Journal of Innovation and Development
ISSN: 2958-4752 | Vol. 3, No. 3, 2023

A Summary on the Theory and Policy of Urban Inefficient Land Redevelopment in China

Haiyuan Lin, Jie Jin *

Yunnan University of Finance and Economics, Kunming Yunnan, 650221, China
*** Corresponding author:** Jie Jin (Email: 2570693673@qq.com)

Abstract: Promoting the redevelopment of inefficient urban land, improving land use efficiency, and optimizing urban spatial layout are important measures to achieve high-quality development. Starting from the definition and connotation of urban inefficient land, this article summarizes the criteria and types of urban inefficient land, the techniques and methods for inefficient land research, the reasons for the formation of urban inefficient land, the existing difficulties in the process of redevelopment, corresponding countermeasures, and redevelopment models. This article summarizes the experience and practice of developed regions, analyzes the deficiencies of related research and looks forward to direction of future research.

Keywords: Stock Land; Inefficient Urban Land; Redevelopment; Summary.

1. Introduction

After the delineation of the "three zones and three lines", the land spatial planning requires strict control of urban development boundaries. After the newly revised Land Management Law is introduced, the original urban development model of converting agricultural land into construction land has become difficult. This requires that urban development must shift from "increasing expansion" to "tapping potential", and promoting the redevelopment of inefficient urban land is an important means to alleviate this contradiction. The significance of redevelopment of inefficient urban land lies in: firstly, by revitalizing existing land and changing the excessive reliance on new construction land indicators in the past; Secondly, it can transform the mode of industrial growth, force enterprises to transform, and promote economic transformation and upgrading; Thirdly, it can effectively improve the urban landscape, enhance the level of greening and public infrastructure construction.

2. Connotation, Types and Research Methods of Inefficient Land Use

2.1. Research on the Concept and Connotation of Inefficient Land Use

The study of inefficient land use in China originated from the study of less intensive land and idle land, but the definition of inefficient land use by scholars is different.

For example, Dai Xingyi defined inefficient industrial land as two types: one is illegal pollution processing sites; the other is illegal pollution processing sites; Second, compliant but low-end industrial enterprises [1]. Then it gradually expanded to the quantitative standard research of inefficient industrial land. For example, Zhou Wufu believed that inefficient land use was construction land that could be adjusted and optimized later because the investment intensity, plot ratio, building density and per mu benefit could not meet the relevant requirements [2]; Hong Huikun believes that low efficiency industrial land refers to low efficiency land that does not have regional advantages and lacks competitiveness, and industrial land that still has space for adjustment and utilization and is high energy consumption, high pollution, and the environmental protection and safety index is not up to standard [3].

In recent years, scholars' research on inefficient land use is no longer limited to industrial land, but extended to land for other purposes, and gradually formed the concept of urban inefficient land use. For example, Zhang Mengdi believes that inefficient land exists in both urban and rural areas, which refers to land with low utilization rate and various indicators that cannot meet the relevant requirements [4]; Sun Yujun believes that inefficient land use refers to urban construction land with scattered layout, extensive utilization and unreasonable use within the scope of the overall land use planning [5].

2.2. Research on the Division of Urban Inefficient Land

For the division of inefficient land use, at first, scholars started from the land use standard of industrial land, such as Lin Yu's research on Changsha Development Park. According to the four main forms of inefficient land use in the Development Zone, inefficient land use was divided into four types: incomplete development, substandard development, low output efficiency and low intensity [6].

Later, scholars classified inefficient land from the perspective of redevelopment of inefficient land. For example, Lin Jian classified inefficient land from three perspectives: redevelopment object, redevelopment degree and redevelopment subject [7]. Taking the integration planning of industrial land in Haicang District of Xiamen as an example, Zheng Jinlong summed up that the transformation of inefficient industrial land can be divided into five types: renovation and reconstruction, function transformation, use change, land reconstruction and market transfer [8].

After the original Ministry of land and resources issued document No. 147, some scholars also classified inefficient land use according to this. For example, Yang Shaomin classified inefficient urban land use into four categories based on land use classification: inefficient industrial land, inefficient living land, inefficient village land and other inefficient land [9].

Although different scholars' classification of inefficient

land use is different, it can be seen that the research on the classification of inefficient land use is still from the division of industrial land to the division of other land use, and it is also based on the characteristics of inefficient land use in the studied area.

2.3. Main Technical Means and Research Methods

In recent years, in the research on the redevelopment of inefficient urban land, many scholars analyzed the spatial distribution pattern of inefficient urban land in the study area from the perspective of geography and using spatial analysis method. From the perspective of public management, some scholars also use SWOT analysis, property right game theory and other methods to analyze the countermeasures against the problems of interest distribution and transformation difficulties in the process of redevelopment. Other scholars use economic methods, such as economic calculation model, land scale potential calculation model and AMM model, to identify inefficient land use and quantify the benefits of inefficient land redevelopment.

Table 1. Main technical means and research methods

Research methods, technical means	representative achievements	research area method application	method application
GIS spatial analysis method (including spatial autocorrelation, kernel density estimation and standard deviation ellipse analysis method)	Chen Yuqing [10], 2021	Fuzhou	uses GIS spatial analysis method to identify the spatial distribution pattern, spatial agglomeration phenomenon and direction trend of urban inefficient land use.
SWOT analysis method	YuTian [11], 2018	Nanjing	introduced SWOT analysis method to analyze the situation and current situation of urban inefficient land redevelopment from the four dimensions of strengths, weaknesses, opportunities and threats.
Literature research and content analysis	Hu Zijiao[12], 2019	Guangzhou	Based on a number of redevelopment policies, uses the word frequency analysis of Rost software to analyze the deficiencies of existing policy tools.
Calculation method of land scale potential	Zhang Lemin [13], 2020	Huangzhou District, Huanggang City	Using the calculation formula of land scale potential, the realizable potential of urban inefficient land redevelopment is calculated.
Property rights game model	Gu Yuewen [14], 2021	Shenzhen	based on the bargaining game model, analyzed the essential reasons for the difficulties in the transformation and upgrading of inefficient industrial land.
Geographic detector model	liuhuifang [15], 2022	Shanxi Province	Using geographical detectors, this paper studies the dominant factors affecting the spatial differentiation of inefficient urban land use in Shanxi Province.
The theoretical model of "situation structure behavior result" analysis	Gu Xiaokun [16], 2022	Shanghai	Based on the analysis of the characteristics of the complex system of inefficient industrial land governance, an analytical framework of "situation structure behavior result" was constructed to reveal the process of inefficient land reduction and its operation mechanism.
The AMM model	Wang Dan [17], 2018	Yangzhou	compare the land price data with the same diameter, circle and neighborhood, and identify the inefficient land use through the rapid judgment of the land economic benefits.
Redevelopment economic calculation model	Zhu Xinshuai [18], 2020	stone city new village, Nanjing	The economic calculation model is introduced to calculate the land value-added income after the redevelopment of inefficient land, and analyze whether the redevelopment behavior in this area is economically feasible.

3. Practical Challenges and Solutions of Inefficient Land Redevelopment

3.1. Research on the Causes of Low Efficiency Land Use in Cities and Towns

There are many reasons for the formation of inefficient urban land use. In summary, there are enterprises' own reasons, government departments' reasons, historical reasons and legal reasons.

The reasons of enterprises themselves are that some enterprises fail to invest and construct as planned due to lack of funds, and some traditional enterprises have low operating efficiency. For example, after analyzing the types of enterprises in Ma'anshan City, renxiangfang found that there were a large number of heavy industrial enterprises in the city, some of which had low output, serious pollution and difficult enterprise transformation, resulting in inefficient land use [19].

The reasons for the government departments are mainly reflected in the fact that some local governments did not strictly carry out investment invitation according to the investment invitation catalogue, and the subsequent land use supervision of enterprises was not strict. For example, Yu Deshun believed that the local government lowered the threshold for entering the park in pursuit of political achievements, which led to the introduction of enterprises with good and bad qualities. At the same time, the regulatory

authorities did not timely urge enterprises to build and put into operation on schedule, resulting in inefficient land use [20].

The historical reasons mainly lie in the unreasonable and backward urban planning in the early stage of our country, and the weak management of land and the low force of coercion. For example, Xu Yong believes that the early planning did not advance the planning of urban development. At the same time, each new government also constantly adjusted the urban planning, which led to the interpenetration of various uses of land, the confusion of zoning, and the low utilization intensity [21].

The legal reason is the lack of relevant laws. For example, Wang Wenzhong believes that the government relies too much on land finance and expropriates land indiscriminately, resulting in a large number of lands not being reasonably developed after being expropriated by the government [22]. Ren Xiangfang pointed out that many companies' assets have been frozen by the court for a long time due to debt problems, and the land cannot be effectively disposed of when the judicial procedures are not completed [19].

3.2. Research on the Dilemma of Urban Inefficient Land Redevelopment

The difficulties in the redevelopment of inefficient urban land are as follows: first, the cost of land redevelopment is too high, and the relevant subjects have no enthusiasm; Second, policy factors affect land disposal; Third, the benefit sharing mechanism of redevelopment is unclear.

The high cost of land redevelopment and the lack of enthusiasm for development are reflected in the fact that the redevelopment of inefficient land in many cities and towns is led by government departments through land expropriation and re transfer. This method is slow and costly, and it also causes great pressure on the finance. For example, Liu Xinping believes that the costs of demolition compensation, resettlement and construction are high, and the funds required for a single reconstruction project are huge. The government, as the leader, faces the dilemma of fund shortage [23]. Sun Yujun believes that for many enterprises or village collectives, even if there is a strong desire to participate in the redevelopment, the complexity of the process and limited benefit sharing have largely limited their enthusiasm [5].

The impact of policy factors is reflected in the outstanding problems left over by history. For example, when Zeng Lechun studied the "three old" reconstruction in Guangdong Province, he found that the ownership relationship of many reconstructed plots was complex, and it was difficult to confirm the ownership of some lands due to the lack of relevant ownership source data for a long time, which delayed the speed of redevelopment [24].

The unclear benefit sharing mechanism is reflected in the different interest orientations among the government, village collectives and enterprises in the process of redevelopment. For example, based on the study of the secondary development of industrial land in Shanghai, Zhang Chuanyong and others found that the interests of parks, enterprises and farmers were inconsistent in the development process. The government hoped to realize redevelopment at low cost, enterprises hoped to maintain the current land use mode, and village collectives hoped to obtain more compensation after being requisitioned [25].

3.3. Strategy Research on Promoting the Redevelopment of Inefficient Urban Land

The root cause of the dilemma in the redevelopment of inefficient land mainly comes from the current restrictions on the use of collective construction land, the restriction of the "bidding, auction and listing" transfer rules, and the lack of judicial enforcement rules. In this regard, many scholars also put forward targeted countermeasures.

With regard to the problems existing in the government's investment promotion and post financing supervision, Yu Deshun proposed that the government departments should scientifically and reasonably prepare the investment promotion catalogue and strictly carry out investment promotion in accordance with the investment promotion catalogue. At the same time, he suggested that the local government should curb the inefficient land use in the bud through regular on-site inspection and timely disposal of enterprises that failed to perform the land use contract [20]. Lin Qiang proposed to combine "prior review" with "post evaluation" to demonstrate the feasibility of project implementation before land supply, and to quantify the implementation quality and the role of the project in tax and employment after land supply [26].

In view of the lack of enthusiasm of the development subject, Lin Qiang proposed that the urban renewal should determine the development subject, formulate the renewal and reconstruction scheme, and determine the compensation standard and method through the market mechanism [26]. Dong Yahui takes the renovation of Nantou ancient city in Shenzhen as the research object, and puts forward that the renovation of the ancient city block can be mainly from bottom to top with multiple participation, forming the participation mode of government, market and NPO [27].

As for the problems left over by the history of inefficient land use, Zeng Lechun proposed to absorb the current practice to establish the system of time limited acquisition of property rights, and those houses with incomplete ownership certificates that have been built for a long time can also be registered after announcement without objection [24].

With regard to the high cost of land redevelopment, Zhang Chuanyong, based on the secondary development of the existing industrial land in Shanghai, proposed three types of incentive measures: reducing the land price for enterprises in line with the industrial development orientation, providing tax incentives for the use of upgraded enterprises, and linking the secondary development with employee performance [25]. In order to avoid large-scale demolition and construction in the process of redevelopment and save the cost of redevelopment, Miao Chunsheng, based on the experience of the reconstruction of urban villages in Shenzhen, proposed that for buildings with good building quality and able to provide a large number of low-cost housing, rough demolition and construction type renewal should not be used, and proposed to determine whether the demolition and reconstruction of residential land in urban villages is economically feasible by setting the plot ratio red line [28].

3.4. Research on Redevelopment Mode of Inefficient Urban Land

In recent years, the redevelopment of inefficient urban land has been carried out throughout the country, and the redevelopment models adopted by different regions are also different. In summary, it can be summarized as the

government led transformation model, the reward and compensation model, the government led transformation profit sharing model and the PPP model.

The advantages of the government led transformation model are that the task is clear, the risk is small, and the income is stable. The government can lead and grasp the development direction of the transformation project, but this model also has its disadvantages. For example, luoyanli believes that this mode involves a series of costs such as the re planning and adjustment of land plots, the transformation of houses and the updating and improvement of infrastructure services, and it is difficult for local governments to bear such a huge demand for funds alone [29].

The incentive compensation mode is mainly used for the transformation of industrial enterprises. In this mode, the government does not directly participate in the transformation of inefficient industrial land, but takes incentive measures to let enterprises transform themselves. For example, zhangchuanyong found that Shanghai Industrial Park adopted floor area ratio incentives, tax incentives and performance linked incentives when transforming inefficient land use [25].

The government led transformation of the profit-sharing model involves the introduction of a variety of social forces to participate in land management. Yang Fei believes that this model can alleviate the financial pressure of local governments' lack of funds; Secondly, the will and interests of the public can be fully guaranteed [30]. Zeng Lechun believes that Shenzhen's inefficient land redevelopment model is a typical representative of this model, which emphasizes planning first, quantifies control indicators, and gives full play to the initiative of market players in independent transformation [24].

PPP mode means that the government establishes a development and construction company with franchise rights with enterprises through bidding and other forms, and the development and construction company with franchise rights is responsible for raising funds, development and construction and later operation. This model can achieve diversified profits, and has also been applied in developed cities. For example, Dai Bing has actually investigated the process of government enterprise cooperation in land redevelopment in three regions of Shanghai, analyzed the feasibility of adopting PPP mode in the reconstruction of old districts in Shanghai from the perspective of theory, policy and practice, and constructed a specific PPP mode for the reconstruction of old districts in Shanghai [31].

4. Summary of Policies and Experience Related to the Redevelopment of Inefficient Urban Land

As for how to effectively promote the redevelopment of inefficient urban land, many cities in China have actively explored and gained rich practical experience. The redevelopment of inefficient urban land in many cities is a bottom-up policy innovation carried out by cities according to their own transformation motivation and with the consent of the natural resources department. It is mainly reflected in the following three aspects:

First, innovation in the management of collectively operated construction land. In order to guide the collective economic organizations to transform and develop the stock of construction land, many provinces have proposed that within the scope of urban construction land determined in the plan, the original village collective can apply for changing the collective construction land to state-owned construction land. After going through the land formalities according to law, the land with changed ownership can be developed by the original village collective economic organizations themselves or in cooperation. For example, in view of the unbalanced distribution of interests and prominent contradictions in land acquisition and demolition in the reconstruction of urban villages, Shanghai has adopted the method of taking the village collective as the main body and introducing cooperative units to jointly transform and develop projects.

The second is to improve the rules for handling illegal land use. For inefficient land use in cities and towns that comply with relevant plans and have no legal land use procedures, many pilot cities have formulated plans to improve various land use procedures. For example, according to the different time points of land use behavior, Wenzhou City has adopted three methods: registration after the parties' application for announcement without objection, land use formalities by transfer or agreement transfer, and handling in accordance with the current laws, regulations and policies.

The third is to improve the "bidding, auction and listing" transfer rules. Some cities have improved the "bidding, auction and listing" transfer rules to give the original state-owned land use right holders more initiative in the transformation and development, and built a benefit sharing and incentive mechanism to encourage the original owners to participate in the transformation and development. For example, Xiaoshan District of Hangzhou city has proposed to guide enterprises to carry out "zero land technological transformation" in view of the existence of many dangerous old plants with low density and low plot ratio and the old plants in urgent need of transformation for industrial renovation and upgrading. Enterprises that expand multi-storey plants and improve plot ratio will no longer receive land transfer fees. At the same time, enterprises that are difficult to pay taxes after completion and use will be exempted from taxes.

5. Deficiencies and Prospects of Existing Research

5.1. Deficiencies of Existing Research

According to the existing literature, there is a broad consensus on the redevelopment of inefficient land in China. However, there are still some deficiencies in the current research. In terms of the definition of inefficient land use, the connotation and identification standards of inefficient land use in provinces, cities and counties are inconsistent. As far as the research goal is concerned, the current redevelopment focuses more on improving the economic benefits of inefficient land use, while ignoring the factors affecting the quality of the city, such as ecology, landscape, public services and so on. In terms of the research object, the research focuses on the cities in the eastern region, and there is less research on the inefficient land use in the relatively backward central and western cities and the vast rural areas.

5.2. Outlook

In view of the deficiencies of the existing research, the author here imagines four future research directions and trends: first, according to the existing experience, clarify the goal, connotation and scope of the redevelopment of inefficient land, and establish an overall evaluation system for

inefficient land use; Second, for some central and western cities with relatively low level of economic development but in the rapid expansion of land use, it is obvious that the experience of developed regions cannot be completely copied for redevelopment. The redevelopment of inefficient land use in western cities should be adjusted in combination with their unique economic level, topography, local low-carbon ecology and cultural characteristics, and corresponding identification standards should be formulated according to local conditions; Third, at present, the work and Research on the redevelopment of inefficient land use in China focus on the central urban areas and old urban areas with a high level of urbanization. There are a large number of stock space in rural areas that have not been effectively utilized. How to establish a mechanism for the coordinated utilization of urban and rural stock space is also an issue that needs further consideration in the future. Fourth, we can refer to the standard land in developed areas and future community construction, avoid the generation of inefficient industrial land in the future when transferring land, and transform the inefficient residential land into a future community with humanistic, low-carbon, digital and convenient service facilities in one step.

References

[1] Dai Xingyi. Optimal land use in the transformation and development of Shanghai [J]. Shanghai land and resources, 2015,36 (01): 1-4.

[2] Zhouwufu, xiejichang. Urban inefficient land redevelopment ideas from the perspective of organic renewal -- a case study of Wenzhou [J]. planner, 2014,30 (S3): 203-207.

[3] Honghuikun, liaoheping, Zeng Yan, et al. Study on the exit mechanism of inefficient industrial land in Chongqing [J]. JOURNAL OF SOUTHWEST UNIVERSITY (NATURAL SCIENCE EDITION), 2015,37 (05): 128-135.

[4] Zhangmengdi Research on the redevelopment of inefficient urban land in Lucheng District, Wenzhou [D]. Jiangxi Agricultural University, 2016.

[5] Sunyujun. Research on the dilemma and Countermeasures of urban inefficient land redevelopment [J]. China Construction, 2021 (01): 149-150.

[6] Lin Yu Definition and classification of inefficient land use in development (Park) areas [D]. Hunan Agricultural University, 2013.

[7] Lin Jian, ye Zijun, Yang Hong. Thoughts on the redevelopment of inefficient urban land in the era of stock planning [J]. China land science, 2019,33 (09): 1-8.

[8] Zhengjinlong, Hao Wangyang. Research on spatial mining and utilization of existing industrial land -- a case study of industrial land integration planning in Haicang District, Xiamen [J]. urban architecture, 2021,18 (11): 21-27.

[9] Yangshaomin, lizihua. Discussion on types and identification standards of inefficient urban land use [J]. China land and resources economy, 2021,34 (02): 42-48.

[10] Chenyuqing, zhugaolong, wangxudong, et al. Research on the spatial pattern and redevelopment mode of inefficient urban land use -- a case study of Fuzhou [J]. urban development research, 2021,28 (09): 13-17.

[11] Yu Tian Research on the path of inefficient land redevelopment in Nanjing Based on SWOT analysis [D]. Nanjing Agricultural University, 2018.

[12] Hu Zijiao Research on the policy of urban inefficient land redevelopment [d]. Jinan University, 2019.

[13] Zhanglemin, zhangyunrong, Chai Yuting. Analysis of the current situation and potential of inefficient urban land use in Huangzhou District of Huanggang City [J]. southern agriculture, 2020,14 (23): 84-86.

[14] Gu Yuewen, Lu Ping. Research on the renewal mechanism of low efficient industrial land under the perspective of property right game -- Taking the reform of new industrial land in Shenzhen as an example [J]. urban development research, 2021,28 (01): 71-77.

[15] Liuhuifang, Bi rutian, Wang Jin, et al. Spatial pattern differentiation and influencing factors of inefficient land use in county towns in Shanxi Province [J]. Journal of agricultural machinery, 2022,53 (05): 169-180+208.

[16] Guxiaokun, Zhouxiaoping, Liuboyan, et al. Reduction of inefficient industrial land in Shanghai based on "situation structure behavior result" analysis [J]. Journal of natural resources, 2022,37 (06): 1413-1424.

[17] Wang Dan, Fang bin,Chenzhengfu. Measurement of land economic benefits and diagnosis of inefficient land use in single center cities based on Externality Theory -- a case study of Yangzhou City [J]. China land science, 2018,32 (06): 61-67.

[18] Zhu Xinshuai Research on the redevelopment mode and value added benefits of urban inefficient residential land [D]. Nanjing Normal University, 2020.

[19] Ren Xiangfang, Li Shanshan. Problems and suggestions on the redevelopment and utilization of inefficient urban land in Ma'anshan [J]. Anhui agronomy bulletin, 2021,27 (01): 124-126.

[20] Yu Deshun, Tao Jiakun. Suggestions on the redevelopment and utilization of inefficient urban land [J]. Jilin agriculture, 2019 (15): 39.

[21] Xu Yong, ZhangHaiming, Yang Shiyong. Cause analysis and Countermeasures of idle and inefficient land use in Shandong Province [J]. Shandong land and resources, 2014,30 (05): 90-93+98.

[22] Wang Wenzhong. Causes and Countermeasures of inefficient land use in China [J]. land and resources, 2016 (10): 48-49.

[23] Liuxinping, Yanjinming, Wangqingri. The Realistic Dilemma and rational choice of the redevelopment of inefficient urban land in China [J]. China land science, 2015,29 (01): 48-54.

[24] Zeng Lechun, Gong Junwei, Zhu Yizhong. Institutional Dilemma and Countermeasures of inefficient construction land redevelopment -- a case study of Guangdong Province [J]. China land, 2021 (03): 41-43.

[25] Zhang Chuanyong, Wang Fenglong, Du Yuhu. Problems and Countermeasures of redevelopment of existing industrial land in large cities: a case study of Shanghai [J]. Journal of East China Normal University (PHILOSOPHY AND SOCIAL SCIENCES), 2020,52 (02): 161-170+197.

[26] Lin Qiang. Institutional arrangements and Policy Reflections on Urban Renewal -- a case study of Shenzhen [J]. urban planning, 2017,41 (11): 52-55+71.

[27] Dong Yahui, LvBin. Research on the sustainable regeneration path of the old urban area under the elastic delimitation of the purple line -- a case study of Nantou ancient city in Shenzhen [J]. planner, 2019,35 (16): 17-22.

[28] Miao Chunsheng, Qin Wenchao, Shui Haoran. From large-scale demolition and construction to organic renewal, guide the transformation of the development mode of Urban Villages -- Taking the preparation of the overall plan for the comprehensive renovation of urban villages (old villages) in Shenzhen (2019-2025) as an example [J]. planner, 2021,37 (11): 55-62.

[29] Luo Yanli, Zhang Chun, Yang Fan, et al. Analysis of PPP mode in the redevelopment of inefficient urban land [J]. land and resources guide, 2017,14 (02): 85-90.

[30] Yang Fei Research on the mode and Countermeasures of the redevelopment and utilization of inefficient urban land [D]. Anhui Agricultural University, 2020.

[31] Dai Bing, Fan Hua, Sun Xin, et al. Research on the implementation of secondary land development in Shanghai using PPP mode [J]. scientific development, 2017 (10): 58-67.