three Lilong Landscape Lines. Including: Shengli Street Lilong line; Lihuangpi Road Lilong line; Jiangnan Road Lilong line.

We established four basic models of sustainable improvement of existing Lilong:

Model 1: Protective Maintenance and Improvement

Model 2: Alteration (separate flat)

Model 3: Rebuild and Reconstruction

Model 4: Demolition and Redevelopment

3. Sustainable Improvement of Residential Environment for Weak Population

3.1 Sustainable Improvement Target of Residential Environment for Weak Population

Weak population was resulted of the configuration of social structure. It is very important to strengthen the self-improvement capability and participation mechanism of weak population in sustainable improvement and management for old urban residential area at China.

According to the occurrence reasons, weak population could be classified as following: low income group, poor group, social assistant group, poor competitive group etc., which show low income, low life quality, poor competitive capability and low development expect in detail.

The improvement targets of residential environment for weak population in old urban community are:

- To insist on principle of "improving the community environment, being more harmonious between neighbors, helping the weak population, increasing the community activity".
- To improve the residential environment quality for weak population in community.
- To enhance the sustainable improvement management ability for weak population.

3.2 Sustainable Improvement System of Residential Environment for Weak Population

Urban community renewal not only relate to the physical problem, but also the social and economic problems. We put forward the sustainable improvement system of residential environment for weak population of the old urban community composed of three parts: to improve their economic position, physical residential conditions and social environment. See Figure 2.

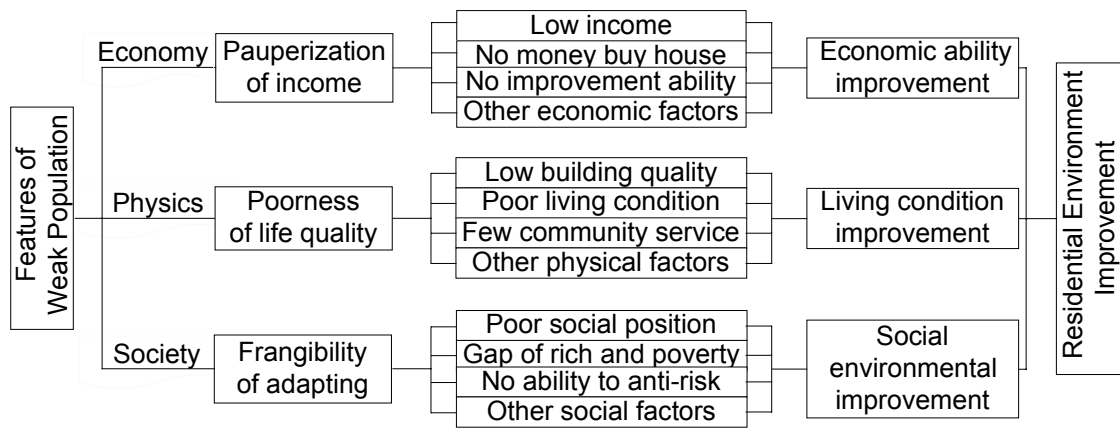


Figure 2 Sustainable improvement system of residential environment for week population

We established the participation mechanism of residential environment improvement for week population. See Figure 3.

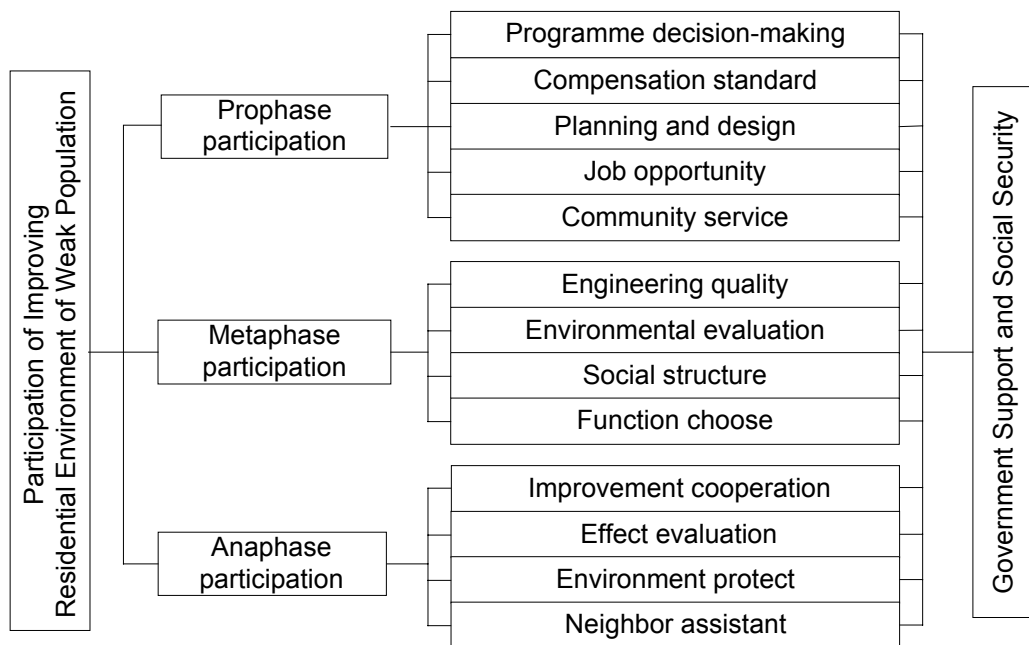


Figure 3 Participation mechanism of residential environment improvement for week population

3.3 Sustainable Improvement Strategies of Residential Environment for Week Population

To solve the dwelling problem of weak population is a complicated and long-term social system engineering, the sustainable improvement measures should include four aspects:

3.3.1 To establish the dwelling social security system for urban low-income stratum

The reform target of Chinese housing system is to establish commercialized and socialized housing system, and to establish three kinds of basic dwelling providing system. One is to establish commercial housing providing system for high-medium income stratum, the second is to establish economical and practical housing providing system for medium-low income estate, and the third is to establish flop house providing system specific to the lowest income poor estate. Apparently, weak population dwelling security not only includes the third category, but also includes those low-income families in the second category, and numerous concealed or potential weak dwelling populations.

3.3.2 To make full use of the two-aspect utilities of commodity exchange and social security

Economical and functional house, as the material form of social security commercial dwelling, is the dwelling with low input and minor profit aiming at the purchasing requirement of much medium-low income estate. They are the house resource of the government for the items such as social protection, moving because of construction, civil administrative supporting, and relocation after natural disaster, etc. Meanwhile, economical and practical houses are not allocated as welfare with no charge, they are affordable houses to low-income dwellers through various market supporting measures.

3.3.3 To set up a providing system of the lowest-rent house for weak population

Town lowest-rent house means to provide relatively low renting house to permanent dwellers with the lowest income in towns, through the implementation of social protection system in housing field by the government and related units. The purpose is to help the dwellers with lowest income to get basic dwelling security.

The construction of lowest-rent house in China is still at the preliminary and immature stage. Its providing channels are mainly as follows:

- Recognition of available house. The public houses currently rented by lowest income families that are also within the stipulated area standard of the local government are considered to be flophouse.
- House under construction, namely the cheap renting dwelling being financially constructed by the government.
- Purchasing. The government financially purchased houses, such as old houses, vacant commercial houses, and then cheaply rent them to lowest income dwellers.
- Rent subsidy. The government provides some renting subsidy to lowest income dwellers. Then they go to the market to rent houses freely.
- Replacement of new and old houses, namely using the old public houses being vacant from the construction of new houses as cheap renting dwelling resources.
- Receding, namely using the old public houses receded from the reform of dwelling allocation system, which also fulfill the requirement of cheap renting house stipulated by local government as cheap renting house resources.
- Donation, namely using the houses donated by society, which also fulfill the cheap renting dwelling standard as houses and renting them to the lowest income and poor dwelling estate.

3.3.4 To construct the community service network for weak population

The community is the main living space for weak population. Compared with other dwellers in the community, weak population is more vulnerable and in more need for help and support. The community service network should has following aspects:

- Unemployment-poverty service system. Including reemployment, reeducation and retaining, life service for specially poor family and legal assistant.
- Senior citizen service system. Consisting of providing for the aged, entertainment and medical treatment.
- Handicapped service system. Containing recovering service, special education and life service of removing obstacles.
- Single-parents family service system. Homemaking serve, kid assistant and match making.

In these years many cities in China have achieved lots of successful experiences. For instance, Baibuting garden community, the largest public housing example in Wuhan city, developed "love engineering" for community weak population.

4 Sustainable Improvement Action and Demonstration

Action and Demonstration 1: Sustainable utilization and improvement for existing Lilong housing --- Cases of Shanghaicun Lilong, Rushouli Lilong and Jincheng Lilong.

Action and Demonstration 2: Sustainable improvement planning and actions for historical street --- Cases of the historical building heritages street of Lihuangpi Road and the historical folk custom culture street of Jiqingjie.

Action and Demonstration 3: Sustainable management mechanism of improvement for weak population in old urban community --- Case of the "love engineering for weak population" by Baibuting garden community.

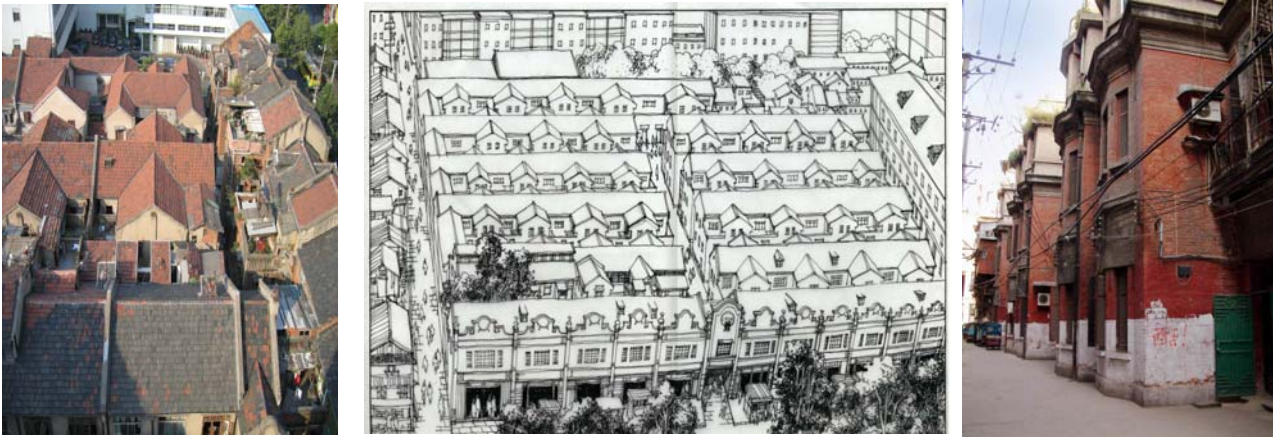


Figure 4 Demonstration 1: Existing Lilong housing, Wuhan, China

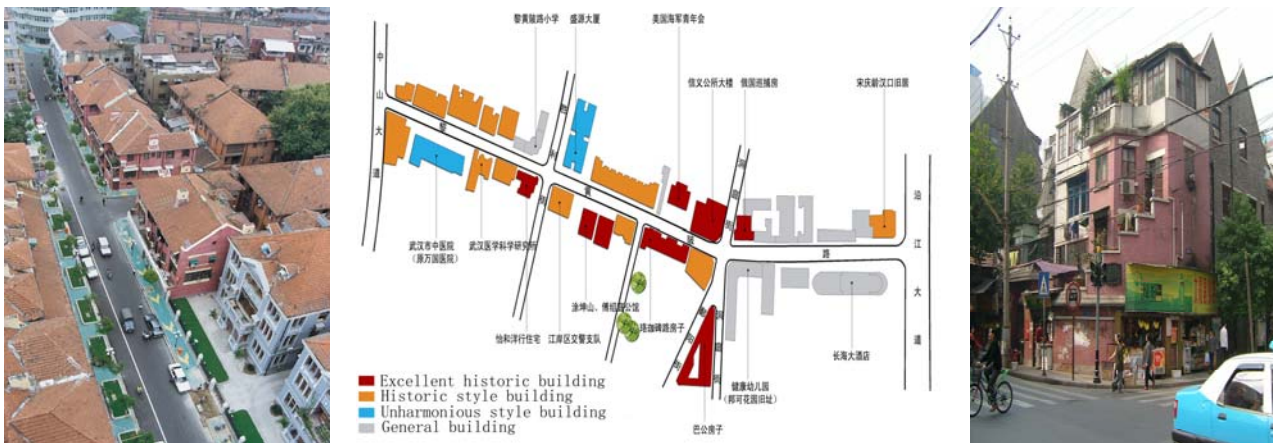


Figure 5 Demonstration 2: Historical buildings heritages street of Lihuangpi road

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