

Domestic and International Site Remediation Progress

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Abstract

The regulation of urban construction land can effectively solve the problems of inefficient use of urban land, idle land, urban stock land. This paper systematically combs the practice and experience of construction land regulation in several countries at home and abroad, which provides reference for the development of construction land regulation projects in China. Under the new situation, we should adapt to the current situation that the objects, objectives and models of land reclamation are more diversified, implement the strategy of land connotation excavation and reclamation and redevelopment. The urban and rural land use structure and industrial layout must be further optimized to promote the economic and intensive use of land, and promote urban renewal and industrial transformation and upgrading.

Keywords

Land Consolidation; Land Use Structure; Urban Renewal.

1. Introduction

With the global industrialization process, the number and scale of cities continue to expand, and the demand for construction land continues to grow [2]. In 1992, China formally implemented the reform of the urbanization system after the reform and opening up, and from 1978 to 2021, China's urbanization rate increased from 17.92% to 64.72%. Among them, from 2017 to 2021, the urbanization rate of China's resident population increased by 1.17%, 1.06%, 1.02%, 3.29% and 0.89%, respectively, and the new urbanization entered a slow development stage. In the process of transition from traditional urbanization to new urbanization, achieving the coordinated development of "people and land" is the focus and difficulty of the key stage of urbanization [3]. Integrating urban and rural development to meet the demand for construction land for urban development under the premise of ensuring that the quantity and quality of arable land will not be reduced [4] is also a difficult problem faced by the governments of various countries.

In the process of industrial development, the demand for construction land in secondary and tertiary industries has been increasing, while the problem of inefficient utilization of urban land has been gradually exposed and has become an obstacle to socio-economic development [5]. The rough development pattern of inefficient utilization and excessive consumption of land resources has led to a low level of intensive utilization of urban land, an increase in the stock of urban construction land, and a serious waste of land resources [6]. Land reclamation, as a systematic engineering technical means that can optimize land use, plays an important role in

alleviating the contradiction between man and land and solving land use problems [7,8], and has been widely adopted by various countries. It aims to provide a reference for the development of construction land reclamation technology in China by combining the practice and experience of construction land reclamation at home and abroad.

2. Development Process for Remediation Abroad

The history of foreign construction land remediation can be traced back to the 18th century, and the term "urban land remediation" first appeared in Switzerland, as early as 1893, the Swiss canton of Sulik issued the above-mentioned building code, from the initial consolidation of fields, tenure adjustments, and other single mode to the construction of infrastructure and then to the village remediation, promoting regional development and ecological environmental protection and other composite models [9]. Through land consolidation, economic conditions, living conditions, environmental protection and landscape protection are improved to achieve the unity of economic, social and environmental benefits.

In Germany, laws and regulations have been enacted on urban land redevelopment, and the "Frankfurt Real Estate Redevelopment Law" is the first special law related to urban land redevelopment; at present, the main legal basis for urban land redevelopment in Germany is the "Building Code", which specifies the operational procedures and normative basis such as land allocation, legal procedures, organizational structure and compensation methods for urban land redevelopment. The Building Code specifies the land allocation, legal procedures, organizational structure, compensation methods and other operational procedures and normative basis for urban construction land. Since the mid-1970s, Japan has gradually shifted to rural infrastructure construction and improvement of living environment by adjusting land tenure and carrying out village renovation, in order to narrow the gap between urban and rural areas. With the changes in the objectives and tasks of land improvement, Japan has gradually established a complete set of legal systems, including the Regional Agricultural Revitalization Law, the Agricultural Business Foundation Strengthening Promotion Law, and the Land Improvement Law.

Since the 1990s, the basic purpose of the research on construction land reclamation has been to improve rural production conditions, such as improving the living conditions and landscape environment of the countryside through field adjustment, village renovation and infrastructure construction, and rational planning of natural resources and humanistic landscapes. In addition, the contents related to construction land reclamation have appeared in laws such as the EU Rural Development Guidelines and the Law on Spatial Planning, which are issued periodically, and these laws, regulations and administrative rules clearly stipulate the purposes, tasks, methods and procedures of land reclamation, the relevant rights and obligations of participants in land reclamation, and the adjustment of land ownership, among others.

3. Development Process for Domestic Land Reclamation

Land reclamation in China has played an important role in protecting arable land, ensuring national food security, promoting integrated urban and rural development, and so on. Before the 1980s, the focus was on the basic construction of farmland, such as levelling the land, merging fields, completing ditches and organizing roads, etc.; in the 1980s, the focus was on the implementation of the joint contract responsibility system in rural areas and the establishment of township and village enterprises, which led to a great change in the way of land use and the structure of land use area. In the "13th Five-Year Plan" period, land reclamation will standardize rural construction land consolidation and urban and rural construction land layout, orderly promote urban industrial and mining construction land consolidation to improve urban living environment, and promote land reclamation and ecological restoration to ensure

sustainable land use. Taiwan calls urban land consolidation "urban land rezoning", and issued the "Implementation Methods for Municipal Land Rezoning" in 1980, marking its entry into the standardization stage.

On September 12, 2014, the Ministry of Land and Resources issued the Guiding Opinions on Promoting the Saving and Intensive Use of Land, which made an overall deployment to vigorously promote the saving and intensive use of land, and made it clear that land would be saved and intensively used. At the same time, the Opinions made it clear that it would implement the strategy of land excavation and reclamation and redevelopment, and that during the Twelfth Five-Year Plan and Thirteenth Five-Year Plan periods, it would complete the reclamation of rural construction land for a total of 9 million mu, and the reclamation and utilization of industrial and mining wastelands left over from history for a total of 3 million mu. In 2016, the State Council issued the "Several Opinions of the State Council on Deeply Promoting the Construction of New Urbanization", among other things, improved the land utilization mechanism by requiring the "establishment of an incentive mechanism for the redevelopment of urban low-utility land" and the "improvement of the mechanism for the transfer of land management rights and the right to use homestead bases". In 2019, the Land Management Law of the People's Republic of China will be amended for the third time to emphasize the equal importance of "special protection of arable land and strict management of construction land" and "optimizing market allocation and building a unified urban and rural construction land market" and to make new progress in improving the quality and efficiency of land use. The "Proposal of the Central Committee of the Communist Party of China on Formulating the Fourteenth Five-Year Plan for National Economic and Social Development and the Visionary Goals for the Period 2035," adopted at the Fifth Plenary Session of the 19th Central Committee of the Communist Party of China (CPC) on October 29, 2020, proposes to "carry out the action of upgrading and improving the environment of rural human settlements, and to support the whole county of 600 counties in promoting the improvement of the environment of human settlements".

4. Summary

After more than two decades of development, land reclamation practice has gradually evolved from the original farmland reclamation to the combination of farmland reclamation and construction land reclamation, and construction land reclamation is a realistic need to adapt to the changes in human-land relations and spatial reconstruction in the process of China's rapid urbanization and industrialization, which is conducive to promoting sustainable development in the region. China is still in a period of rapid urbanization, and the demand for construction land is growing rapidly. In order to alleviate the pressure of land demand, the construction land reclamation project has become an inevitable choice for solving the problem of land use in cities and towns in China. As the objects, objectives and modes of remediation become more diversified, through the combination of land remediation and urban and rural construction land increase/decrease hooks, and through integrated planning, aggregation of funds and integration of resources, the goal of optimizing the structure and layout of urban and rural land use, improving the ecological environment of the land, and coordinating the development of industry and urban and rural construction can be achieved.

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References

- [1] J. C. HAN. Introduction to land engineering (2nd edition), Beijing, Science Press, 2017.
- [2] Q. K. YANG, X. J. DUAN, Z. F. JIN, et al. Spatial and temporal differentiation of urban land development intensity in the Yangtze River Delta region and the influence mechanism, *Resource Science*, vol. 42 (2020), 723-734.
- [3] C. L. FANG. The rule and key direction of high-quality development of China's new urbanization, *Geography Research*, vol. 38 (2019), 13-22.
- [4] C. CHEN, W. ZHANG, C. C. FENG. Progress and prospect of research on urban-rural construction land replacement, *China Agricultural Resources and Zoning*, vol. 35 (2014), 61-66.
- [5] X. K. GU, X. P. ZHOU, B. Y. LIU, et al. Reduction and management of inefficient industrial land use in Shanghai based on context-structure-behavior-outcome analysis, *Journal of Natural Resources*, vol. 37 (2022), 1413-1424.
- [6] J. CAO, W. Z. ZHANG, J. J. LIU. Delineation of development boundary of towns on the edge of metropolis under the dual perspectives of economy and ecology - A case study of Panyu District, Guangzhou City, *Resource Science*, (2020), 262-273.
- [7] Y. F. JIANG, H. L. LONG, Y. T. TANG. Land improvement and rural revitalization--A perspective of multi-functionality of land use, *Progress in Geoscience*, vol. 40 (2021), 487-497.
- [8] B. HAN, X. B. JIN, Z. M. GU, et al. Research progress and key issues of land consolidation under the goal of rural revitalization, *Journal of Natural Resources*, vol. 36 (2021), 3007-3030.
- [9] X. P. ZHOU, D CHAI. Renewal of connotation and reconstruction of mode of urban land remediation in the context of new urbanization, *China Land*, (2018), 27-29.
- [10] P. ZHAO, J. H. GUO. Industrial revitalization for common wealth of peasants and rural areas: challenges of the Era, inner mechanisms and paths to realization, *Exploration of Economic Issues*, (2022), 1-11.