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# Integrated sustainability assessment and renewal of old industrial areas: A case study on Changzhou

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**Abstract**

With the acceleration of China's industrialization process, quite a lot of developed cities have come to the watershed towards a post-industrial stage. The constant urgrading of their traditional industries has brought about an urgent need to redevelop the old industrial areas with a more scientific and realistic urban strategy.

This paper takes Changzhou city as an in-depth case study of industrial land renewal from a perspective of sustainable development. In Changzhou, textile and electronic industries have constitued its economic base for decades, which occupied the majority of its industrial land throughout the city. However, in the following years, these urban industries will be moved out of the downtown area, and the formed lands be transferred into commercial, business, public service, cultural industry and residential use mainly. Based on the analysis of the current situation of the old industrial areas, this paper proposed three constructive views on how to improve these areas on the aspects of basic theory research, redevelopment mode, and planning methods. Secondly, it analyses the factors which affect the renewal of old industrial areas, and proposes the integrated and comprehensive sustainability assessment system that combines the economic, social, environmental and regional development. Finally, this paper focuses on and puts forth urban renewal strategies such as enhancing urban centre functions, regenerating land resources, optimizing the use of urban land resouces.



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Keywords: Post-industrialization; old industrial areas; urban renewal; assessment system; Changzhou

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## 1. Introduction

There have been successful and failed cases in the practice of old industrial area renewal so far, such as Tiexi Industrial Area of Shenyang City (Zhang Xiaoyun, 2001; Chen Baichao et al.,2003), Ruhr Industrial Base (Wang Jianguo et al., 2003). These cases provided experiences for China's planning practice in urban renewal. But among them, the reasons for some of the mistakes include the lack of scientific and holistic assessment of the present features of the old industrial areas. The failure to assess the "present situation – goal-setting – policy-making" during the process of renewal and transformation of the city's old industrial areas resulted in the lack of understanding of the areas' value, the lack of diversity in transformation methods, subjectivity and arbitrariness, as well as the emphasis on economic profit and the neglect of social, cultural and environmental benefits. As a result, studying the assessment systems and methods for renewing old industrial areas will assist in guiding future renewal practices. It will provide a scientific method framework of implementing old industrial area renewal in China. By making the planning and policy-making process of old industrial area renewal more systematic and scientific, it will promote the comprehensive, coordinate and sustainable development of the old industrial areas' renewal.

The main objective of the study is to establish an assessment system and method for the renewal of old industrial areas that have practical and guiding significance. This includes two main points: first, how to understand past integrated assessment system from the socio-economic level into the level of old industrial area renewal, thereby establishing a set of assessment index specific to the renewal of old industrial areas; second, how to establish an assessment method framework, through which the assessment index system can be integrated with various types and levels of old industrial area renewal. Only the establishment of a comprehensive assessment method framework can enable the effective application of the assessment system at the socio-economic level in the practice of renewing old industrial areas.

## 2. General Situation of Changzhou's Old Industrial Areas

The object of this study is Changzhou's old industrial areas. Changzhou's old industrial areas, which include industries within the scope of Changzhou's central group, have undergone development since beginning of the 20th century. They include the earliest national industries from the 30s, large-scale industrial construction from the early days of the Peoples Republic of China as well as a large number of township enterprises that emerged after reform and opening up. Having experienced the surge in industrial construction that never occurred in many other Chinese cities, these areas are highly representative and typical.

The old industrial areas refer to the industrial lands in the old city of Changzhou. It reaches as far north as the main road north of the city, as south as Guihua Canal, as west as Longjiang Road, and as East as Qingyang Road, occupying a total land area of 77.35 square miles. These areas are situated in the center and old city of Changzhou, with relatively earlier and higher quality urban industrial development.

The old industrial areas currently have approximately 337 industrial enterprises. There are 102 textile, printing and dyeing, and clothing industrial enterprises, representing 30.26% of the total enterprises, 143 machinery processing industries, representing 42.43% of the total enterprises, 17 electronic industrial enterprises, representing 0.51%, 21 chemical industries, representing 6.2%, 6 pharmaceutical industries, representing 1.7%, and 38 other enterprises, representing 11.3%.

These industrial enterprises occupy a total land area of 985.97 hectares. Among them, textile, printing and dyeing clothing enterprises occupy 197.99 hectare which represent 20.08% of the total land area, machinery processing industries occupy 500.85 hectares which represent 50.8%, electronic industries occupy 39.4 hectares which represent 3.99%, chemical industries occupy 80.74 hectares which represent 8.18%, pharmaceutical industries occupy 11.38 hectares which represent 1.15%, food industries occupy 40.34 hectares which represents 4.09%, and other industries occupy 112 hectares which represent 11.36% of the total land area. From the number of land size of the industrial enterprises in the old city, the machinery processing industry has a clear advantage, followed by the textile, printing and dyeing industry. Electronic and chemical industries also represent a significant proportion.

The machinery and textile industries have a long history. Among them, factories relatively large in size were mostly built in the first half of the 20th century, representing the origin of Changzhou's national industries. As time went on, products continued to optimize and the industrial chain continued to extend upstream. Based on textile and